

Vermont Oxford Network – eNICQ 5 Documentation

eNICQ 5 External Data Interface Guide

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eNICQ 5 External Data Interface Guide

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Introduction

Purpose and Applicability

These instructions are intended to assist software vendors, Vermont Oxford Network member IT departments and other third party developers in designing a data interface or import file structure that is compatible with the eNICQ 5 Infant Data Entry System. This document provides background information, specific design criteria, business process descriptions and detailed table formats that will be essential to implementing a successful data interface.

These instructions apply to eNICQ 5.x.x or higher; they do not apply to prior versions of eNICQ that were developed in Microsoft® Access® (version 4.x.x or earlier).

Background

The Vermont Oxford Network provides a software product called eNICQ to assist members with infant data entry, correction and submission. The eNICQ software allows electronic data entry and secure submission of de-identified data files via the Internet to the Vermont Oxford Network. To avoid duplication of data entry, many Vermont Oxford Network members and software vendors have developed methods of extracting data from their existing medical record systems and updating the eNICQ database with that information. Once extracted from the external software, the data can be completed, corrected and submitted to the Vermont Oxford Network by eNICQ.

Versions of eNICQ that used the Microsoft® Access® platform allowed external systems to access the eNICQ database tables directly, and the design and development of the data interface to eNICQ was left to the individual discretion of members and vendors. With the introduction of eNICQ 5, the mechanics of the data interface have been more clearly defined and documented.

Data Accuracy Considerations

Before making a decision to pursue the design of an interface between eNICQ 5 and your external software, it is important to consider how closely data items within your external software match the Vermont Oxford Network data definitions. Each data item collected by the Vermont Oxford Network has a precise definition, which is provided within the Vermont Oxford Network Database Manual of Operations (available for download at <http://www.vtoxford.org/tools/downloads.aspx>).

As you determine whether to extract an entry from your external software for use in the eNICQ 5 database, please confirm that the external software's definition of each item matches the Vermont Oxford Network's definition. Comparison of the item's definition within the external software and the Vermont Oxford Network's data definition should involve personnel associated with the clinical or data entry aspects of data collection during the design of the interface. Quality assurance review should also be performed once the interface is

implemented to ensure that the interface is writing accurate data to the eNICQ 5 database. Please see Section 3 of this document for additional detail about data accuracy considerations.

Maintenance Considerations

An additional consideration will be the commitment to ongoing support of the interface. The data items collected and the item definitions are subject to change each calendar year. Choosing to create an external data interface entails committing to ongoing support and annual maintenance of the interface for the duration of its use. Implementation of annual updates to the data interface is required by January 1st of each year. Details about the data items that will be collected and the definitions that will be used for the upcoming year are usually available from the Vermont Oxford Network by June of the preceding year. Please see Chapter 3 of this document for additional detail about maintenance considerations.

Vermont Oxford Network Databases

During the enrollment process with the Vermont Oxford Network, member centers select which database(s) in which they will participate. Members may submit data for Very Low Birth Weight (VLBW) infants only (VLBW Database) or for all NICU infants (Expanded Database). Members may also participate in the Neonatal Encephalopathy Registry (NER). Participation in the NER requires that members also participate in the VLBW or the Expanded Database.

- Members participating in the VLBW Database collect data items for each infant whose birth weight is between 401 and 1500 grams OR whose gestational age is between 22 weeks, 0 days and 29 weeks, 6 days (inclusive), regardless of where in the hospital the infant receives care. See the Vermont Oxford Network Database Manual of Operations for additional detail on VLBW Database eligibility criteria.
- Members participating in the Expanded Database collect all VLBW items, as well as additional supplemental data items. The Expanded Database includes data for all infants eligible for the VLBW Database, and also includes data for infants with birth weights greater than 1500 grams who are admitted to the hospital's NICU or die within the first 28 days of life without first having gone home, regardless of gestational age. See the Vermont Oxford Network Database Manual of Operations for additional detail on Expanded Database eligibility criteria.
- Members participating in the NER collect all VLBW, Expanded, and NER data items for infants who received hypothermic therapy. See the NER Manual of Operations for additional detail on NER eligibility criteria.

Protected Health Information and HIPAA

Confidential patient data items are stored in your local eNICQ 5 database. Patient identifiers are protected health information as specified in the US Health Insurance Portability and Accountability Act of 1996 (HIPAA) and the regulations implementing HIPAA. eNICQ 5 has been designed to ensure that patient identifiers cannot be sent to Vermont Oxford Network.

The Vermont Oxford Network does not accept protected health information.

Hospitals in the US must implement measures to secure protected health information from unauthorized access, as specified in the HIPAA Privacy and Security regulations. Users of eNICQ software should be sure to comply with local hospital policies and good information security practices to protect data in the eNICQ database.

To avoid access to the eNICQ 5 tables by unauthorized personnel, system administrators should review the security options available in the eNICQ 5 System Administrator's Guide and ensure that the application is accessible only to hospital staff members who have permission to access the data.

If you are unsure about the adequacy of your information security safeguards, or have any difficulty implementing the instructions in this guide, please consult your IT department or a qualified information security professional for assistance, in order to help prevent HIPAA violations and potential breaches of information security.

Chapter 1: Differences between eNICQ 4 (Microsoft® Access® platform) and eNICQ 5 (.NET platform)

The key changes to the design of eNICQ 5 that will impact any data interface strategy are listed below. Section 2 of this document provides details on accessing and updating the eNICQ 5 database tables.

SQL Server® database. The database for eNICQ 5 no longer uses Microsoft® Access®. The eNICQ 5 database uses SQL Server®.

External Data Tables for Creating and Updating Records. Whereas with eNICQ version 4.x (Microsoft® Access® platform) only primary infant tables were included in the database, with eNICQ 5 there are four tables in the SQL Server® database for external systems to create and update records. Data can be inserted into the external tables in one of two ways:

External Data Interface: The Vermont Oxford Network supports external systems designed to create or update records using these external data tables. External systems should not directly update the primary infant tables in the eNICQ 5 database.

Data File Import: Data files in CSV (Comma Separated Value) format may be imported to the external tables through the eNICQ 5 user interface.

The tables available in eNICQ 5 for interface with external systems are described below.

tblExternalCore: Patient identifier information. Data items in this table are applicable to all members, but most items in this table are considered to be protected health care data and are not exported to The Vermont Oxford Network. The Vermont Oxford Network does not accept protected health care information.

tblExternalVON: Data items in this table are applicable to all infant records. Except for the field MedicalRecordNumber, all data items in this table are exported to the Vermont

Oxford Network if applicable. Note that the applicability of items in this table may vary. Please see the Manual of Operations for the applicable birth year.

tblExternalExp: Data items in this table are applicable only to members participating in the Expanded Database or the Neonatal Encephalopathy Registry. Except for MedicalRecordNumber, all data items in this table are exported to the Vermont Oxford Network if applicable. Note that the applicability of items in this table may vary based on the infant's birth year, as described in the Manual of Operations.

tblExternalNER: Data items in this table are applicable only to members participating in the Neonatal Encephalopathy Registry (NER). In addition to the field MedicalRecordNumber, this table contains a number of date items that are not exported to the Vermont Oxford Network. The applicability of items in this table may vary based on the infant's birth year, as described in the NER Manual of Operations. Because creating an interface to populate tblExternalNER data items from another source is much more involved than the other external tables, documentation for this table is available from the Vermont Oxford Network upon request, and is not included in this document.

Support for Multiple Member Centers. The eNICQ 5 database can support more than one center. Users entering data for more than one center with eNICQ will no longer need to have multiple installations of eNICQ as is the case with eNICQ 4.

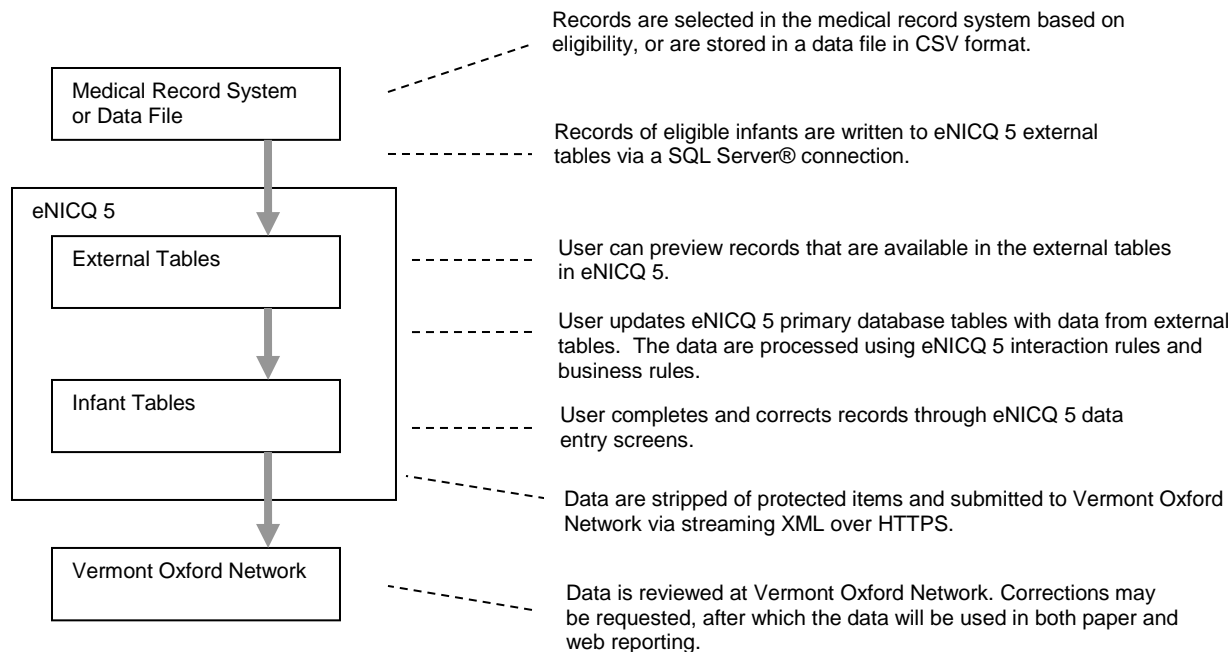
Assignment of Vermont Oxford Network ID numbers. External systems currently interfacing with eNICQ 4 must assign Vermont Oxford Network ID numbers in the external system rather than in eNICQ. With eNICQ 5, assignment of Medical Record Numbers is required, while assignment of Vermont Oxford Network ID numbers may be done by the external system or automatically by eNICQ. If Vermont Oxford Network ID numbers are assigned by the external system, establish a business practice that ensures there is no potential for the same ID number to be assigned to more than one patient. Because an eNICQ 5 user can still create records through the user interface, ID numbers can be assigned without the external system's awareness. One option is for the external system to check the primary infant tables for the current maximum ID before assigning ID numbers to new records.

Getting Help

The eNICQ Technical Support Team can answer questions you may have about the specifications described in this document. Please call 802-865-4814 and request Technical Support, or email your questions to support@vtxford.org.

Chapter 2: Data Flow and Business Processes

The eNICQ 5 external data interface is designed to receive incoming records from external systems into external tables and process the data according to business and interaction rules prior to integrating them into the primary infant tables of the database. The data flow is intended to be one-way. Changes or additions to data made in eNICQ 5 afterwards are not intended to be passed back to your medical record system.



Establishing Database Connectivity

External applications access the eNICQ 5 database via SQL Server® Authentication. Instructions for connecting to the eNICQ 5 database are provided with the eNICQ 5 Installation Guide.

Assigning Vermont Oxford Network ID Numbers

To assign the Vermont Oxford Network Patient ID Number from the external system, populate the ID field in tblExternalCore. If the ID field is populated in tblExternalCore and no record exists in the primary table that matches the Medical Record Number or the ID value for the record, eNICQ 5 will create a new record in the primary table(s) for the infant. Mismatches between Medical Record Number and ID values in external table records and primary table records will cause an error, in which case the user will be notified and the external table record deleted.

To have eNICQ 5 automatically assign the ID numbers, do not populate the ID number in tblExternalCore. If the ID field is not populated in tblExternalCore, eNICQ 5 will assign an ID number to each new record that is one greater than the highest numbered ID in the primary tables for the center.

Updating Primary Tables with Data from External Tables

The user decides which fields from external data tables are used to update the primary tables. A screen is provided in eNICQ 5 that allows the user to select which fields may be used in the external tables to update the primary database tables. The user may select some or all fields for each module. If a field is selected, any data in the primary table will be overwritten when

records from the external tables are processed.

If a record is created in eNICQ 5 and will be updated using the external tables, the record created in eNICQ 5 must include a Medical Record Number.

Writing to the External Tables

Table Specifications.

As described in Section 1, there are four external database tables provided as a standardized means for adding and updating records in eNICQ 5 from external systems.

tblExternalCore: Appendix A provides details on the table structure, field names and descriptions, data types and whether the fields in the table are exported to the Vermont Oxford Network.

tblExternalVON: Appendix B provides details on the table structure, field names and descriptions and data types. Data item descriptions are provided annually by the Network in the Vermont Oxford Network Database Manual of Operations. Refer to <http://www.vtoxford.org/tools/downloads.aspx> for the Manual of Operations for each applicable birth year.

tblExternalExp: Appendix C provides details on the table structure, field names and descriptions and data types. Data item descriptions are provided annually by the Network in the Vermont Oxford Network Database Manual of Operations. Refer to <http://www.vtoxford.org/tools/downloads.aspx> for the Manual of Operations for each applicable birth year.

tblExternalNER: Because the Neonatal Encephalopathy Registry (NER) contains a far greater quantity of data items than the other database tables, and because the data items collected will change substantially for the 2013 birth year, details for creating an External Data Interface to populate the NER data items are not included in this document. Populating these items using an interface is an option, and details are available from the Vermont Oxford Network if your center would like more information.

Interface Specifications

Primary Key for External Tables: The primary key for each of the four external tables is MedicalRecordNumber and Vermont Oxford Network hospital number (HOSPNO). These key fields must always be included in each record exported to the external tables. **The MedicalRecordNumber value for each infant must be unique and unchanging.**

All Adds and Updates Require tblExternalCore Records: eNICQ 5 will process a record in tblExternalVON, tblExternalExp or tblExternalNER only if there is a corresponding record in tblExternalCore with the same MedicalRecordNumber and HOSPNO. Records without a corresponding record in tblExternalCore will be deleted. Updates to tblExternalCore may be done without updating other external tables.

Populate Only Applicable Tables: tblExternalExp and tblExternalNER may not be applicable. If the center participates in only the VLBW Database, data in tblExternalExp

and tblExternalNER will not be used to update primary tables.

- Populate tblExternalNER only if the center participates in the Neonatal Encephalopathy Registry (NER).
- Populate tblExternalExp only if the center participates in the Expanded Database or NER.

Identify the Fields that may be Populated by the Interface: Each field that will be eligible for population by the external data interface must be identified using the Center Interface settings within the eNICQ 5 application. Fields not selected for import will be ignored, even if data is entered into the external tables. The data will be discarded without being written to the eNICQ 5 database. For more information about the Center Interface settings, please see the eNICQ 5 User's Guide within the [eNICQ 5 Documentation Library](#).

External Tables Need Not Be Fully Populated: The external tables need not be fully populated in order create or update records in the eNICQ 5 database. Only the primary key fields are required to process external data. This allows for some data fields to be populated by external systems and other fields to be entered directly by the eNICQ 5 user. Please note, however, that if the user has identified a field as eligible for population by the interface and the field is null in the external table, the field will be updated to null in the primary table. Whenever records are updated using the external tables, therefore, all fields previously populated and still applicable should continue to be updated. To import a partial record without clearing existing entries, use the Center Interface settings to uncheck any items that will not be populated from the partial record. In cases where import data for a record is split into multiple CSV files, either merge the CSV files beforehand, or upload all the CSV files to the external tables before importing the data to the primary tables.

Clearing Data in External Tables: The eNICQ 5 user will be notified when the application is opened that records are available for update from the external tables. The user can choose when to update the primary records using data from the external tables. Doing so will create new records or update records in the primary infant tables based on eNICQ 5 interaction rules. The external tables will be cleared of records that were imported during this operation.

Coordinating Population of External Tables: The eNICQ 5 user has control over when data from the external tables is imported to the live eNICQ database, which causes the external tables to be cleared. If there is an attempt to add data to one of the external tables and any of the records being added have primary keys that match an existing record on that table, the attempt to add new data for the existing record will fail. To avoid this, the Vermont Oxford Network recommends that you design your interface to search for existing records matching the primary keys before writing new data to the external tables. If a record already exists, the new data should update the existing record, not insert a new entry into the external tables. Alternatively, create a policy to coordinate writing to the external tables with the eNICQ 5 user importing the data to the live eNICQ 5 database and clearing the external tables.

Adding Records: New records may be added to the eNICQ 5 primary database by writing data to tblExternalCore only, or by writing data to tblExternalCore and one or more of the other three external tables.

Editing Records: Records are edited in the same way they are added. Data in the

external table(s) completely replace data in the primary database tables.

Deleting Records: Records in eNICQ 5 can be deleted manually through the user interface. A record that has never been exported to the Vermont Oxford Network will be deleted from the eNICQ 5 database entirely. A record that has been exported to the Vermont Oxford Network will be marked for deletion, and notification of the deletion will be sent to the Vermont Oxford Network the next time an eNICQ 5 application user initiates a data submission.

Expiration of Data Fields: If the Vermont Oxford Network stops collecting a particular data item, the field will remain available for update using the external tables for three years after the item is no longer collected. Notation on when the field was deprecated will be included in the specifications for the external tables, which will be released each year.

Importing a Data File: Records may also be added, updated or deleted by importing a data file. The data file must be in CSV (Comma Separated Value) format, and should be created using the specifications detailed in the appendices below. The import is initiated by the eNICQ 5 user from within the client application. A single CSV data file may contain data for any combination of fields from any of the external tables.

Chapter 3: Additional Data Considerations

The Vermont Oxford Network distributes operations manuals and instructions for submitting electronic data annually. These documents describe item definitions, eligibility requirements and data collection policies and procedures related to database participation. Each data item in the external tables has its own data definition, a precise explanation of the information required for the item. To assure data integrity, care is required to determine that data transferred from external systems to eNICQ 5 are consistent with the Vermont Oxford Network definitions and eligibility requirements. Item definitions are updated annually based on changing needs of the neonatal community and apply to infants born in a particular birth year. Each year, changes must be examined to assure that data transferred from external systems to the eNICQ 5 database are appropriate for each infant's birth year.

Infant eligibility criteria for the Vermont Oxford Network databases have been established so that data from each member center is comparable to other member centers. Procedures should be established to assure that data are collected for each eligible infant and that data are not collected for infants who are ineligible.

Refer to the following documents available at <http://www.vtoxford.org/tools/downloads.aspx> for variable names, descriptions, data item definitions and eligibility requirements:



- The Vermont Oxford Network Database Manual of Operations applies to the data collected for the Very Low Birth Weight (VLBW) database and the Expanded Database. This includes data items contained in tblExternalVON and tblExternalExp.
- The NER Manual of Operations applies to the data collected for the Neonatal Encephalopathy Registry. This includes data items contained in tblExternalNER.

- In June of each year, the Vermont Oxford Network publishes Electronic Data Submission (EDS) Instructions, which include descriptions of new items and other changes for the upcoming birth year. A table is provided with variable names, descriptions, ranges and codes.

If you have any questions about either determining eligibility or interpreting data definitions, please contact support@vtoxford.org.

Appendix A

TblExternalCore (For use in 2012)

	Name	Description	SQL Server® Data Type	Max Length (Bytes)	Allow Nulls	Not Exported to VON
	HOSPNO	VON center number	smallint	4	✗	
	ID	VON Patient ID Number	Int	4	✓	
	PATIENTFIRSTNAME	Infant's first name	varchar(50)	50	✓	✓
	PATIENTLASTNAME	Infant's last name	varchar(50)	50	✓	✓
	MOTHERFIRSTNAME	Mother's first name	varchar(50)	50	✓	✓
	MOTHERLASTNAME	Mother's last name	varchar(50)	50	✓	✓
	MEDICALRECORDNUMBER	Medical record number	varchar(50)	50	✗	✓
	DOB	Date of birth	datetime	8	✓	✓
	DOA	Date infant was first admitted to the reporting hospital	datetime	8	✓	✓
	DID	Date of initial disposition: date the infant was first discharged home, first transferred to another hospital or died, whichever comes first.	datetime	8	✓	✓
	DFD	Date of Final Disposition: date the infant was first discharged home or died, whichever comes first. If the infant was still hospitalized at one year of age, without having gone home, this is the date of first birthday.	datetime	8	✓	✓
	NOTES	Notes: for local use if user desires to annotate infant record.	varchar(2500)	2500	✓	✓
	SourceApplicationName	Source Application Name: name of the external application populating this table.	varchar(100)	100	✓	
	SourceApplicationVersion	Source Application Version: version of the external application populating this table.	varchar(25)	25	✓	

Appendix B

TblExternalVON (For use in 2012)

Name	Description/Range of Acceptable Values	SQL Server® Data Type	Max Length (Bytes)	Allow Nulls
 HOSPNO	Center Number	smallint	4	✗
 MEDICALRECORDNUMBER	Medical Record Number	varchar(50)	50	✗
ID	Vermont Oxford Network Patient ID Number Range: 1 to 99,9999	Int	4	✓
BWGT	Birth Weight (grams) Range: <u>VLBW Database</u> : 401 to 1500, 99999 (may be <401 or >1500 if [GAWEEKS] is between 22 and 29) <u>Expanded Database and Infants Eligible for the Neonatal Encephalopathy Registry</u> : Same as VLBW Database but also includes infants >1500 grams who are otherwise eligible. See eligibility criteria in Manual of Operations. Codes: 99999=Unknown	int	4	✓
GAWEEKS	Gestational Age, Weeks Range: 15 to 46, 99 Codes: 99=Unknown	smallint	2	✓
GADAYS	Gestational Age, Days Range: 0 to 6, 99 Codes: 99=Unknown	smallint	2	✓
DELDIE	Died in the Delivery Room or Resuscitation Area within 12 hours of birth and prior to NICU admission Range: 0, 1 Codes: 0=No, 1=Yes	tinyint	1	✓
LOCATE	Location of Birth Range: 0, 1 Codes: 0=Inborn, 1=Outborn	tinyint	1	✓
SEX	Sex of Infant Range: 0, 1, 9 Codes: 0=Female, 1=Male, 9=Unknown	tinyint	1	✓
BHEADCIR	Head Circumference at Birth (cm, rounded to nearest 10 th) Range: 10.0 to 70.0, 777.7, 999.9 Codes: 777.7=N/A, 999.9=Unknown	float	8	✓
HISP	Ethnicity of Mother Range: 0, 1, 9 Codes: 0=Not Hispanic, 1=Hispanic, 9=Unknown	tinyint	1	✓
NEWRACE	Race of Mother Range: 1, 3, 4, 5, 6, 77, 99 Codes: 1=Black, 3=White, 4=Asian, 5=Native American, 6=Other Race, 77=N/A, 99=Unknown Use 77 if [BYEAR]>2011	tinyint	1	✓
PCARE	Prenatal Care Range: 0, 1, 9 Codes: 0=No, 1=Yes, 9=Unknown	tinyint	1	✓
ASTER	Antenatal Steroids Range: 0, 1, 9 Codes: 0=No, 1=Yes, 9=Unknown	tinyint	1	✓
VAGDEL	Mode of Delivery Range: 0, 1, 9 Codes: 0=Cesarean Section, 1=Vaginal, 9=Unknown	tinyint	1	✓
MULT	Multiple Gestation Range: 0, 1, 9 Codes: 0=No, 1=Yes, 9=Unknown	tinyint	1	✓
NBIRTHS	Number of Infants Delivered Range: 1 to 10, 77, 99 Codes: 77=N/A, 99=Unknown. Use 77 if [MULT]=0. Use 99 if [MULT]=9	smallint	2	✓
AP1	APGAR Score at 1 Minute Range: 0 to 10, 99 Codes: 99=Unknown	smallint	2	✓
AP5	APGAR Score at 5 Minutes Range: 0 to 10, 99 Codes: 99=Unknown	smallint	2	✓

Appendix B

TblExternalVON (For use in 2012)

Name	Description/Range of Acceptable Values	SQL Server® Data Type	Max Length (Bytes)	Allow Nulls
ATEMPM	Temperature Measured within the First Hour after Admission to Your NICU Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
ATEMP	Temperature within the First Hour after Admission to Your NICU (degrees centigrade, rounded to nearest 10 th) Range: 20.0 to 45.0, 777.7, 999.9 Codes: 777.7=N/A, 999.9=Unknown. Use 777.7 if [ATEMPTM]=0 or 7	float	8	✓
DROX	Oxygen during Initial Resuscitation Range: 0, 1, 9 Codes: 0=No, 1=Yes, 9=Unknown	tinyint	1	✓
DRBM	Face Mask Ventilation during Initial Resuscitation Range: 0, 1, 9 Codes: 0=No, 1=Yes, 9=Unknown	tinyint	1	✓
DRET	Endotracheal Tube Ventilation during Initial Resuscitation Range: 0, 1, 9 Codes: 0=No, 1=Yes, 9=Unknown	tinyint	1	✓
DREP	Epinephrine during Initial Resuscitation Range: 0, 1, 9 Codes: 0=No, 1=Yes, 9=Unknown	tinyint	1	✓
DRCC	Cardiac Compression during Initial Resuscitation Range: 0, 1, 9 Codes: 0=No, 1=Yes, 9=Unknown	tinyint	1	✓
NEWOX28	Oxygen on Day 28 Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1 or infant not hospitalized on Day 28	tinyint	1	✓
USOUND1	Cranial Imaging on or before Day 28 Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
UGRADE1	Periventricular-Intraventricular Hemorrhage (PIH), Worst Grade Range: 0 to 4, 7, 9 Codes: 7=N/A, 9=Unknown. Use 7 if [USOUND1]=0 or 7. Use 9 if [USOUND1]=9	tinyint	1	✓
DIE12	Died Within 12 Hours of Admission to Your NICU Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
OXY	Oxygen after Initial Resuscitation Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
CPAP	Nasal CPAP after Initial Resuscitation Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
CPAPES	Nasal CPAP before ETT Ventilation Range: 0, 1, 7, 9 Codes: Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [CPAP]=0 or 7. Use 9 if [CPAP]=9. Use 1 if [CPAP]=1 and no ETT Ventilation was used.	tinyint	1	✓
VENT	Conventional Ventilation after Initial Resuscitation Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
HFV	High Frequency Ventilation after Initial Resuscitation Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓

Appendix B

TblExternalVON (For use in 2012)

Name	Description/Range of Acceptable Values	SQL Server® Data Type	Max Length (Bytes)	Allow Nulls
HFNC	High Flow Nasal Cannula after Initial Resuscitation Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
NIMV	Nasal IMV or SIMV after Initial Resuscitation Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
DRSURF	Surfactant during Initial Resuscitation Range: 0, 1, 9 Codes: 0=No, 1=Yes, 9=Unknown	tinyint	1	✓
SURFX	Surfactant at Any Time Range: 0, 1, 9 Codes: 0=No, 1=Yes, 9=Unknown. Use 1 if [DRSURF]=1	tinyint	1	✓
SURF1DHR	Age at First Dose of Surfactant (hours) Range: 0 to 6665, 7777, 9999 Codes: 7777=N/A, 9999=Unknown. Use 7777 if [SURFX]=0. Use 9999 if [SURFX]=9	smallint	2	✓
SURF1DMIN	Age at First Dose of Surfactant (minutes) Range: 0 to 59, 77, 99 Codes: 77=N/A, 99=Unknown. Use 77 if [SURFX]=0. Use 99 if [SURFX]=9	smallint	2	✓
RDS	Respiratory Distress Syndrome Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
PNTX	Pneumothorax Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
OX36	Oxygen at 36 Weeks Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1. Use 7 if rounded [GAWEEKS] > 36. Use 7 if infant is not hospitalized at 36 weeks GA	tinyint	1	✓
STERBPD	Steroids for CLD Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
PDA	Patent Ductus Arteriosus Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
INDOMETH	Indomethacin Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
NEC	Necrotizing Enterocolitis Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
GIPERF	Gastrointestinal Perforation Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
EBSEPS	Bacterial Sepsis on or before Day 3 Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
LBPATN	Bacterial Pathogen after Day 3 Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1. Use 7 if infant not hospitalized after day 3	tinyint	1	✓

Appendix B

TblExternalVON (For use in 2012)

Name	Description/Range of Acceptable Values	SQL Server® Data Type	Max Length (Bytes)	Allow Nulls
CNEGSTAPH	Coagulase Negative Staph Infection after Day 3 Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1. Use 7 if infant not hospitalized after day 3	tinyint	1	✓
FUNGAL	Fungal Infection after Day 3 Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1. Use 7 if infant not hospitalized after day 3	tinyint	1	✓
PVL	Cystic Periventricular Leukomalacia Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1. Use 7 if no cranial ultrasound was done	tinyint	1	✓
EYEX	Retinal Examination Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
ISTAGE	ROP Stage Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [EYEX]=0, 7. Use 9 if [EYEX]=9	tinyint	1	✓
CMAL	Major Birth Defect Range: 0, 1, 9 Codes: 0=No, 1=Yes, 9=Unknown	tinyint	1	✓
BDCD1	First Birth Defect Code Range: See Manual of Operations, Appendix C for applicable codes, 7777, 9999 Codes: 7777=N/A, 9999=Unknown. Use 7777 if [CMAL]=0	smallint	2	✓
BDCD2	Second Birth Defect Code Range: See Manual of Operations, Appendix C for applicable codes, 7777, 9999 Codes: 7777=N/A, 9999=Unknown. Use 7777 if [CMAL]=0	smallint	2	✓
BDCD3	Third Birth Defect Code Range: See Manual of Operations, Appendix C for applicable codes, 7777, 9999 Codes: 7777=N/A, 9999=Unknown. Use 7777 if [CMAL]=0	smallint	2	✓
BDCD4	Fourth Birth Defect Code Range: See Manual of Operations, Appendix C for applicable codes, 7777, 9999 Codes: 7777=N/A, 9999=Unknown. Use 7777 if [CMAL]=0	smallint	2	✓
BDCD5	Fifth Birth Defect Code Range: See Manual of Operations, Appendix C for applicable codes, 7777, 9999 Codes: 7777=N/A, 9999=Unknown. Use 7777 if [CMAL]=0	smallint	2	✓
BDEFECT	Birth Defect Description Range: Free text, 77, 99 Codes: 77=N/A, 99=Unknown. Use 77 if [CMAL]=0. Use 77 if [CMAL]=1 and Birth Defect Codes entered do not require description (see Manual of Operations)	nvarchar(255)	510	✓
SRGLIG	PDA Ligation Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
NECSURG	NEC Surgery Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
ROPSURG	ROP Surgery Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓

Appendix B

TblExternalVON (For use in 2012)

Name	Description/Range of Acceptable Values	SQL Server® Data Type	Max Length (Bytes)	Allow Nulls
OSURG	Other Surgery Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
SRGCD1	First Surgery Code Range: See Manual of Operations, Appendix D for applicable codes, 77, 99 Codes: 77=N/A, 99=Unknown. Use 77 if ([OSURG]=0 or 7 and [NECSURG]=0 or 7). Use 99 if ([NECSURG]=9 and [OSURG]= 0 or 9) or ([NECSURG]=0 or 9 and [OSURG]=9)	nvarchar(6)	12	✓
SRGCD2	Second Surgery Code Range: See Manual of Operations, Appendix D for applicable codes, 77, 99 Codes: 77=N/A, 99=Unknown. Use 77 if ([OSURG]=0 or 7 and [NECSURG]=0 or 7). Use 99 if ([NECSURG]=9 and [OSURG]= 0 or 9) or ([NECSURG]=0 or 9 and [OSURG]=9)	nvarchar(6)	12	✓
SRGCD3	Third Surgery Code Range: See Manual of Operations, Appendix D for applicable codes, 77, 99 Codes: 77=N/A, 99=Unknown. Use 77 if ([OSURG]=0 or 7 and [NECSURG]=0 or 7). Use 99 if ([NECSURG]=9 and [OSURG]= 0 or 9) or ([NECSURG]=0 or 9 and [OSURG]=9)	nvarchar(6)	12	✓
SRGCD4	Fourth Surgery Code Range: See Manual of Operations, Appendix D for applicable codes, 77, 99 Codes: 77=N/A, 99=Unknown. Use 77 if ([OSURG]=0 or 7 and [NECSURG]=0 or 7). Use 99 if ([NECSURG]=9 and [OSURG]= 0 or 9) or ([NECSURG]=0 or 9 and [OSURG]=9)	nvarchar(6)	12	✓
SRGCD5	Fifth Surgery Code Range: See Manual of Operations, Appendix D for applicable codes, 77, 99 Codes: 77=N/A, 99=Unknown. Use 77 if ([OSURG]=0 or 7 and [NECSURG]=0 or 7). Use 99 if ([NECSURG]=9 and [OSURG]= 0 or 9) or ([NECSURG]=0 or 9 and [OSURG]=9)	nvarchar(6)	12	✓
SRGCD6	Sixth Surgery Code Range: See Manual of Operations, Appendix D for applicable codes, 77, 99 Codes: 77=N/A, 99=Unknown. Use 77 if ([OSURG]=0 or 7 and [NECSURG]=0 or 7). Use 99 if ([NECSURG]=9 and [OSURG]= 0 or 9) or ([NECSURG]=0 or 9 and [OSURG]=9)	nvarchar(6)	12	✓
SRGCD7	Seventh Surgery Code Range: See Manual of Operations, Appendix D for applicable codes, 77, 99 Codes: 77=N/A, 99=Unknown. Use 77 if ([OSURG]=0 or 7 and [NECSURG]=0 or 7). Use 99 if ([NECSURG]=9 and [OSURG]= 0 or 9) or ([NECSURG]=0 or 9 and [OSURG]=9)	nvarchar(6)	12	✓
SRGCD8	Eighth Surgery Code Range: See Manual of Operations, Appendix D for applicable codes, 77, 99 Codes: 77=N/A, 99=Unknown. Use 77 if ([OSURG]=0 or 7 and [NECSURG]=0 or 7). Use 99 if ([NECSURG]=9 and [OSURG]= 0 or 9) or ([NECSURG]=0 or 9 and [OSURG]=9)	nvarchar(6)	12	✓
SRGCD9	Ninth Surgery Code Range: See Manual of Operations, Appendix D for applicable codes, 77, 99 Codes: 77=N/A, 99=Unknown. Use 77 if ([OSURG]=0 or 7 and [NECSURG]=0 or 7). Use 99 if ([NECSURG]=9 and [OSURG]=0 or 9) or ([NECSURG]=0 or 9 and [OSURG]=9)	nvarchar(6)	12	✓

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TblExternalVON (For use in 2012)

Name	Description/Range of Acceptable Values	SQL Server® Data Type	Max Length (Bytes)	Allow Nulls
SRGCD10	Tenth Surgery Code Range: See Manual of Operations, Appendix D for applicable codes, 77, 99 Codes: 77=N/A, 99=Unknown. Use 77 if ([OSURG]=0 or 7 and [NECSURG]=0 or 7). Use 99 if ([NECSURG]=9 and [OSURG]=0 or 9) or ([NECSURG]=0 or 9 and [OSURG]=9)	nvarchar(6)	12	✓
OSRGDESC	Surgical Code Description Range: Free text, 77, 99 Codes: 77=N/A, 99=Unknown. Use 77 if [OSURG]=0. Use 77 if [OSURG]=1 and Surgery Codes entered do not require description (see Manual of Operations). Use 99 if ([NECSURG]=9 and [OSURG]=0 or 9) or ([NECSURG]=0 or 9 and [OSURG]=9)	varchar(255)	255	✓
FDISP	Initial Disposition Range: 1, 2, 3, 5, 7, 9 Codes: 1=Home, 2=Transferred, 3=Died, 5=Still Hospitalized as of First Birthday, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
ENTFEED	Enteral Feeding at Discharge Range: 0, 1, 2, 3, 7, 9 Codes: 0=None, 1=Human Milk Only, 2=Formula Only, 3=Human Milk with Fortifier or Formula, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
DWGT	Weight at Initial Disposition (grams) Range: 201 to 66665, 77777, 99999 Codes: 77777=N/A, 99999=Unknown. Use 77777 if [DELDIE]=1	int	4	✓
DHEADCIR	Head Circumference at Initial Disposition (cm, rounded to nearest 10 th) Range: 10.0 to 70.0, 777.7, 999.9 Codes: 777.7=N/A, 999.9=Unknown. Use 777.7 if [DELDIE]=1	float	8	✓
OXFINAL	Oxygen at Discharge Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
ACFINAL	Monitor at Discharge Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
TRANSCODE	Reason for Transfer Range: 0, 1, 2, 3, 4, 5, 7, 9 Codes: 0=ECMO, 1=Growth/Discharge Planning, 2=Medical/Diagnostic Services, 3=Surgery, 4=Chronic Care, 5=Other, 7=N/A, 9=Unknown. Use 7 if [FDISP]=1, 3, 5, 7. Use 9 if [FDISP]=9	tinyint	1	✓
F2DISP	Post Transfer Disposition Range: 1, 2, 3, 4, 5, 7, 9 Codes: 1=Home, 2=Transferred Again, 3=Died, 4=Readmitted, 5=Still Hospitalized as of First Birthday, 7=N/A, 9=Unknown. Use 7 if [FDISP]=1, 3, 5, 7. Use 9 if [FDISP]=9	tinyint	1	✓
F3DISP	Disposition after Readmission Range: 1, 2, 3, 5, 7, 9 Codes: 1=Home, 2=Transferred, 3=Died, 5=Still Hospitalized as of First Birthday, 7=N/A, 9=Unknown. Use 7 if [F2DISP]=1, 2, 3, 5, 7. Use 9 if [F2DISP]=9	tinyint	1	✓
F3WGT	Weight at Disposition after Readmission (grams) Range: 201 to 66665, 77777, 99999 Codes: 77777=N/A, 99999=Unknown. Use 77777 if [F3DISP]=7. Use 99999 if [F3DISP]=9	int	4	✓

Appendix B

TblExternalVON (For use in 2012)

Name	Description/Range of Acceptable Values	SQL Server® Data Type	Max Length (Bytes)	Allow Nulls
UDISP	Ultimate Disposition Range: 1, 3, 5, 7, 9 Codes: 1=Home, 3=Died, 5=Still Hospitalized as of First Birthday, 7=N/A, 9=Unknown. Use 7 if [F2DISP]=1, 3, 5, 7. Use 7 if [F3DISP]=1, 3, 5, 7. Use 9 if [F2DISP]=9. Use 9 if [F3DISP]=9	tinyint	1	✓
CHORIO	Chorioamnionitis Range: 0, 1, 9 Codes: 0=No, 1=Yes, 9=Unknown	tinyint	1	✓
MHYPERTENS	Maternal Hypertension, Chronic or Pregnancy-Induced Range: 0, 1, 9 Codes: 0=No, 1=Yes, 9=Unknown	tinyint	1	✓
INO	Inhaled Nitric Oxide Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
IBUPROFEN	Ibuprofen for PDA Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
OUTB_CTR	Transfer Code of Center from which outborn Infant Transferred Range: See http://www.vtoxford.org/tools/transferlist.aspx for applicable codes, 77777777, 99999999 Codes: 77777777=N/A, 99999999=Unknown. Use 77777777 if [LOCATE]=0. Use 77777777 if [BYEAR]<2009	int	4	✓
PIHWFO	PIH, Where First Occurred Range: 1, 2, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 7=N/A, 9=Unknown. Use 7 if [USOUND1]=0 or 7. Use 7 if [UGRADE1]=0. Use 9 if [UGRADE1]=9. Use 7 if [BYEAR]<2009	tinyint	1	✓
INOWG	Inhaled Nitric Oxide, Where Given Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [INO]=0 or 7. Use 9 if [INO]=9. Use 7 if [BYEAR]<2009	tinyint	1	✓
STERBPDWG	Steroids for CLD, Where Given Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [STERBPD]=0 or 7. Use 9 if [STERBPD]=9. Use 7 if [BYEAR]<2009	tinyint	1	✓
SRGLIGWD	PDA Ligation, Where Done Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [SRGLIG]=0 or 7. Use 9 if [SRGLIG]=9. Use 7 if [BYEAR]<2009	tinyint	1	✓
ROPSURGWD	ROP Surgery, Where Done Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [ROPSURG]=0 or 7. Use 9 if [ROPSURG]=9. Use 7 if [BYEAR]<2009	tinyint	1	✓
SRGLOC1	Location of Surgery, First Surgery Code Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [OSURG]=0 or 7 and [NECSURG]=0 or 7. Use 9 if ([OSURG] is 0 or 9 and [NECSURG]=9) or ([OSURG]=9 and [NECSURG] is 0 or 9). Use 7 if [BYEAR]<2009	tinyint	1	✓

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TblExternalVON (For use in 2012)

Name	Description/Range of Acceptable Values	SQL Server® Data Type	Max Length (Bytes)	Allow Nulls
SRGLOC2	Location of Surgery, Second Surgery Code Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [SRGCD2]=7 Use 9 if ([OSURG] is 0 or 9 and [NECSURG]=9) or ([OSURG]=9 and [NECSURG] is 0 or 9). Use 7 if [BYEAR]<2009	tinyint	1	✓
SRGLOC3	Location of Surgery, Third Surgery Code Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [SRGCD3]=7 Use 9 if ([OSURG] is 0 or 9 and [NECSURG]=9) or ([OSURG]=9 and [NECSURG] is 0 or 9). Use 7 if [BYEAR]<2009	tinyint	1	✓
SRGLOC4	Location of Surgery, Fourth Surgery Code Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [SRGCD4]=7 Use 9 if ([OSURG] is 0 or 9 and [NECSURG]=9) or ([OSURG]=9 and [NECSURG] is 0 or 9). Use 7 if [BYEAR]<2009	tinyint	1	✓
SRGLOC5	Location of Surgery, Fifth Surgery Code Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [SRGCD5]=7 Use 9 if ([OSURG] is 0 or 9 and [NECSURG]=9) or ([OSURG]=9 and [NECSURG] is 0 or 9). Use 7 if [BYEAR]<2009	tinyint	1	✓
SRGLOC6	Location of Surgery, Sixth Surgery Code Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [SRGCD6]=7 Use 9 if ([OSURG] is 0 or 9 and [NECSURG]=9) or ([OSURG]=9 and [NECSURG] is 0 or 9). Use 7 if [BYEAR]<2009	tinyint	1	✓
SRGLOC7	Location of Surgery, Seventh Surgery Code Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [SRGCD7]=7 Use 9 if ([OSURG] is 0 or 9 and [NECSURG]=9) or ([OSURG]=9 and [NECSURG] is 0 or 9). Use 7 if [BYEAR]<2009	tinyint	1	✓
SRGLOC8	Location of Surgery, Eighth Surgery Code Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [SRGCD8]=7 Use 9 if ([OSURG] is 0 or 9 and [NECSURG]=9) or ([OSURG]=9 and [NECSURG] is 0 or 9). Use 7 if [BYEAR]<2009	tinyint	1	✓
SRGLOC9	Location of Surgery, Ninth Surgery Code Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [SRGCD9]=7 Use 9 if ([OSURG] is 0 or 9 and [NECSURG]=9) or ([OSURG]=9 and [NECSURG] is 0 or 9). Use 7 if [BYEAR]<2009	tinyint	1	✓

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TblExternalVON (For use in 2012)

Name	Description/Range of Acceptable Values	SQL Server® Data Type	Max Length (Bytes)	Allow Nulls
SRGLOC10	Location of Surgery, Tenth Surgery Code Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [SRGCD10]=7 Use 9 if ([OSURG] is 0 or 9 and [NECSURG]=9) or ([OSURG]=9 and [NECSURG] is 0 or 9). Use 7 if [BYEAR]<2009	tinyint	1	✓
PNTXWO	Pneumothorax, Where Occurred Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [PNTX]=0 or 7. Use 9 if [PNTX]=9. Use 7 if [BYEAR]<2009	tinyint	1	✓
NECWO	NEC, Where Occurred Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [NEC]=0 or 7. Use 9 if [NEC]=9. Use 7 if [BYEAR]<2009	tinyint	1	✓
GIPERFWO	Gastrointestinal Perforation, Where Occurred Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [GIPERF]=0 or 7. Use 9 if [GIPERF]=9. Use 7 if [BYEAR]<2009	tinyint	1	✓
LBPATHWO	Late Bacterial Pathogen, Where Occurred Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [LBPATH]=0 or 7. Use 9 if [LBPATH]=9. Use 7 if [BYEAR]<2009	tinyint	1	✓
CNEGWO	Coagulase Negative Staph Infection, Where Occurred Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [CNEGSTAPH]=0 or 7. Use 9 if [CNEGSTAPH]=9. Use 7 if [BYEAR]<2009	tinyint	1	✓
FUNGALWO	Fungal Infection, Where Occurred Range: 1, 2, 3, 7, 9 Codes: 1=Your Hospital, 2=Other Hospital, 3=Both Your Hospital and Other Hospital, 7=N/A, 9=Unknown. Use 7 if [FUNGAL]=0 or 7. Use 9 if [FUNGAL]=9. Use 7 if [BYEAR]<2009	tinyint	1	✓
XFER_CTR	Transfer Code of Center to which Infant Transferred Range: See http://www.vtoxford.org/tools/transferlist.aspx for applicable codes, 77777777, 99999999 Codes: 77777777=N/A, 99999999=Unknown. Use 77777777 if [FDISP]=1, 3, 5, 7. Use 77777777 if [BYEAR]<2009	int	4	✓
DRCPAP	Nasal CPAP during Initial Resuscitation Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [BYEAR]<2011	tinyint	1	✓
VENT36	Conventional Ventilation at 36 Weeks Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1. Use 7 if rounded [GAWEEKS] > 36. Use 7 if infant is not hospitalized at 36 weeks GA. Use 7 if [BYEAR]<2011	tinyint	1	✓
HFV36	High Frequency Ventilation at 36 Weeks Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1. Use 7 if rounded [GAWEEKS] > 36. Use 7 if infant is not hospitalized at 36 weeks GA. Use 7 if [BYEAR]<2011	tinyint	1	✓



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TblExternalVON (For use in 2012)

Name	Description/Range of Acceptable Values	SQL Server® Data Type	Max Length (Bytes)	Allow Nulls
HFNC36	High Flow Nasal Cannula at 36 Weeks Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1. Use 7 if rounded [GAWEEKS] > 36. Use 7 if infant is not hospitalized at 36 weeks GA. Use 7 if [BYEAR]<2011	tinyint	1	✓
NIMV36	Nasal IMV or Nasal SIMV at 36 Weeks Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1. Use 7 if rounded [GAWEEKS] > 36. Use 7 if infant is not hospitalized at 36 weeks GA. Use 7 if [BYEAR]<2011	tinyint	1	✓
CPAP36	Nasal CPAP at 36 Weeks Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1. Use 7 if rounded [GAWEEKS] > 36. Use 7 if infant is not hospitalized at 36 weeks GA. Use 7 if [BYEAR]<2011	tinyint	1	✓
MATRACE	Race of Mother Range: 1, 3, 4, 5, 6, 7, 77, 99 Codes: 1=Black, 3=White, 4=Asian, 5=American Indian or Alaska Native, 6=Native Hawaiian or Pacific Islander, 7=Other Race, 77=N/A, 99=Unknown Use 77 if [BYEAR]<2012	smallint	2	✓
AMAGSULF	Antenatal Magnesium Sulfate Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown Use 7 if [DELDIE]=1. Use 7 if [BYEAR]<2012	tinyint	1	✓
PROBIOTICS	Probiotics Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown Use 7 if [DELDIE]=1. Use 7 if [BYEAR]<2012	tinyint	1	✓
ROPANTIVEGF	Treatment of ROP with Anti-VEGF Drug Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown Use 7 if [DELDIE]=1. Use 7 if [BYEAR]<2012	tinyint	1	✓

Appendix C

TblExternalEXP (For use in 2012)

	Name	Description/Range of Acceptable Values	SQL Server® Data Type	Max Length (Bytes)	Allow Nulls
	HOSPNO	VON Center Number	smallint	2	✗
	MEDICALRECORDNUMBER	Medical Record Number	varchar(50)	50	✗
	ID	Vermont Oxford Network Patient ID Number Range: 1 to 99,999	Int	4	✓
	DURVENT	Duration of Assisted Ventilation Range: 0, 1, 2, 3, 7, 9 Codes: 0=None, 1= <4 Hours, 2= 4 to 24 Hours, 3= >24 Hours, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
	VENTDAYS	Days of Assisted Ventilation Range: 2 to 367, 7777, 9999 Codes: 7777=N/A, 9999=Unknown. Use 7777 if [DURVENT]=0, 1, 2, 7. Use 9999 if [DURVENT]=9	smallint	2	✓
	ECMOP	ECMO at Your Hospital Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
	HYPOIEP	Hypoxic-Ischemic Encephalopathy Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1. Use 7 if [GAWEEKS]<36	tinyint	1	✓
	HYPOIES	HIE Severity Range: 1, 2, 3, 7, 9 Codes: 1=Mild, 2=Moderate, 3=Severe, 7=N/A, 9=Unknown. Use 7 if [HYPOIEP]=0, 7. Use 9 if [HYPOIEP]=9	tinyint	1	✓
	MECASP	Meconium Aspiration Syndrome Range: 0, 1, 9 Codes: 0=No, 1=Yes, 9=Unknown	tinyint	1	✓
	TRCSUCMA	Tracheal Suctioning for Meconium Attempted in the DR Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [MECASP]=0. Use 9 if [MECASP]=9	tinyint	1	✓
	SEIZURE	Seizures Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
	COOLED	Hypothermic Therapy at Your Hospital Range: 0, 1, 7, 9 Codes: 0=No, 1=Yes, 7=N/A, 9=Unknown. Use 7 if [DELDIE]=1	tinyint	1	✓
	COOLMETH	Cooling Method Range: 1, 2, 3 (if BYEAR ≥2012), 7, 9 Codes: 1=Selective Head, 2=Whole Body, 3=Both Selective Head and Whole Body, 7=N/A, 9=Unknown. Use 7 if [COOLED]=0, 7. Use 9 if [COOLED]=9	tinyint	1	✓