

Vermont Oxford Network

Manual of Operations: Part 1 Guidelines for Database Participation

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Database Eligibility

Very Low Birth Weight (VLBW) Eligibility

- Any live born¹ infant whose birth weight is from 401 to 1500 grams OR whose gestational age is from 22 weeks 0 days to 29 weeks 6 days who is admitted to or dies in any location in your center within 28 days of birth.

Expanded Eligibility

- Any infant who meets the VLBW eligibility, plus:
- Any live born infant whose birth weight is greater than 1500 grams² and who:
 - Is admitted to a NICU³ in your center within 28 days of birth; OR
 - Dies in any location in your center within 28 days of birth.

Examples

Infant Characteristics	Meets VLBW Eligibility?	Meets Expanded Eligibility?
<401 g or, if birth weight is unknown, <22 weeks 0 days	No	No
401 to 1500 g or 22 weeks 0 days to 29 weeks 6 days	Yes	Yes
>1500 g or, if birth weight is unknown, >29 weeks 6 days	No	Yes if admitted to NICU or dies

These examples assume that the infant was born in your center or was admitted to your center within 28 days of birth.

1 Definition of Live Born: A live born infant is one who breathes or has any evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscle, regardless of whether the umbilical cord has been cut or the placenta is attached. Heartbeats are to be distinguished from transient cardiac contractions; respirations are to be distinguished from fleeting respiratory efforts or gasps. Please refer to: Barfield WD; Committee on Fetus and Newborn. Standard terminology for fetal, infant, and perinatal deaths. Pediatrics. 2016; 137(5):e20160551.

2 If the birth weight is unknown but the gestational age is greater than 29 weeks 6 days and the infant meets the other Expanded Database criteria, the infant is eligible.

3 Definition of Neonatal Intensive Care Unit (NICU): A NICU is any location within the hospital in which newborn infants receive continuous positive airway pressure (CPAP) or intermittent mandatory ventilation (IMV). When applying this definition, do not include those areas in which these modalities of respiratory support are used only for brief periods of stabilization prior to transfer to another location. The intent is that units designated as a NICU routinely provide these services for ongoing care beyond an initial period of stabilization.

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Introduction

Vermont Oxford Network's Database Manual of Operations consists of two parts.

- Part 1 provides information about Vermont Oxford Network and the programs and services VON provides. It includes guidelines for database participation and information that you will need to prepare for and manage collection and submission of data to VON.
- Part 2 includes Data Item definitions and data booklets for infants born in a specific birth year. It is updated annually.

Current versions of both parts of the Manual and other Vermont Oxford Network instructions and forms are available at www.vtoxford.org/downloads.

CHAPTER 1

Welcome to Vermont Oxford Network

About Vermont Oxford Network

Vermont Oxford Network (“VON”) is a non-profit voluntary collaboration of health care professionals established in 1988. Today, VON is comprised of over 1,200 Neonatal Intensive Care Units around the world.

The **mission** of Vermont Oxford Network is to improve the quality, safety, and value of care for newborn infants and their families through a coordinated program of data-driven quality improvement, education, and research.

The **vision** of Vermont Oxford Network is to establish a worldwide community dedicated to giving infants the best possible start so that every newborn and family achieves their fullest potential.

Vermont Oxford Network provides several programs and services to the neonatal community in support of its mission. VON:

- Maintains databases that contain information about the care and outcomes of high-risk newborn infants. VON databases:
 - Provide unique, reliable, and confidential data to participating centers for use in quality management, process improvement, internal audit, and peer review.
 - Provide core data for outcomes research, randomized clinical trials, and epidemiological studies.
 - Create the foundations for educational materials and programs for healthcare professionals, policy makers, families of high-risk infants, and the public.
- Coordinates quality improvement programs that bring together individuals and groups from various centers to explore opportunities for improving infant care and also provide options for earning Continuing Medical Education (CME) credit.
 - **INICQ** collaboratives use online learning to share presentations from expert speakers, encourage centers to examine their own practices for improvement opportunities, and engage centers in quality improvement discussions and activities.
 - **NICQ** collaboratives use a combination of online and on-site learning to promote quality improvement with a focus on hands-on participation.
- Convenes an Annual Quality Congress to bring together neonatal professionals from all disciplines of practice for discussion of cutting-edge clinical topics, formal and informal networking opportunities, and exhibition of improvement stories from member centers.

For more information on any of Vermont Oxford Network's programs or events, visit the VON website at www.vtoxford.org.

Data Submission Options

Members of Vermont Oxford Network may choose to participate in either **Very Low Birth Weight (VLBW)** data submission or in **Expanded** data submission.

- **VLBW** data submission includes data for each eligible infant whose birth weight is from 401 to 1500 grams or whose gestational age is from 22 weeks, 0 days to 29 weeks, 6 days, regardless of where in your center the infant receives care.
- **Expanded** data submission includes data for all eligible VLBW infants, as well as for eligible infants over 1500 grams who are not eligible for the VLBW Database. Supplemental Data Items are completed for all eligible infants.

Details about infant eligibility criteria for these databases are in Chapter 2 of Vermont Oxford Network's Manual of Operations: Part 2 Data Definitions and Infant Data Forms and on the inside front cover of this Manual.

Data Submission and Reporting

Each January 1st marks the beginning of a new cycle of data submission and reporting. Data are submitted, finalized, and reported for all eligible infants born during the entire calendar year. Members confirm that data for all eligible infants are submitted and that data records for each infant are accurate and up to date.

VON produces quarterly and annual reports to provide participating members with feedback about their performance. Reports include:

- Patient characteristics
- Treatment practices
- Morbidity and mortality
- Length of stay at your center

Data Submission Methods

Members may submit data to Vermont Oxford Network in one of two ways:

- eNICQ: Vermont Oxford Network produces data collection and submission software called **eNICQ**, which is available to all member centers as a benefit of membership. For more information about **eNICQ**, visit <https://public.vtoxford.org/enicq-6/>.
- Data extraction from your electronic data collection system: Member centers may extract data from their existing electronic medical record systems to data files that may be uploaded on Vermont Oxford Network's website or imported into **eNICQ** for validation and submission. For more information, visit www.vtoxford.org/SubmitData.

Confidentiality and Patient Privacy

Vermont Oxford Network strictly maintains the confidentiality of the data in its databases. Center data are available only to individuals authorized by the center.

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. Vermont Oxford Network does not generally accept protected health information from member centers unless the member centers have both voluntarily elected to send this information in addition to the standard Vermont Oxford Network dataset and have signed an appropriate Business Associate Agreement.

Your center must take appropriate measures to ensure that patient data stored at your center are protected and secured from unauthorized access.

Getting Help

A VON Account Manager is assigned to assist your center in organizing your system and managing your data submissions. See Chapter 3 for more details on getting help.

CHAPTER 2

The Annual Data Submission and Report Cycle

Introduction

All centers that complete data for a birth year and fulfill the data finalization requirements will receive an Annual Report, which analyzes center data and provides comparisons to Network data. Annual Reports are based on birth year. Each January 1st marks the beginning of a new cycle, which includes data submission for each eligible infant born in the calendar year. The events in this annual cycle are listed in Table 2.1.

Following the end of a birth year and before the Annual Report is published, your Account Manager will provide the timeline for data finalization. The expectation is that members will ensure that records for all eligible infants have been submitted and that all submitted records are accurate and up to date on or before the due dates specified in the annual Data Finalization Guidelines.

The Annual Cycle for Data Submission and Reporting

1. Develop and submit an Eligibility Verification Plan (EVP) before submitting data for a new birth year.
2. Submit data for each eligible infant over the course of the year.
3. Correct data as necessary as the year progresses.
4. Complete the annual Membership Survey after the calendar year has ended.
5. Finalize data for the Annual Report after confirming that data for each eligible infant born in the birth year were submitted.
6. Use the Nightingale Internet Reporting System regularly to review up-to-date information on patient demographics, outcomes, and interventions to support your quality improvement activities throughout the year.

Table 2.1: The Annual Cycle for Data Submission and Reporting

1. Develop and Submit an Eligibility Verification Plan

The Eligibility Verification Plan (EVP) is intended to help establish a method for identifying eligible infants and their locations in your center. Your center prepares and submits the EVP upon joining Vermont Oxford Network and at the beginning of each calendar year. The EVP should be completed online within the Member's Area – Data Management at <https://datamanagement.vtoxford.org/> before data submissions begin for the birth year. For more details about the EVP, see Chapter 4.

2. Collect and Submit Data for Each Eligible Infant

Members of your data collection team need to fully understand the eligibility criteria described in the VON Manual of Operations: Part 2, which is available at www.vtoxford.org/downloads. These criteria depend on whether your center participates in the VLBW or the Expanded Database.

When eligible infants are identified, use the logs and worksheets discussed in Chapter 4 to keep track of each infant and to assign VON ID numbers. Sequential VON ID numbers are automatically assigned by the eNICQ data collection and submission software but can be overridden by the center. The VON ID Number that is assigned is the unique identifier created for each Vermont Oxford Network infant record submitted.

For each eligible infant, collect and submit data based on the procedures described in Chapter 5 and using the data definitions in Manual: Part 2.

3. Correct Data as Necessary

When data are submitted to VON, extensive error checking is done to help ensure that the data are complete and correct. Chapter 6 describes the process for data correction and finalization. Follow the guidelines in Chapter 6 to make corrections and ensure that all data are complete and correct.

4. Complete the Annual Membership Survey

At the beginning of each year, the Membership Survey must be completed based on your center characteristics for the previous year. The Membership Survey is available for completion within the Member's Area – Data Management at <https://datamanagement.vtoxford.org/>.

Data from the membership surveys are summarized and reported in the Nightingale Internet Reporting System. These reports allow you to compare characteristics and capabilities at your center to other VON centers. Reports are also generated using survey data which allow you to compare your center's infant procedures and outcomes to those at similar centers.

5. Finalize Data for the Annual Report

Data finalization is a key component of the annual data submission and reporting cycle. Your center will receive detailed Data Finalization Guidelines each year to assist with finalizing the previous year's data. See Chapter 6 for more detail about the data finalization process.

6. Use Vermont Oxford Network Reports for Quality Improvement

Vermont Oxford Network reports provide a wealth of information that can be used by your center to improve the quality of care. The Nightingale Internet Reporting System provides up-to-date information on patient demographics, outcomes, and interventions with the ability to compare your center's data to the Network and different NICU types. See Chapter 7 for more details about reports.

CHAPTER 3

Organizing Your Network Data Management System

Introduction

Your center will be assigned a VON Account Manager once a data submission option has been selected and a Membership Agreement has been signed. Your Account Manager will familiarize your team with the data collection and submission process, point you to training materials and tutorials to help you get started, answer any questions you may have about collecting, recording, or submitting data, and support your center in achieving accurate and timely data reporting throughout your membership. See the Manual of Operations: Part 2 or visit www.vtoxford.org for a listing of Account Managers.

If you have questions at any time, you are encouraged to contact your Account Manager. If your Account Manager is unavailable, you can speak to anyone on the Account Management Team. To telephone VON from the United States, Canada, or Puerto Rico, dial 1-802-865-4814; otherwise, dial 001-802-865-4814. To email a VON representative, send email to mail@vtoxford.org.

The steps in this Chapter will help you to set up a system for collecting, submitting, and using Network data and reports. Table 3.1 provides an outline of these steps.

If you need help with any aspect of organizing your system or managing your data, contact your Account Manager. Your Account Manager will help you keep your center's data up to date and assist you with any problems that arise.

Steps to Organize Your VON Data Management System

- Step 1: Choose a database option.
- Step 2: Organize a multidisciplinary team.
- Step 3: Establish procedures for data security and patient privacy.
- Step 4: Establish procedures for data collection, submission, and correction.
- Step 5: Train data management staff.
- Step 6: Provide team members with access to Vermont Oxford Network's Web Services

Table 3.1: Steps to Organize Your VON Data Management System

Step 1: Choose a Data Submission Option

Your center may choose to participate in Very Low Birth Weight (VLBW) data submission or Expanded data submission, as discussed in Chapter 1. When deciding on a data submission option, keep in mind that you must submit data for all the infants at your center who meet the eligibility criteria for that database (see Chapter 4). Contact your Account Manager with any questions about changing your data submission option.

Step 2: Organize a Multidisciplinary Team

Your center should establish a multidisciplinary team to:

- Ensure accurate and complete data submission
- Review and evaluate your center's data on Nightingale and in your center's quarterly and annual reports
- Promote use of your center's reports across your team

This team will help direct your center's local quality improvement efforts using Network reports to target specific clinical practices, to identify opportunities for improvement, and to monitor quality improvement over time. Team members will work together to develop and maintain an internal system for collecting and submitting infant data to VON, as well as a process for regularly sharing and reviewing the data and annual reports with your NICU team(s).

Each center's core team should include individuals assigned to the following roles. These individuals will communicate with VON about specific aspects of your center's participation as outlined below.

- Team Leader
- Neonatology Contact
- Data Contact
- Report Contact
- VON Services Administrator(s)
- Financial Contact

A **Team Leader** should be identified to oversee all activities involved in Vermont Oxford Network participation by:

- Coordinating data submission, reporting, education, and quality improvement activities
- Ensuring the appropriate staff fulfill critical VON roles
- Serving as your center's primary advocate for data science and quality improvement
- Encouraging your center's staff to fully utilize VON information and tools

The **Neonatology Contact** supports your center's VON membership by:

- Answering medical questions from your center's Data Collector pertaining to the VON data definitions
- Receiving, evaluating, and distributing information from VON about ongoing clinical trials, research projects, and quality improvement collaboratives

The **Data Contact** is responsible for collection and submission of all infant data to Vermont Oxford Network by:

- Establishing and overseeing procedures for data collection and submission
- Developing an Eligibility Verification Plan and monitoring its implementation
- Collecting and submitting infant data to VON or, depending on the size of your center, supervising the data collection and submission tasks
- Verifying that all eligible infants are included in your center's data submissions
- Receiving all Network correspondence regarding data status, submission, and errors
- Confirming that the data conform to all definitions and conventions of the VON database

Data Contacts are automatically granted access to VON Members Area - Data Management and issued a VON Web Services Login.

It is recommended that your center assign a Primary Data Contact and an Alternate Data Contact.

The **Report Contact** at your center should be a member of your center's peer review committee and be active in quality improvement activities. The Report Contact is responsible for:

- Receiving a printed copy of your center's Annual Report and electronic copies of other Vermont Oxford Network reports
- Sharing reports and findings with the applicable team members at your center
- Ensuring that the appropriate staff are aware of and have access to the Nightingale reporting tool

Report Contacts are automatically granted access to VON Members Area - Data Management and issued a VON Web Services Login.

VON Services Administrator(s) are responsible for ensuring staff members at your center have access to applicable Vermont Oxford Network tools and web sites by:

- Creating user accounts that staff members at your center use to access VON tools, data, reporting, and educational materials
- Assisting users with password questions
- Periodically reviewing your center's list of users who have been granted access to VON tools and removing access from users who no longer need it

VON Services Administrators are automatically granted access to the VON User Permissions Editing tool and issued a VON Web Services Login.

VON recommends that your center identify more than one VON Services Administrator.

The **Financial Contact's** responsibilities include:

- Handling Vermont Oxford Network (VON) membership agreements
- Ensuring VON membership payment

When personnel in these roles change, it is important to notify your VON Account Manager via the VON Role Change Forms. Role Change Forms are in the VON Help Center. Go to <https://vtoxford.zendesk.com/hc> and search for *Change Forms*.

In addition to these roles, we encourage you to engage your entire interdisciplinary NICU team. Team members may include doctors, nurses, respiratory therapists, nutritionists, pharmacists, social workers, and other healthcare professionals involved in NICU care at your center, as well as parents.

Step 3: Establish Procedures for Data Security and Patient Privacy

Your center must protect patient privacy and ensure that patient data are secure according to your center's policies and procedures. Patient identifier information should be protected based on applicable laws and center policies. Do not send any patient identifier information to Vermont Oxford Network. VON does not accept protected health information unless the submitting member has appropriate agreements in place with Vermont Oxford Network, in which case VON only accepts specific dates used for Time Series reporting.

Step 4: Establish Procedures for Data Collection, Submission, and Correction

Follow the guidelines in Chapters 4, 5, and 6 of this manual to identify and report data for all eligible infants. Use these guidelines to create a system that works for your center to collect, submit, correct, and finalize data.

Step 5: Train Data Management Staff

Use this manual and the Manual of Operations: Part 2 to train your center's data management staff. Staff members who are involved in data collection, data submission, and quality improvement should understand the following areas:

- Patient eligibility criteria
- Data definitions for each Data Item
- Procedures for filing and storing forms
- Data security and protection of patient identifier information
- Procedures for collecting, submitting, and correcting data
- Procedures for data management and data finalization
- Use of VON reports for monitoring and improving patient care
- Use of VON resources available at www.vtoxford.org

Step 6: Provide Team Members with access to Vermont Oxford Network's Web-Based Services

Vermont Oxford Network makes a number of online resources available to your center to support your membership and quality improvement efforts:

- **Members Portal** provides access to VON tools and resources, snapshots, information on upcoming events, and other VON announcements.
- **Data Management** provides tools to monitor data submissions, review errors and warnings, and complete data finalization tasks.
- **Nightingale Internet Reporting System** provides access to up-to-date infant data reporting, as well as Annual Reports and Network comparisons.

Vermont Oxford Network encourages your center to provide all staff members involved in neonatal care with access to these Web Services.

Your center's VON Services Administrator(s) will be provided with the ability and information to grant access to Vermont Oxford Network's Web Services, assist users with questions or problems, and update user accounts.

VON offers online tutorials and web-based training to help your team learn to navigate and better use the tools provided. Your VON Account Manager can provide you with further information about training available to your team members.

CHAPTER 4

Database Eligibility Criteria

Identifying Eligible Infants

To ensure that data from your center are useful for quality improvement and comparisons of your center's performance, your center must submit data for all of the infants who meet the eligibility criteria for the database your center has chosen.

Very Low Birth Weight and Expanded Database Eligibility Criteria are included in Chapter 2 of Vermont Oxford Network's Manual of Operations: Part 2, which is available at www.vtoxford.org/downloads. Please review the eligibility criteria carefully to ensure that your center is capturing and submitting data for all eligible infants who receive care at your center.

The Eligibility Verification Plan

The Eligibility Verification Plan (EVP) is intended to help establish a method for identifying eligible infants and their locations in your center and is prepared and submitted annually to VON. At the beginning of each calendar year, your center should log in to Member's Area – Data Management at <https://datamanagement.vtoxford.org/> to complete an Eligibility Verification Plan for the current birth year. To complete the EVP, indicate the sources you will use to identify eligible infants and the frequency with which you will collect data from these sources. If your center uses a data source that isn't listed, specify the source on the line below "Other." The frequency with which you check each source depends on various factors, including the number of infants who are born or receive care at your center, staffing at your center, and whether your center has a computerized clinical data system.

Notice that the EVP has a special section on data sources for Delivery Room Deaths and infants who die in your center. These patients can be difficult to track. Check all the data sources where infants who die in the delivery room, initial resuscitation areas, or at other locations in your center may be documented.

It is important to identify all locations in your center where an eligible infant may receive continuous positive airway pressure (CPAP) or intermittent mandatory ventilation (IMV). To ensure that these infants are not inadvertently omitted from your center's data, write down these locations in the section "Locations where Neonatal Intensive Care Is Provided" and routinely check these locations for eligible infants.

Keeping Track of Eligible Infants

The Patient Log

Vermont Oxford Network recommends that your center maintain a Patient Log. The Patient Log (sample in Figure 4.1) is used to keep track of all infants who are eligible for submission to the VON database your center has chosen. It provides a link between the data in your local system and the data you have submitted to VON. Because this log contains both patient identifiers, such as the infant's name and medical record number, and a VON ID assigned by the VON data submission software (eNICQ) to that infant, it allows you to associate a specific infant's records in your local system with the data about that infant that you have reported to VON. This is important when you need to make corrections to the data you have submitted, as well as for data audits and peer reviews. **eNICQ** does contain the same data found on the Patient Log. However, you may decide to maintain a paper Patient Log to assist your center with recovery in the event of accidental data loss.

NOTE: The Patient Log contains patient identifiers which are defined as “protected health information” by the U.S. HIPAA (Health Insurance Portability and Accountability Act) regulations. Do not submit this log to Vermont Oxford Network. Vermont Oxford Network does not accept protected health information unless the submitting member has appropriate agreements in place with Vermont Oxford Network, in which case VON only accepts specific dates used for Time Series reporting.

Suggestions for Maintaining a Patient Log

Before you enter data in the Patient Log, establish the infant's eligibility for inclusion in the VON database (Chapter 4).

Enter your Center Number at the top of the Patient Log. This number was assigned when your center joined VON.

Enter the applicable birth year at the top of the Patient Log. To make it simpler to keep track of infants and for reporting purposes, it is recommended that you not mix data for infants born in different years on the same Patient Log.

Enter the VON ID number for each patient. A different VON ID number must be assigned to each eligible infant for multiple births. If your center uses eNICQ for data submission, the application will automatically assign the appropriate VON ID number.

Enter the patient's name, medical record number, and birth date. With this information you will be able to accurately match the patient with the data submitted to VON.

In the column labeled "DR Death?" enter "Yes" or "No" to indicate whether the infant meets the delivery room death criteria.

Enter the Patient's Birth Location. If outborn, enter the date that the infant was admitted to your center, the name of the center from which the infant transferred, and the transfer code of the center from which the infant transferred. Transfer codes may be found on the VON website, www.vtoxford.org/transfers.

Enter the infant's initial disposition (Home, Transfer, Died, or Still Hospitalized as of First Birthday, whichever is first) and the date of initial disposition when these data become available. VON data collection ends at the infant's first birthday if the infant is still hospitalized.

Table 4.1: Suggestions for Maintaining a Patient Log

The Transfer Log

The Transfer Log (sample in Figure 4.2) is used to keep track of all infants who transfer from your center to another center. For infants transferred from your center to another center, your center must submit data indicating the infant's post-transfer disposition. The Transfer Log captures information that will be helpful for tracking infants who transfer from your center to another center. The Transfer Log can be downloaded from www.vtoxford.org/downloads. **eNICQ** does contain the same data found on the Transfer Log, however you may decide to maintain a paper Transfer Log to assist your center with recovery in the event of accidental electronic data loss.

NOTE:

- The Transfer Log contains patient identifiers which are defined as “protected health information” by the U.S. HIPAA (Health Insurance Portability and Accountability Act) regulations. Do not submit this log to Vermont Oxford Network. Vermont Oxford Network does not accept protected health information unless the submitting member has appropriate agreements in place with Vermont Oxford Network, in which case VON only accepts specific dates used for Time Series reporting.
- Infants who relocate from one unit in your center to another unit within your center are NOT considered to have transferred. Do not complete the Transfer Log in these cases.

Center Number: _____
 Birth Year: _____

**VERMONT OXFORD NETWORK
 TRANSFER LOG**

TRANSFER LOGS INCLUDE PROTECTED HEALTH CARE INFORMATION FOR YOUR INTERNAL USE ONLY
DO NOT SUBMIT TO VERMONT OXFORD NETWORK

Network ID Number	Patient Name	Medical Record Number	Birth Date	Transfer Center Name	Transfer Center Code	Post-Transfer Disposition (Home, Transferred, Died, Still Hospitalized at First Birthday)	If Readmitted to Your Center after Initial Transfer, Disposition after Readmission (Home, Transferred Again, Died, Still Hospitalized in Your Center as of First Birthday)	If Transferred More than Once, Ultimate Disposition (Home, Transferred Again, Died, Still Hospitalized in Your Center as of First Birthday)	Date Infant Discharged Home, Died, or First Birthday (whichever is first)

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Figure 4.2: Sample Transfer Log

Suggestions for Completing the Transfer Log

Enter your Center Number at the top of the Transfer Log. This number was assigned when your center joined VON.

Enter the applicable birth year at the top of the Transfer Log. To make it simpler to keep track of infants and for reporting purposes, it is recommended that you not mix data for infants born in different years on the same Transfer Log.

Enter the VON ID number that was assigned to the infant in the Patient Log.

Enter the patient's name, birth date, transfer center name, and the center's transfer code. Transfer codes for all Vermont Oxford Network centers and for other hospitals may be found on the VON website, www.vtoxford.org/transfer.

Enter the infant's Post Transfer Disposition. This is the status of the infant when the infant was first discharged from the "transferred to" center (initial transfer). Enter Home, Transferred Again, Died, Readmitted, or Still Hospitalized as of First Birthday (whichever occurred first following initial transfer). VON data collection ends at the infant's first birthday if the infant is still hospitalized.

If the infant was readmitted to your center after initial transfer, enter the Disposition after Readmission (Home, Transferred Again, Died, or Still Hospitalized as of First Birthday).

If the infant was transferred more than once, either after readmission to your center or after initial transfer, enter the infant's Ultimate Disposition (Home, Died, or Still Hospitalized at First Birthday, whichever occurs first). The Ultimate Disposition is the infant's final discharge status if transferred more than once.

Enter the date that the infant was discharged home, died, or the infant's first birthday (if still hospitalized), whichever is first.

Table 4.2: Suggestions for Completing the Transfer Log

CHAPTER 5

Collecting and Submitting Data for Eligible Infants

Introduction

VON data collection for eligible infants begins when the infant is born and ends when the infant is discharged home, dies, or is still hospitalized as of the first birthday, whichever is first. Eligibility criteria are described in Chapter 2 of Vermont Oxford Network's Manual of Operations: Part 2, which is available at www.vtoxford.org/downloads.

Submission of data to VON is handled either by the **eNICQ** software, or by extracting data from your electronic health records system and submitting data files to Vermont Oxford Network. More information about data submission options is available at www.vtoxford.org/SubmitData.

Collecting Infant Data

VON recommends collecting data on paper then entering the data electronically. Keeping paper copies of your data is important in order to allow for data audits by your center's team. To improve data accuracy, collect data for each infant while the infant is still hospitalized and when procedures are performed or events are observed.

VON Data Items are included in the Patient Data Booklet and the Delivery Room Death Booklet. The Delivery Room Death Booklet is used in lieu of the Patient Data Booklet for eligible infants who meet the delivery room death criteria. The delivery room death criteria are described in Vermont Oxford Network's Manual of Operations: Part 2. Copies of all Vermont Oxford Network manuals and data booklets are available at www.vtoxford.org/downloads.

Data in the VON database are organized into individual infant records and each record includes all the Data Items. Examples of Data Items are birth weight, coagulase negative staphylococcal infection, and initial length of stay.

Patient Data Booklet and Delivery Room Death Booklet

There are four types of Patient Booklets. The VLBW Patient Data Booklet and the Expanded Patient Data Booklet are used for infants who do not die in the delivery room. The VLBW Delivery Room Death Booklet and the Expanded Delivery Room Death Booklet are used for infants who meet the delivery room death criteria. Each booklet includes a confidential Patient identification Worksheet and VON Data Items that are completed for an infant.

VLBW Patient Data Booklet and Expanded Patient Data Booklet

Depending on the database your center has chosen to participate in, you would use the VLBW Patient Data Booklet or the Expanded Patient Data Booklet; both include a Patient Identification Worksheet and the VON Data Items to be completed for an infant. The Patient Identification Worksheet is used to identify the infant's name, medical record number, mother's name, VON ID number, and to keep track of important dates that are necessary for completing VON data. Guidelines for completing the Patient Identification Worksheet are provided in Table 5.1. When completing VON data booklets, refer to Part 2 of the VON Manual of Operations for Data Items specific to the infant's birth year. Part 2 of the manual is updated each year and provides the definitions of the Data Items in VON Patient Data Booklets for a particular birth year.

NOTE: The Patient Data Booklets contain patient identifiers which are defined as "protected health information" by the U.S. HIPAA (Health Insurance Portability and Accountability Act) regulations. Do not submit Patient Data Booklets to Vermont Oxford Network. Vermont Oxford Network does not accept protected health information unless the submitting member has appropriate agreements in place with Vermont Oxford Network, in which case VON only accepts specific dates used for Time Series reporting.

Guidelines for Completing the Patient Data Booklet Patient Identification Worksheet

Enter your Center Number and the patient's VON ID Number at the top of the Patient Booklet.

Enter the patient's name, mother's name, patient's medical record number, and patient's date of birth. Check to be sure that the VON ID number and patient name are consistent with the Patient Log.

Date of Day 28: Calculate the Date of Day 28 in order to determine applicable Data Items to answer. Enter the date on which the infant is 28 days old. The Date of Day 28 is determined by using the calendar date of birth as day 1, regardless of the time of birth, and adding 27 to this date. Thus, for an infant born at 11:59 PM on September 1, day 1 is September 1. Day 28 for this infant is September 28. A chart for determining the Date of Day 28 may be downloaded from www.vtoxford.org/downloads. **eNICQ** calculates the Date of Day 28 based upon the Date of Birth entered. For centers collecting data in Patient Data Booklets and then entering that data in **eNICQ**, it may be useful to manually calculate the Date of Day 28 to determine if Data Items related to the Date of Day 28 are applicable for individual infant records.

Date of Week 36: Calculate the Date of Week 36 in order to determine applicable Data Items to answer. This date is calculated using the procedures included in Vermont Oxford Network's Manual of Operations: Part 2 Data Definitions and Infant Data Forms, which is available at www.vtoxford.org/downloads. **eNICQ** calculates the Date of Week 36 from dates entered. The Date of Week 36 can also be calculated via a tool on the VON website at <https://public.vtoxford.org/week-36-calculator/>.

**Table 5.1: Guidelines for Completing the Patient Data Booklet
Patient Identification Worksheet**

Delivery Room Death Booklet

The Delivery Room Death Booklets include a Patient Identification Worksheet. To complete the Patient Identification Worksheet, enter your Center Number and the patient's VON ID Number at the top of the Patient Booklet. Enter the patient's name, mother's name, patient's medical record number, and patient's date of birth. Check to be sure that the VON ID Number and patient name are consistent with the Patient Log. When completing VON data booklets, refer to Part 2 of the VON Manual of Operations for Data Items specific to the infant's birth year. Part 2 of the manual is updated each year and provides the definitions of the items on VON data forms for a particular birth year.

Data Collection

When eligible infants are identified, use the logs and worksheets described in Chapter 4 to keep track of each infant and to assign VON ID numbers. Sequential VON ID numbers are automatically assigned by the eNICQ data collection and submission software but can be overridden by the center. The Patient Log, Transfer Log, and Patient Identification Worksheets will allow you to associate data reported to VON with patient records at your center.

Use only the booklets applicable to the infant's birth year when collecting data. Copies of current data booklets are available at www.vtoxford.org/downloads.

When Data Items are Unknown

Record Data Items as "Unknown" only if the answer to an item is truly unknown and cannot be obtained. Do not record items as unknown to indicate temporary or pending values. Leave these items blank until an answer is known.

Identifying Data Items as "Not Applicable"

Data Items that do not apply are coded as "Not Applicable" or N/A in the databases. Vermont Oxford Network's eNICQ software automatically codes items as "Not Applicable" as needed. For centers that are not using eNICQ, the Electronic Data Submission (EDS) Instructions provide assistance with coding items as "N/A". The current version of the EDS Instructions is available at www.vtoxford.org/downloads.

Recording Data Items that Require Calculation

eNICQ completes calculations of the Date of Day 28 and the Date of Week 36 from other dates entered. You may find it helpful to use the calculation charts on the VON website, www.vtoxford.org/downloads, to manually calculate the Date of Day 28 and Total Length of Stay. Note that the charts for calculating dates are created for a specific birth year. Use the Length of Stay Calculation Worksheet in Part 2 of this manual when manually calculating the initial length of stay or total

length of stay items. A Fahrenheit to centigrade conversion chart is also provided on the VON website.

For each eligible infant, start data collection by choosing either the Patient Data Booklet (VLBW or Expanded) or the Delivery Room Death Booklet that is applicable for the infant's birth year. Refer to Part 2 of the VON Manual of Operations for samples of the booklets. The Patient Data Booklet may be modified each year when new items are added or items are no longer collected for the VON database. Part 2 of the manual is updated each year and shows the Data Items and definitions that are applicable for a particular birth year. Copies of the Patient Data Booklet and the Delivery Room Death Booklet and Part 2 of VON Manual of Operations are available at www.vtoxford.org/downloads.

Completing Infant Data Booklets

A Patient Data Booklet or Delivery Room Death Booklet should be completed for each eligible infant. Begin data entry by reviewing the Patient Log to confirm that a VON ID has not already been assigned to the patient. If not, add the patient to the Patient Log and complete the Patient Identification Worksheet. Copy the VON ID number from the Patient Log to the Patient Data or Delivery Room Death Booklet. Enter your Center Number and the infant's VON ID number and year of birth at the top of the Patient Data or Delivery Room Death Booklet.

When completing the Patient Data or Delivery Room Death Booklet, be sure that the Data Item definitions in Part 2 of this manual are understood and uniformly applied to all eligible infants. The Data Item definitions are published each year and apply to infants born in a specific birth year.

Outborn Infants

For infants admitted to your center within 28 days of birth who meet the other eligibility criteria, both events that occur prior to admission to your center and while in your center should be recorded. For example, if an infant had a cranial ultrasound exam at the transferring center, answer this item "Yes" and record the worst grade of PIH; if an infant received indomethacin at the transferring center, answer this Data Item "Yes".

Frequently Asked Questions on Data Collection for Outborn Infants

Q: An eligible outborn infant was transferred from another Vermont Oxford Network center. Should our center also send data on this infant?

A: Yes, if the infant is admitted to your center within 28 days of birth and meets the other eligibility criteria, your center should submit data for this infant.

Q: An eligible outborn infant was transferred to our center from another center. Should events that occurred at the transferring center be recorded on data forms submitted by our center?

A: Yes. Data Items submitted by your center for eligible outborn infants should reflect events that occurred prior to admission to your center.

Q: *An eligible outborn infant was admitted to our center for surgery and transferred back to the other center on the same day. Should data be reported on this infant?*

A: Yes. If the infant meets the eligibility criteria, your center should submit data for this infant, regardless of the reason for admission or the length of stay at your center.

Infants Who Transfer to Another Center and are Readmitted to Your Center

When an infant is readmitted to your center after transferring once to another hospital and without having been home, the following Data Items should be updated based on all events at both centers until the date of Disposition after Readmission:

- Bacterial Sepsis and/or Meningitis on or before Day 3
- Bacterial Sepsis and/or Meningitis on or before Day 3, Pathogen(s)
- Oxygen on Day 28
- Cranial Imaging on or before Day 28
- Worst Grade of PIH
- Where PIH First Occurred
- Oxygen after Initial Resuscitation
- Conventional Ventilation after Initial Resuscitation
- High Frequency Ventilation after Initial Resuscitation
- High Flow Nasal Cannula after Initial Resuscitation
- Nasal Ventilation after Initial Resuscitation
- Nasal CPAP after Initial Resuscitation
- Nasal CPAP or Nasal Ventilation before or without ever having received ETT Ventilation
- Surfactant at Any Time
- Age at First Dose of Surfactant (Hours and Minutes)
- Inhaled Nitric Oxide
- Inhaled Nitric Oxide, Where Given
- Oxygen, Conventional Ventilation, High Frequency Ventilation, High Flow Nasal Cannula, Nasal Ventilation, and Nasal CPAP at 36 Weeks
- Steroids for CLD
- Steroids for CLD, Where Given
- Indomethacin for Any Reason
- Ibuprofen for PDA
- Acetaminophen (Paracetamol) for PDA
- Probiotics
- Treatment of ROP with Anti-VEGF Drug
- Caffeine for Any Reason
- Intramuscular Vitamin A for Any reason
- ROP Surgery
- ROP Surgery, Where Done

- Surgery or Interventional Catheterization for Closure of PDA
- Surgery for NEC, Suspected NEC, or Bowel Perforation
- Other Surgery
- Surgery Code, Location of Surgery, and Surgical Site Infection for PDA Surgery, NEC Surgery, and/or Other Surgery
- Respiratory Distress Syndrome
- Pneumothorax
- Patent Ductus Arteriosus
- Necrotizing Enterocolitis
- NEC, Where Occurred
- Focal Intestinal Perforation
- Focal Intestinal Perforation, Where Occurred
- Bacterial Sepsis and/or Meningitis, Late (after Day 3 of life)
- Bacterial Sepsis and/or Meningitis, Late, Where Occurred
- Bacterial Sepsis and/or Meningitis, Late, Pathogens
- Coagulase Negative Staph Infection after Day 3
- Coagulase Negative Staph Infection after Day 3, Where Occurred
- Fungal Infection after Day 3
- Fungal Infection after Day 3, Where Occurred
- Cystic Periventricular Leukomalacia
- ROP, Retinal Examination
- Worst Stage of ROP
- Congenital Anomaly
- Congenital Anomaly Code(s)
- Enteral Feeding at Discharge
- Oxygen, Respiratory Support, Conventional Ventilation, High Frequency Ventilation, High Flow Nasal Cannula, Nasal Ventilation, Nasal CPAP, and Monitor at Discharge

NOTE: Infants who relocate from one unit in your hospital to another unit within your hospital are NOT considered to have transferred.

NOTE: *Readmitted after initial transfer* means that the infant's Initial Disposition is "transferred to another hospital" and that the infant was readmitted to your center after this initial transfer without having gone home or transferred again prior to readmission. For example, if the infant transferred from your center to hospital B and was readmitted to your center from hospital B, the infant was readmitted after initial transfer. But if the infant transferred from hospital B to hospital C prior to being readmitted to your center, the infant would not be considered to have been readmitted after initial transfer.

Completing Data Booklet for Infants Who Meet the Delivery Room Death Criteria

Data in the Delivery Room Death Booklet should be completed for each eligible infant who meets the delivery room death criteria. Begin data entry by reviewing the Patient Log to confirm that a VON ID has not already been assigned to the patient. If not, add the patient to the Patient Log and complete the Delivery Room Death Patient Identification Worksheet. Enter your Center Number and copy the infant's VON ID number from the Patient Log to the Delivery Room Death Booklet.

The Delivery Room Death Booklet includes a subset of infant characteristics, delivery room interventions, and diagnoses from the Patient Data Booklet. When completing the booklet, be sure that the Data Item definitions in the Vermont Oxford Network Manual of Operations: Part 2 are understood and uniformly applied to all eligible infants. The Data Item definitions are published each year and apply to infants born in a specific birth year.

Submitting Data to Vermont Oxford Network

Electronic data may be submitted using Vermont Oxford Network's **eNICQ** software or by using files generated from your center's Electronic Health Records system and uploaded to VON via the VON Data Management secure website.

eNICQ

The **eNICQ** software allows electronic data entry and secure submission of de-identified data via the Internet and may be downloaded from the VON website <https://public.vtoxford.org/enicq-6/>. The software supports both Very Low Birth Weight (VLBW) data submission and Expanded data submission, and includes the following features:

- Extensive range and error checking
- Online help includes all Data Item definitions
- Customizable logs to simplify tracking of infants and record status
- Automatic calculation of key dates and length of stay items
- **eNICQ** Administrator control of user access
- Version checking and downloading of new versions via the Internet
- Multiple search criteria for finding and viewing records
- Embedded User's Guide

The **eNICQ** software assists with resolving data errors before data is submitted to Vermont Oxford Network. Centers that use other software to collect and submit data to VON may find that there are errors present in the data once the data is subjected to range and error checking by VON. Any data errors will need to be corrected by the center submitting updated records. VON's website provides extensive resources for data management, which are described in Chapter 6.

Electronic Data Submission from Another System

Data may be submitted to Vermont Oxford Network in a file created by your center's data collection application or EHR over a secure HTTPS connection. Instructions for submitting electronic data using software other than **eNICQ** are provided in PDF format on the VON website, www.vtoxford.org/SubmitData. Extensive details on creating files to upload and the file upload process are in the EDS Instructions document, available in the VON Help Center at www.vtoxford.zendesk.com/hc (search for 'EDS').

CHAPTER 6

Data Management and Finalization

Introduction

Data Management is an important component of data accuracy. Although data are finalized on an annual basis, keeping your center's infant records up to date throughout the year will make the annual finalization process easier for your center and will improve the year-to-date reporting available from the Nightingale Internet Reporting System, which is discussed in greater detail in Chapter 7.

Interactive assistance with data management and finalization is available as part of the web services provided to members at www.vtoxford.org. Access to Member's Area - Data Management is automatically provided to your center's Data Contact and Report Contact. Your center's VON Services Administrator is encouraged to provide access to other staff members involved with data management and finalization.

Maintaining Infant Records

As stated in Chapter 2, finalization guidelines are distributed and data checks are performed to ensure that all errors in submitted records have been corrected, all submitted records are complete, and all eligible infants have been identified. Data for a birth year are considered complete and accurate when the requirements in Table 6.1 are met:

Maintaining and Finalizing Infant Records

Records are complete and correct for all eligible infants who have died, who have been discharged home, or who have reached their first birthday.

Records are accurate and up to date for all eligible infants who are less than a year old and are still hospitalized without being discharged home.

No errors exist in any data for the birth year being finalized or for prior years' data.

Your center has accounted for any unused ID numbers (gaps in ID number sequencing).

Your center has confirmed the number of records submitted for the birth year.

Your center has confirmed the first and last ID numbers used for the birth year.

Your center has confirmed that all eligible infants have been reported for the birth year, including eligible infants who die in the delivery room/initial resuscitation area.

Table 6.1: Maintaining and Finalizing Infant Records

Early in the year following the birth year for which data will be finalized, your center will receive guidelines for data finalization. These guidelines include a timeline showing when criteria listed in Table 6.1 must be completed, along with procedures for submitting data for infants who are still hospitalized. Data finalization for the previous birth year must be completed as specified in the Data Finalization Guidelines.

Data Management

Your center should regularly review the data status summaries in the Data Management section of the Member's Area on the VON website, <https://datamanagement.vtoxford.org/>. These summaries show how many records have been submitted and when submissions have occurred, identify the status of each record, list errors and warnings, and provide other information for monitoring the accuracy and completeness of your center's data. Summaries include the Data Management Summary, the Data Form Status Summary, the Error and Warning Summary, the Infant ID Gaps Summary, the Unknown Items Summary, and the Transfer Summary.

Data Management Summary

When you click on the Data Management link in the Member's Area of the Vermont Oxford Network website, the Data Management Summary is displayed (Figure 6.1). This summary provides a one-page synopsis of the status of data submitted by your center.

At the top of the summary, the last date that data were submitted by your center and successfully processed by VON is displayed.

When finalizing data for a birth year, refer to the Data Management Checklist. The finalization steps and due dates are displayed, as well as the status of each step. To be sure that your center's data will be included in the VON database and that your center will receive the Annual Report, complete the finalization steps on or before the due dates.

The Data Summary box shows the number of infant records submitted by your center during the last four years, the number of delivery room deaths, and the first and last Network ID numbers submitted in each year. When determining whether data for all eligible infants have been submitted to VON, verify whether the record totals for each year are reasonable and consistent with logs and other records maintained by your center.

The Record Status Summary provides information on the status of each infant record submitted to VON and shows the numbers of incomplete records, records with errors, and records for still hospitalized infants.

To resolve issues in the Record Status Summary:

- Update incomplete records when data become available
- Correct records that have errors
- Finalize data for infants still hospitalized as of first birthday

Submission Certification shows a history of the submission certification ranges used by your center to submit data and your center's data submission option (Very Low Birth Weight data submission or Expanded data submission).

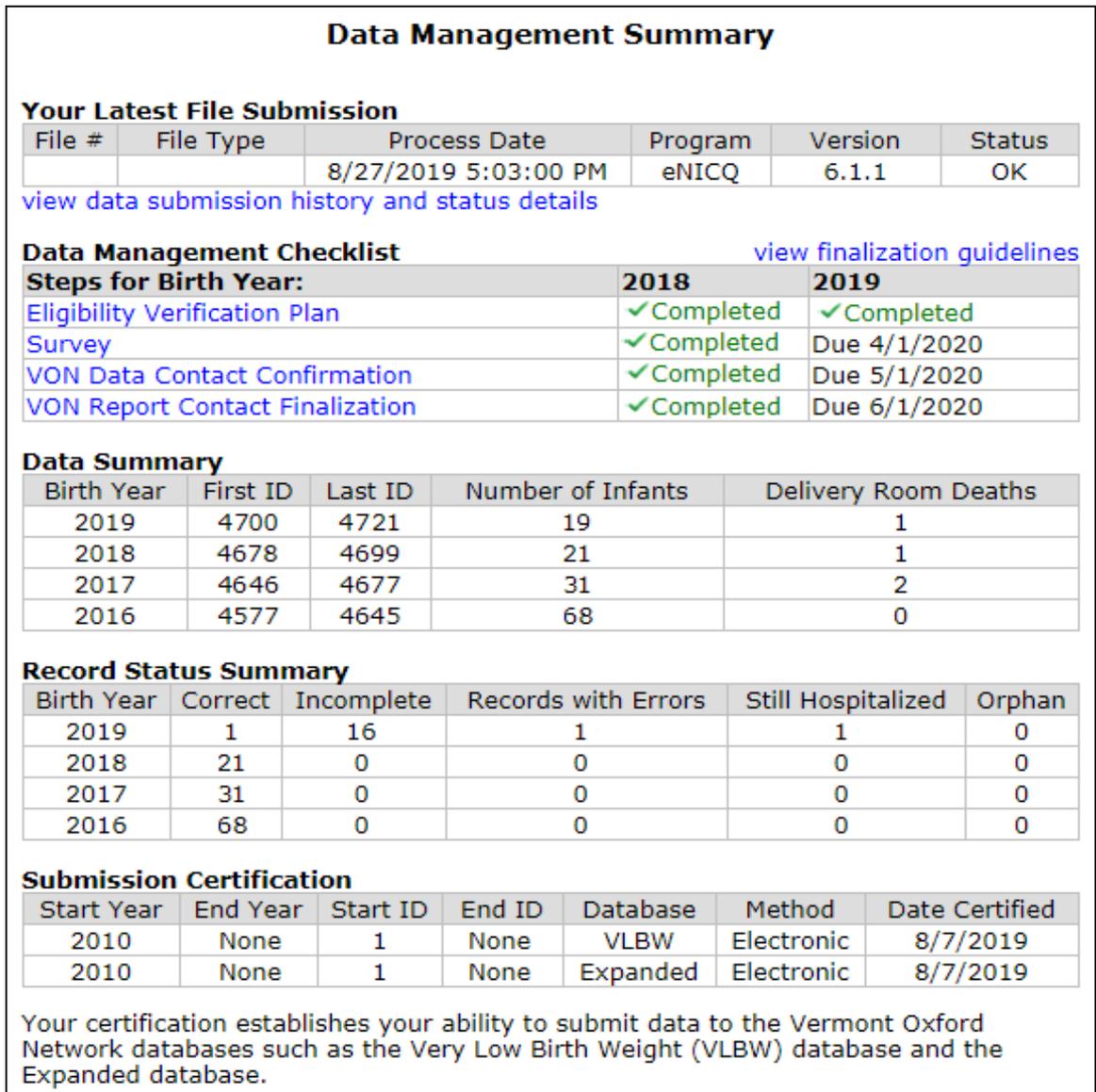


Figure 6.1: Data Management Summary

Data Form Status Summary

The Data Form Status Summary (Figure 6.2) allows you to view the status of each record submitted to VON for one or more years within the past four years. Each row of the summary shows the VON ID number, birth year, birth weight, whether the infant died in the delivery room, the infant's initial and total length of stay, and the overall status of the record. To view records that are not complete and correct, click on the check box labeled "Hide Complete Records" on the Data Form Status Summary page. This will limit the list to records that are incomplete, have errors, or which indicate that the infant is still hospitalized.

The Start Year and End Year drop down boxes at the top of the Data Form Status Summary page allow you to limit the list to be viewed to any birth year(s) during the last four years.

An explanation of the record and form status codes is provided at the bottom of the Data Form Status Summary (Figure 6.2).

C – Correct: The record has been completely error checked and is correct. There are no errors or blank items on the record.

I – Incomplete: The record is partially complete but has some blanks that should be completed when data are available and prior to finalization.

E – Error: The record has one or more errors and requires correction.

S – Still Hospitalized: "S" status records should be completed when the infant is discharged home, dies, or reaches his/her first birthday, whichever is first. A record with "S" status at the time of data finalization must be updated to "C" status upon the infant's first birthday, or by finalization of the following birth year at the latest. Completing records as soon as possible after an infant is discharged is recommended.

Data Form Status Summary
Births During 2019
Center XXXX

Start Year: End Year: Hide Complete Records: *[Note: ID gaps are not shown.]*

ID#	Patient						Status of Forms			
	Birth Year	Birth Weight	Died In Delivery	Initial Length of Stay	Total Length of Stay	Record Status	28 Day Discharge	Transfer / Readmission	Supplemental Data	
4700	2019	1051				S				
4701	2019	1501			N/A	I				
4702	2019	1496		25	366	I				
4703	2019	1576				I				
4704	2019					I				
4705	2019	1200		12	363	E				
4706	2019					I				
4707	2019	1600		3	13	I				
4708	2019	1400		32		I				
4709	2019	1400				I				
4710	2019	1000		30	N/A	I				
4711	2019	1400		999	999	I				
4712	2019					I				
4713	2019	1200		15	15	I				
4714	2019	750		11		I				
4715	2019	1572		3		I				
4716	2019	2725		5	N/A	C				
4717	2019					I				
4721	2019	3521				I				

Total Number of Infants: 19

Record Status Key Codes

A single Record Status is assigned to each patient record. Record Status is based on the status of all the forms for that record.

- C - Correct: the record has been completely error checked and is correct. There are no errors or blank items on the record.
- I - Incomplete: the record is partially complete but has some blank items.
- E - Error: the record has one or more errors.
- S - Still Hospitalized: items to be completed at Discharge have not been completed.
- O - Orphan record: the infant ID number is outside the submission range designated for your center.

Form Status Key Codes

Each record is comprised of multiple forms (ie, 28 Day, Discharge, etc.). Each of these forms is assigned its own Form Status.

- C - Correct: the form has been completely error checked and is correct. There are no errors or blank items on the form.
- P - Pending: the data form has not been received or all items on the form are blank.
- I - Incomplete: the form is partially complete but has some blank items.
- E - Error: the form is complete but has one or more errors.
- R - Received: the form is complete and has no known errors. Other forms have not been received to verify data accuracy.
- N - Not Applicable.

Figure 6.2: Data Form Status Summary

Error and Warning Summary

When data are submitted by your center, the infant records are processed using software that does extensive error checking to identify Data Items that are missing, out of range, inconsistent, or which have an unusual value. The results

of this process are reflected in the Error and Warning Summary (Figure 6.3), which documents all records that require correction or verification.

Error and Warning Summary

Births During 2019

Center XXXX

Start Year: End Year: Hide Blanks: Warnings: Hide Reviewed:

Infant ID	Birth Year	Date	Message	Reviewed
4700	2019	8/07/2019	WARNING: MODE OF DELIVERY: Check that the answer to this item is UNKNOWN and unobtainable. An unknown value will affect reporting of predicted mortality for your center.	<input type="checkbox"/>
4701	2019	8/07/2019	WARNING: HEAD CIRCUMFERENCE AT BIRTH: Value is outside the normal range for this measure. Check to be sure the value submitted is accurate.	<input type="checkbox"/>
4704	2019	8/07/2019	WARNING: IBUPROFEN FOR PDA: Because Ibuprofen for PDA was answered YES, please verify whether PDA should be answered YES.	<input type="checkbox"/>
4705	2019	8/08/2019	ERROR: POST TRANSFER DISPOSITION: Since the infant was born this year, the disposition cannot be STILL HOSPITALIZED AS OF FIRST BIRTHDAY.	<input type="checkbox"/>
4716	2019	8/07/2019	WARNING: WEIGHT AT INITIAL DISPOSITION: The change in weight for this infant is outside the normal range and should be verified. Please check your entries for Weight at Initial Disposition and for Birth Weight.	<input type="checkbox"/>

***Form Name Key:**
 28D = 28 Day Form
 DIS = Discharge Form
 XFR = Transfer & Readmission Form
 SUP = Supplemental Data Form

The **Reviewed** column is intended to help you keep track of the items you have addressed and those which still need your attention. As you correct Errors, complete Blanks, and review items with Warnings, you can click to check the **Reviewed** box as a reminder that the item has been addressed. This causes the item to turn gray, and allows you to hide it temporarily by clicking the "Hide Reviewed" box at the top of the Summary. When you update and resubmit a record, any Errors or Blanks which still apply to that record will have their checkboxes reset. To help you track Warned items which have been verified as correct, checkboxes on Warnings will not be reset.

Figure 6.3: Error and Warning Summary

When submitted records are incomplete, have errors, or include data values that require attention, the Error and Warning Summary shows the VON ID number and birth year, the date of last error check, the message, and whether you have reviewed the message.

Three kinds of messages appear on the Error and Warning Summary. Messages that begin with the word "ERROR" indicate that the record requires correction, and the error message describes the problem with the Data Item. If the word

“BLANK” appears in the beginning of the message, this means that an incomplete record was submitted and some items were left blank. A message that begins with the word “WARNING” means that an unusual value was recorded and should be checked to be sure no mistake was made during data entry.

At the top of the Error and Warning Summary page there are drop-down boxes to select a range of years to be displayed. Records submitted during any of the past four years can be shown. There is also a check box to hide messages about items that are blank, as well as a filter to show all warnings, hide warnings, or display only warnings identified in the last 30 days. Finally, at the right of each message, you have the ability to indicate that an item on the summary has been reviewed, and to suppress the reviewed items by clicking the “Hide Reviewed” box at the top right of the summary. By clicking the “Reviewed” check box after checking the warning messages, you can keep track of which warnings you have reviewed. Checking the “Reviewed” check box for an error will not remove the error. All errors must be corrected.

Infant ID Gaps Summary

Assigning sequential VON ID numbers to infants born in your center has the advantage of making it easy to identify when ID numbers are skipped. Gaps in the ID number sequence may indicate that one or more eligible infants were not reported. During data finalization, your Account Manager will ask you to determine the reasons for any gaps in the ID number sequence. When gaps are determined not to be a problem with reporting all eligible infants, check the “Confirmed” box within the ID Gaps Summary to indicate that the ID will not be used for the selected birth year. The Infant ID Gaps Summary (Figure 6.4) provides feedback on any gaps that exist and whether the gaps have been confirmed.

Infant ID Gaps Summary Records for 2019, Center XXXX

This summary shows the status of all records between the lowest ID number and the highest ID number for the given year. Use this summary to look for IDs labeled "Unused ID - Not Confirmed". If you don't plan to use the ID number for the given year, please check the box in the "Confirm Unused ID" column and that ID will be marked as "Unused ID - Confirmed" for the given year. Please note that a confirmed Unused ID for any given year may still be used at any time.

Key

Status	Description	Action Required
20XX Infant	This ID number has infant data for the year shown	None
Deleted Record	This ID number was deleted from the system	None
Unused ID - Confirmed	These are unused IDs that you've confirmed won't be used for the given year.	None
Unused ID - Not Confirmed	We have no information on these ID numbers and your center has submitted ID numbers higher than this for the given year.	Send data for these infants OR Check the box in the Confirm Unused ID column to confirm that they won't be used for the given year.

Birth Year:

ID#	Record Status	Comments	Confirm Unused ID
4718	Unused ID - Not Confirmed		<input type="checkbox"/>
4719	Unused ID - Not Confirmed		<input type="checkbox"/>
4720	Unused ID - Not Confirmed		<input type="checkbox"/>

Figure 6.4: Infant ID Gaps Summary, Unused IDs Not Confirmed

The Infant ID Gaps Summary includes drop-down boxes that allow you to select the birth year and whether you want to view all infant ID numbers submitted during the year, only unused ID numbers, only IDs that are unused but not confirmed, or only records that have been deleted by your center.

Unknown Items Summary

When data submitted by your center are coded as "Unknown," VON reports may be incomplete and the value of the reports for quality improvement is diminished. Items should be coded as unknown only when the data are unobtainable. When more than 20% of any item values are unknown for the previous birth year, your center's Report Contact will be requested to verify that the data cannot be obtained.

For each item with unknown values, the Unknown Items Summary (Figure 6.5) shows the item number, item name, item description, number of infant records that the item applies to (Number Applicable), number of records where the value

of the item is unknown, and the percent unknown. At the top of the Unknown Items Summary there is a drop-down box to control the birth year for which you would like to view items with unknown values. There is also a check box to show VON ID number(s) for records that have an unknown value for the item. You can also click in the link “View Unknown Items by Infant ID” to reorganize the display by VON ID number.

Unknown Items Summary						
Births During 2019						
Center XXXX						
Year: 2019 ▼		Show Infant ID(s): <input checked="" type="checkbox"/>		View Unknown Items by Infant ID		
Item No.	Item Name	Item Description	Number Applicable	Number Unknown	Percent Unknown	Infant ID(s)
	AP1	APGAR SCORE, 1 MINUTE	19	3	1.58%	4700, 4708, 4710
	HISP	ETHNICITY OF MOTHER	19	2	1.05%	4710, 4711
	LBPATH	BACTERIAL PATHOGEN AFTER DAY 3	19	1	0.53%	4701
	ROPSURG	ROP SURGERY	19	1	0.53%	4711
	PDA	PATENT DUCTUS ARTERIOSUS	19	1	0.53%	4708
	BHEADCIR	HEAD CIRCUMFERENCE AT BIRTH	19	1	0.53%	4711
	MATRACE	RACE OF MOTHER	19	1	0.53%	4710

NOTE: Unknown data items are acceptable only when the data are unknown and unobtainable. Every reasonable attempt to obtain this data should be made. Prior to Data Finalization, your center's Report Contact will be asked to verify any item where 20% or more of the responses for that item is recorded as unknown.

Figure 6.5: Unknown Items Summary

Transfer Summary

The Transfer Summary provides a list of all records your center has submitted for infants who transferred into or out of your center.

Submitting Data Corrections

All errors must be corrected by your center. Make the corrections using **eNICQ** or your computer software. Corrections will be accepted for records for the current birth year, as well as the three prior birth years. Records for birth years older than the current year minus three are considered archived and corrections to those records will not be accepted.

CHAPTER 7

Using Center and Vermont Oxford Network Reports for Quality Improvement

Introduction

One of the important benefits of membership in Vermont Oxford Network is the feedback you get through VON's confidential, customized reports. The reports document patient characteristics, treatment practices, morbidity, mortality, and length of stay at your center. They also track performance over time, comparing your center's performance with its performance in previous years, with that of the Network as a whole, and with subgroups of centers similar to your own. Table 7.1 lists the reports provided by VON for centers participating in the VLBW and Expanded data submission. Most reports can be accessed using the Member's Area Nightingale Internet Reporting System at www.vtoxford.org.

Report System or Report Name	Purpose	Frequency
Nightingale Internet Reporting System	Comprehensive historical and up-to-date information on patient demographics, outcomes, and interventions via the Internet, substantially extending the availability and timeliness of audit and quality improvement data. Nightingale provides secure access to confidential center and Network data, with access controlled by your center.	Reports reflect center data processed to date.
Quarterly Reports	To track the clinical picture to date and identify any trends that indicate clinical problems or problems in data reporting.	Quarterly - April, July, October, and January.
Annual Reports	To make quality improvement interventions and for data audit and peer reviews.	Annually – typically in September.
Network Database Summaries	As a summary of clinical results for the entire Network.	Annually -- typically in September.
Group Reports	To assist regional and other groups of centers to improve the quality of care.	Annually, or more frequently on request (additional fee).
Special Reports	To analyze center measures in ways not provided in standard reports.	On request (additional fee).
Time Series Reporting	To allow users to review infants based on discharge dates.	Determined by user.

Table 7.1: Network Reports

To effectively use the center and Network reports for quality improvement, we recommend that you organize a multidisciplinary team to review the data as part of the ongoing quality improvement efforts at your NICU as discussed in Chapter 3. The reports can be used as the starting point for in-depth analyses of specific clinical practices and patient outcomes at your center, as well as to develop and evaluate quality improvement activities.

We recommend you create an internal plan for how the Report Contact shares the information in the reports with the rest of the multidisciplinary team.

Nightingale Internet Reporting System

Named after the renowned 19th century nurse and statistician Florence Nightingale (1820-1910), the Nightingale Internet Reporting System allows users to access historical and up-to-date information on infant care and outcomes. Access to your center's data on the Nightingale system is controlled by the VON Services Administrator(s) appointed by your center. All data transmissions to the Nightingale server are encrypted using 2048-bit TLS Protocol.

On Nightingale, <https://nightingale.vtoxford.org>, you can:

- View your center data and Network or group comparison data for each of these populations.
 - Infants with birth weights from 501 to 1500 grams
 - Infants whose gestational age is from 22 weeks 0 days to 29 weeks 6 days
 - All VLBW infants (infants with birth weights from 401 to 1500 grams or whose gestational age is from 22 weeks 0 days to 29 weeks 6 days)
 - All Expanded infants (Expanded Data centers only)
- Select from four different types of charts or view the results in a table. Once displayed, you can download tables and charts as PDF or Excel documents and save or print them.
- View results by birth year, birth weight category, gestational age category, or birth location.
- View risk adjusted outcome data by birth year and for three-year periods.
- Drill down to the infant level to identify specific infant characteristics, outcomes, and procedures.
- View year-to-date reports on Nightingale that are similar to the quarterly reports accessible to members. Nightingale users can view up-to-date information on all collected Data Items for the current birth year and prior years.
- For center users with appropriate permission, download your center's infant data as an Excel or XML file for current or prior years.

- View annual Membership Survey data for your center as compared to the entire Network and to your center's NICU Type.
- Save a set of queries for future reference.
- Provide online feedback and suggest improvements to the Nightingale system.

Annual Reports

The Annual Report provides a comprehensive, confidential analysis of your center's individual data and that of the Network as a whole. The graphs and tables allow you to confidentially compare your center's morbidity, mortality, and length of stay to the total Network.

The reports for a given birth year cohort are generally produced in August and September of the following calendar year. The reason for this reporting lag is the long length of stay for some infants (disposition information is not available for some infants until six months or more after birth).

Annual Report for VLBW Infants

The VLBW Annual Report is based on a cohort of infants born in a calendar year with birth weights from 501 to 1500 grams. The report includes measures that have been risk adjusted to account for case mix at your center, as well as data stratified by birth weight and gestational age.

Annual Report for Expanded Data Centers

If your center participates in Expanded data submission, your Annual Report will include both VLBW and Expanded infant data. See Chapter 4 for details on the population included in Expanded data submission. The Expanded section of the Annual Report is similar to the VLBW section of the Report, except that it includes eligible records on infants with birth weights over 1500 grams and responses to additional Expanded Data Items. Both the VLBW and Expanded sections of the Annual Report include risk adjusted measures and summary measures stratified by birth weight and gestational age, which are provided to facilitate comparisons of your center's performance with other Expanded data submission participants.

Quarterly Reports

The Quarterly Reports provide a snapshot of the clinical data reported by your center for the current year-to-date. The reports are available in Nightingale.

The reports can be used to determine accuracy of data submitted as well as indicate changes in clinical practices in your center. A dramatic change in demographics, interventions, diagnoses, or outcomes may signal a trend you should investigate.

Network Database Summaries

The Network Database Summaries report the results for all eligible infants who were born during the birth year at all VON member centers. The reports summarize Network results; there are no member center data included other than a list of participating member center names, countries, cities, and states.

Group Reports

For an additional fee and on request, reports are prepared for groups of centers that wish to view comparative data for individual group centers and for the group as a whole. Comparison data for the entire group are also available in Nightingale for all measures collected by VON. These reports can be useful for facilitating collaborative efforts by group members and are available on request. Please contact your VON Account Manager if you have questions about receiving group reports.

Special Reports

Reports not available in Nightingale may be prepared on request for an additional fee. Please contact your center's VON Account Manager with any questions about special reports.

Time Series Reporting

Time Series Charts allow users to review infants based on discharge dates. Users can choose to view data by month, quarter, or semiannual (every six months). To ensure that the Time Series Charts are accurate, data submissions to Vermont Oxford Network should include all infants discharged in the time period.

CHAPTER 8

Engaging in Quality Improvement & Education

Vermont Oxford Network offers members the opportunity to participate in a number of quality improvement and education programs and activities.

Quality Improvement Collaboratives

VON Collaboratives are designed to provide the structure, knowledge, measurement tools, and sharing required for multidisciplinary teams of neonatal professionals at centers, as well as statewide collaboratives, to successfully develop and execute their quality and safety agendas.

VON offers two types of Collaboratives, structured to allow centers to select the curriculum and program that best meet their team's improvement goals and schedules.

iNICQ

Vermont Oxford Network's Internet-based Quality Improvement Collaborative, iNICQ, allows centers to participate with others through a series of web-based conferences and VON Day Quality Audits. All sessions are recorded and available online with on-demand access, to enhance the dissemination of knowledge to every member of the healthcare team.

iNICQ Collaboratives typically offer multiple tracks of learning, with an Intensive Curriculum option that provides additional learning sessions and an opportunity for in-person activities. Additional information is available at <https://public.vtoxford.org/quality-education/>.

NICQ

The NICQ is a two-year hybrid program comprised of virtual and in-person activities. Each NICQ Collaborative typically includes a series of web conferences focused on improving quality, participation in a homeroom affinity group, an ONSITE immersion learning experience at a designated center, and participation at an in-person Quality Symposium in conjunction with the Annual Quality Congress. Additional information is available at <https://public.vtoxford.org/quality-education/>.

Participants in VON QI Collaboratives are offered access to educational and information sharing tools, including the VON Learning Management System and a collaborative-specific listserv.

Annual Quality Congress

Every fall, Vermont Oxford Network convenes an Annual Quality Congress to bring together neonatal professionals from all disciplines of practice for discussion of cutting-edge clinical topics, formal and informal networking opportunities, and exhibition of improvement posters, and videos from member centers. Additional information, including agendas, faculty biographies, and registration are available at <https://public.vtoxford.org/annual-quality-congress/>.

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