THE CANADIAN NEONATAL NETWORK™

LE RÉSEAU NÉONATAL CANADIEN™

Abstractor's Manual

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CNN v.1.3.4

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CHAPTER ONE: INTRODUCTION TO THE CNN

What is the Canadian Neonatal Network?

The Canadian Neonatal Network (CNN) is a group of multi-disciplinary Canadian researchers who collaborate on research issues relating to neonatal care. The Network was founded in 1995 by Shoo Lee, MBBS, FRCPC, PhD and now includes members from 29 hospitals and 17 universities across Canada. The Network maintains a standardized neonatal intensive care unit (NICU) database and provides a unique opportunity for researchers to participate in collaborative projects on a national and international scale. Health care professionals, health services researchers and health administrators participate actively in clinical and epidemiological outcomes, health services, health policy and informatics research aimed at improving the efficacy and efficiency of neonatal care. Research results are published in Network reports and in peer-reviewed journals.

Mission Statement of the CNN

"To be a network of Canadian researchers who conduct leading multi-disciplinary, collaborative research dedicated to the improvement of neonatal-prenatal health and health care in Canada and internationally".

Specific Goals

1) Establish a national network of multi-disciplinary Canadian researchers interested in neonatal-perinatal research
2) Establish and maintain a truly national neonatal-perinatal database and provide the infrastructure to facilitate collaborative research
3) Longitudinally study outcomes and variation in medical care that increases costs but does not improve outcomes. This is important because NICU care is one of the largest components of child health expenditures and exhibits large variations in mortality, morbidity and costs.
4) Develop innovative research methods that can lead to improvement in health and quality of healthcare.

Database

1) *Core Database*: The Network will maintain a core Network database. Institutional representatives and the Steering Committee decide policy concerning content and use of the database.

2) *Project Database*: Research projects may request utilization of the Network data acquisition system to collect project related data. Such requests will be approved by the Steering Committee. Access to such data will be limited to members of the research project. Expenses relating to such data acquisition will be the responsibility of the project researchers concerned.

CHAPTER TWO: BACKGROUND

Neonatal Intensive Care

Newborn intensive care is a rapidly evolving area of medicine in which advancing technology and new treatment techniques have proven very effective in improving infant outcomes. There is constant innovation and introduction of new treatments, equipment and procedures. Despite this rapid progress, there remains a significant mortality and complication rate, particularly for extremely premature infants. It has become evident that there are marked differences in outcome between different Neonatal Intensive Care Units (NICUs). Furthermore, neonatal care is extremely costly, amounting to thousands of dollars spent for each day in the NICU. Due to wide variations in care outcomes, and to the extremely high cost of care it is crucial that both established and novel medical treatments for newborn infants be analyzed for effectiveness and cost-efficiency.

Evaluating Practices

The effectiveness of many individual treatments (respirators, drugs, formulas, etc.) has been proven in clinical trials. However, when used in combinations, on different populations, or by less skilled clinicians, the effectiveness of these treatments in actual practice may vary. These variations in effectiveness or quality of care may be responsible for the observed variations in outcomes. If true, this presents an important opportunity to improve care, by identifying ineffective care practices.

One method for identifying the most effective practices is to compare the outcomes of patients who undergo different treatment strategies. This approach depends on comparing equivalent patients. For example, if two NICUs use different treatment strategies on babies with the same medical condition, but some babies started out sicker than others, there is no way to accurately assess whether the treatments were used effectively, and which of the treatments was most effective. To permit fair comparisons, it is essential to have an objective way to measure severity of illness.

The SNAP Score

SNAP (***Score for Neonatal Acute Physiology***) is an illness severity scoring system which sums up the worst physiological derangement in each organ system in the first 12 hours of admission to the NICU. This scoring system has been shown to be highly predictive of neonatal mortality and to be correlated with other indicators of illness severity including therapeutic intensity, physician estimates of mortality risk, length of stay, and nursing workload. SNAP provides a numeric score that reflects how sick each infant is. This scoring system is modeled after similar adult and pediatric scores, which are already widely in use.

The TRIPS Score

The ***Transport Risk Index of Physiological Stability*** (TRIPS) is an index which is used to assess changes in patient condition as a result of the transport process. TRIPS looks at four empirically weighed items: temperature, blood pressure, respiratory status and response to age appropriate stimuli. These items are compared just prior to transport, upon admission to the receiving NICU, and twelve hours following admission. TRIPS has been found to be a good predictor of NICU mortality and severe IVH risk. TRIPS is also important in that it can be used to help explain causes for a patient's change in status during transportation and from this new procedures to improve patient care during transport can be identified.

The NTISS Score

The ***Neonatal Therapeutic Intervention Scoring System (NTISS)*** is an index used to assess therapeutic interventions a patient is receiving at any time point during day 1 and day 3 of admission. It covers a wide range of pharmacological and non-pharmacological interventions provided during stay in the NICUs. NTISS has been found to be a good tool for identifying resource utilization and illness severity of patients. Because of data collection on TRIPS and SNAP scores, collection of NTISS is optional in this version of the CNN database.

CHAPTER THREE: DATA COLLECTION

Data Collection

Data collection will be conducted by either medical chart review or prospectively collecting in real-time. Data collection should occur at the bedside both to maximize the amount of information obtainable (that is, having the ability to clarify confusing or incomplete chart entries by asking attending clinicians), and to save the time involved in tracking down medical records once the patient has left the hospital. In addition, the data collected will be entered directly into computers. Direct data collection combines the steps of data collection and data entry into one task, saving time and reducing the risk of human error in obtaining the data. The requirements for the new CNN application are as follows:

Software requirements:
1) Windows XP SP2 or later (Windows 2000 is not supported)
2) Access 2000/2003 or higher
3).NET Framework 3.5 SP1 (Freely downloadable software at http://tinyurl.com/5m4j75).

Hardware Requirements:
1) CPU speed of 2.0 Ghz or higher (Pentium 4, Core2Duo or AMD similar class CPU)
2) 512 MB Memory (1GB recommended)
3) Screen Resolution of 1024 x 768

NOTE:

For the transition to the new CNN in January 2010, in order to keep data integrity between the old and new CNN databases,

1) Babies admitted in 2009 will be entered/updated in the old CNN application, even if the babies are discharged in 2010.

2) New babies admitted in 2010 will be entered/updated in the new CNN application only.

3) For babies readmitted in 2010 with their first admission in end of year 2009, enter the readmission as a new admission in the new CNN and choose the Case Type as "3 – Readmission from 2009". We want to capture all admission (including readmission) in this database. This will mean some information will need to be re-entered, but this would be minority of patients.

Which Babies to Abstract

Abstractors are responsible for abstracting every eligible admission to the NICU. Eligible babies are babies who stay in the NICU for at least 24 hours OR who die/are transferred to another level 2 or 3 facility within 24 hours and all delivery room deaths of infants ≥22 weeks gestational age. (Note: For purposes of this database, time of admission is defined as the time of the first set of recorded vital signs.) Once a baby has been admitted to your NICU, you will have ultimate responsibility for the data collection on that baby, regardless of outcomes or transfers. Please note once you identify an infant as Delivery Room Death on the first page in the field "CASE TYPE" you will only be required to complete a very small subset of information (Admission, Mother and Resuscitation screens only) before you will be able to validate the case successfully..

Admission Tracking

Abstractors should check NICU admission log books and delivery room records daily for new admissions. It is crucial that every eligible baby be abstracted (see "Which Babies to Abstract" above). In order to not miss eligible babies it is best to stay current in your abstraction. It is important to stay on top of your abstracting because: 1) If something is unclear or confusing, you can ask the NICU staff questions and they are likely to know the information. If you wait too long after the baby's discharge, they may not have accurate recall of the needed information. 2) Tracking down medical records once the baby leaves the unit can be time consuming and difficult. It also runs the risk that records may be lost. You may try to arrange with your Institutional Representative to have your NICU staff hold charts of discharged babies

for an extra day thus giving you the opportunity to obtain the discharge data before chart removal. If this is arranged, you should check for charts of discharged babies first thing each day to minimize the delay in chart removal.

Data Content

Data collection consists of five major categories of information.

1) **Registration Information:** Background information such as birth weight, gender, gestational age and obstetric variable will be recorded on admission to the NICU.
2) **Illness Severity:** Illness severity will be recorded using SNAP, a physiology based measure.
3) **Transport Information:** Transport details and physiological details as a result of transport situations will be recorded after 12 hours of admission.
4) **Diagnosis and Procedures:** Details about various diagnoses and procedures patients underwent during their stay in NICU.
5) **Discharge Abstract:** At discharge, abstractors will record a number of outcome variables including discharge date and place and support.

General features and use of the new CNN application

Compared to the old CNN application, the new CNN application has numerous unique features to facilitate data entry and enhance abstractors' productivity. Some of the major improvements are listed below:

1) Brand new, more user-friendly data entry interface
- Intuitive side navigation panel for more efficient data access and updates
- Dropdown menus and toolbar for easier menu access

2) Improved Search Engine
- New easily accessible search panel with more search fields as criteria
- Patient list view for browsing search results

3) Improved data entry validation
- Calendar popup date entry, masked edit boxes used to prevent errors at point of entry
- Floating error message balloons for unobtrusive field validation
- Validate Case screen with easily understandable error messages

4) Record Activation / Deactivation feature
- Activate / re-activate records instead of using the free-text Comments field

5) Unlock record / Log out user feature
- User can unlock the locked cases and log out users if the application exits suddenly due to PC/application crash

6) Improved Upload/Update functions
- More user-friendly database upload and application updates

7) Integrated Help system
- The CNN manual is now integrated with the CNN application and is automatically updated with new manual revisions during application updates

The following are two examples of the general data entry workflow, one for creating a new case and the other for searching and updating an existing case.

Creating a new CNN case:

1) Go to File-New Case or click on the New Case toolbar icon
2) Enter the hospital record number and admission date/time.
3) User enters admission info in the admission screen that opens up
4) Browse through the screens using the left navigation menu (Mother, Resuscitation, Transport…etc) and enter the information required
5) Tick the Reviewed checkbox once all the fields have been reviewed by the user

6) Go to Validate Case screen to validate the whole CNN case and its status will change to Validated if successful

Searching and Updating existing cases:

1) Go to the search panel, enter the search criteria and click Search
2) Select the record you want to update by double-clicking on the row in the patient list search results box
3) Update the fields as required on the admission screen that opened up
4) Browse to any of the other screens to do any updates required
5) If the update for the current case is done, select another case to update in the patient list search results box or perform a new search

Scoring Periods

SNAP: SNAP is scored on the day of admission for the first 12 hours following admission. Where the time of admission is defined as the time the first vital signs are recorded in the NICU.
Day 28: Day 28 data should be recorded as the first data noted after midnight ***on day 28 of life*** to 23:59 (24 hours).
Week 36: Week 36 is 36 weeks post conception (gestational age plus weeks of life). It is computed using the gestational age that is calculated from the best available information on the first page. Please note that if the baby is born at 32 weeks gestational age, the week 36 data will be identical to the day 28 data. Therefore, this data should not be collected if the gestational age is 32 weeks or more, or if the patient dies or is transferred to a level 1 nursery prior to week 36. Data should be recorded by using the first value noted after midnight on the first day of week 36 to 23:59 (24 hours).

Missing SNAP Scores

If you are missing information from the scoring period either because a flow sheet is missing or because the baby was transferred out, or died during the scoring period complete the SNAP screen using the information that is available, leaving the rest of the fields blank.

Deaths

For all babies who are admitted to the NICU and die you will need to verify the cause of death by a) asking the attending physician and b) checking the death certificate to see what is listed. Note that the autopsy report may not be completed for several weeks. If a baby dies during the SNAP scoring period you should abstract the score regardless of how many hours of the scoring period the baby lived. Please make a note in the comments box for these cases indicating the length of time the score was based on. You should also talk to your Site Investigator about getting a log of all delivery room deaths of babies greater than or equal to 22 weeks gestational age (live born babies only) from delivery room or Pathology. Please enter these infants in the database. We need only basic information for such patients.

Rounding

Most numeric entries need not be rounded (head circ, temp, pH can all be entered as a decimal). However, some numeric entries that need to be rounded for entry should be rounded as follows: 2.4 and smaller should be rounded to 2; 2.5 and larger should be rounded to 3. Generally, if values are listed as "<", as in "<2", score as one less than what is written, e.g. <2 would become 1 (or 1.9 in the case where an integer is not required).

Readmissions

For those sites just beginning data collection; a "readmission" on the patient log/admission screen can only be scored if this patient has been entered previously in the database. Therefore, any patient who is readmitted to your unit and whose initial admission is prior to the data collection start date would be scored as either inborn or outborn AND not

a readmission (given that their initial visit was not recorded in the database) and their case type set to " 3 – Readmission from 2009".

For all readmissions use the same record number (hospital chart number) and indicate which readmission number it is. This is different from the old application where "a" or "b", "c"..etc was appended to the record number for readmissions.

Patient Unique Identifier (Patient UI)

Since the CNN sites have separate local databases, the patient Unique Identifier field was created to uniquely identify a patient in CNN when the baby moves across different sites. That ID will be used to link the different admission records entered in the separate local site databases when they are consolidated.

When a new admission is created, there is a unique id generated under the Patient UI field. The following is the workflow that all site abstractors MUST FOLLOW to make sure that the patient UI number remains consistent across all the sites.

1) A baby is born at CNN site X and gets admitted to CNN with an autogenerated patient UI number A

2) The baby then gets admitted to CNN site Y and a patient UI number B is automatically assigned.

The abstractor at site X will need to let the abstractor at site Y know of the patient UI number A and the latter should update the baby's patient UI from B to A.

The guideline is that the hospital with the first CNN admission is the one which propagates the originally created baby patient UI to the subsequent sites and the abstractor at the transferring site should inform the other abstractor within a reasonable amount of time (for example, within a couple of days to a week maximum) for the patient UI update to take place.

If you are entering a baby who was entered in the previous CNN database and who is now being re-admitted, select Case Type #3 on the admission screen, and **please enter the patient UI from the previous database into the appropriate field in the current program.**

Multiple Births (Twins, Triplets…)

For cases where a mother has multiple babies, when the second baby is entered into the application, there is a feature to autofill the mother information automatically since they have the same mother. If the "Births this pregnancy" value is more than 1, the ">1 Births" button will appear. When you click on it, a popup window will appear and you can type in the record number of the first baby admission already in the database. The case id, name and date of birth information for the existing baby record for the multiple birth case will be displayed for verification purposes. When you click on OK button, the mother information of the current baby will be autofilled. The retrieved record will be displayed if the "Birth This Pregnancy" field value matches the current baby record. The Date Of Birth retrieved will be in red if it does not match the current baby record to alert the abstractor that the baby from which the mother info is going to be autofilled may be incorrect. Please refer to the "Birth This Pregnancy" field below in the Admission Screen section for a screenshot of the popup.

Missing Values

Note that you need not record something for each data item when asked, except when mandatory to case validation. If the information asked for is unavailable please leave the associated field blank or indicate that it is unknown. In previous versions of this application missing values such as "99 or 999 etc." were noted, but this has now been replaced with "unknown" and "N/A" options.

Data Grids

The new CNN application employs the use of data grids throughout the screens (Diagnosis/Procedures; Cultures/Transfusions; Medications). If errors in entry are made, rows can be deleted in their entirety by clicking on the grey area to the left of the first column of the entry you wish to delete. Once selected, pressing "Delete" on your keyboard will clear the row from the dataset and move remaining entries up.

Glossary

THE MEDICAL GLOSSARY IN THIS VERSION OF THE CNN MANUAL HAS BEEN REMOVED. PLEASE REFER TO ONLINE MEDICAL DICTIONARIES (SUCH AS HTTP://WWW.NLM.NIH.GOV/MEDLINEPLUS/MPLUSDICTIONARY.HTML) IF YOU HAVE QUESTIONS ABOUT MEDICAL DEFINITIONS.

CHAPTER FOUR: ERROR CHECKING

Computer data checks

The computer program has several error checking systems in place. At a primary level, the program performs error checks during data entry, to help ensure accurate data capture. For instance, there are checks for "reasonableness". For example, if you entered '66:66' as a value for time, the computer will generate an immediate error message prompting you that this is not a valid entry, and will require you to change this value before proceeding. At a secondary level, once you have completed an entire patient file and wish to submit your data a final error check (validation) will be run. A third error check occurs after your data has been submitted to the Coordinating Centre (CC), in which you may be contacted by the CNN Coordinator to confirm any unusual entries. If you enter something unusual, please write an explanation in the "comments" section to save the time of rechecking the chart. If you receive an error message that is not self-explanatory, contact the CC for advice.

Abstractor checks

Some data items are not easily checked by the computer. It is crucial that everything you enter into your computer makes sense to you. If it doesn't, please ask questions of the NICU staff to protect the data integrity. In addition, please read through each data screen before closing it to make sure you have filled in all the information correctly.

Record Deactivation

In the old CNN, whenever an admission record was entered wrongly or was invalid, abstractors wrote "To Delete", "To Filter", "Pls Ignore" or similar notes under the Comments field. This made identification of those invalid cases (for annual data cleanup and CNN annual report generation) difficult as the Comments field is free-text.

A new "Record Deactivation" feature has been added in the new CNN application to deactivate admission records that are invalid.

Please **DO NOT** enter "To Delete", "To Filter", "Pls Ignore" or similar words under the Comments field for the new CNN application, use the Record Deactivation feature instead.

Abstractor organization

It is important for data abstractors to be organized to help alleviate errors and missed or overlooked data. In order for the CC to determine the difference between missing data that is unavailable from the chart versus data that may simply have been overlooked by the abstractor it is crucial that the abstractor enter appropriate values. Whenever possible, a blank space should be left any time a data field cannot be completed because the information is not directly noted or cannot be inferred from information anywhere in the patient's complete chart. Abstractors are also advised to keep a separate excel file to keep track of which patient records are complete (following discharge) and which records are still missing information and need to be followed up on. The excel file can also be a way to record which infants have had name changes in order to avoid confusion or duplicate entries. Please note that when babies are transferred to other hospitals it is the responsibility of the first hospital's data abstractor to provide the UI to subsequent hospital's data abstractor in a timely fashion (within 3 weeks of transfer to a subsequent facility) so that information on a patient can be linked appropriately. In the Help menu there is a link to the CNN website where you will be able to find list of abstractors and site investigators and their contact details. There is also a listing of site investigators in Appendix VII. Please use these tools to contact the correct person. If you need to talk to the CNN Coordinator or Database Programmer for computer related issues, their contact details are also provided on the CNN website.

Customizability of the CNN Application

The new CNN application allows users to select from various settings in order to personalize the application environment. To access the settings dialogue window, go to the Tools menu on the upper border of the application and select "Settings…". Here you can customize the Patient Chart, the Search settings, the default Inborn and Outborn Hospital and the database file location. The Patient Chart customization allows you to change the colours of the Patient Chart grid and to personalize the vertical highlight bar. You can customize default search settings by selecting Date to reflect either Date of Admission or Date of Entry Creation, customize how far back to search, and the status of the cases that will be retrieved. By default, the database file location is the application installation folder, which you may choose to change depending on your local organizational needs. You can restore default settings on all tabs by clicking on the "Clear All" button at the bottom of the Settings window. For more information on these features go to General Database Use on page 12.

CHAPTER FIVE: CONFIDENTIALITY AND PROFESSIONALISM

Confidentiality

There are several levels of confidentiality that must be maintained. Firstly, the data in the computer represents personal information about patients. To maintain full confidentiality, the computer will encode all information from the medical chart that identifies the patient before it is transmitted to the Coordinating Centre (CC). The CC will be able to identify patients by their CNN Case ID number, but only the Data Abstractor at individual sites will be able to match that number to a specific patient. Secondly, the SNAP can be used to compute a risk of death. However, the predictive accuracy of this estimate has never been tested. Finally, please ensure that the Research Ethics Board of your institute has approved the CNN data collection. Feel free, however, to answer any questions parents or clinicians may have about the general purpose of the data collection.

For data confidentiality and accountability, for the new application, each abstractor will be issued a user id and password, only known to him/her to log in to the application. Every record created or updated using a given user id will be marked in the backend database with that user id and the created/updated date. This audit trail information can be used for security purposes as well as for improving CNN data entry and data quality. This is different from the old CNN application, where one database password was used and shared by all.

Please also note that the mothers P.H.N. will only be kept on your local datasets and will not be transferred to the CNN Coordinating Centre upon upload.

Professionalism

It is important that you maintain a professional image while working in the NICU. This includes making sure you are not disruptive of parents visiting their sick babies, of clinicians caring for the babies, or of any other NICU routines. Your dress should be professional and your appearance neat at all times you are working, even when working evening or weekend hours. In addition, please try to keep your voice low and your behaviour calm so as not to disturb any sensitive babies.

NICU staff interactions

The NICU staff is often very busy caring for the babies. They are also an excellent resource for information on specific babies or specific medical terminology. In your interactions with the staff, it is important to ask the bedside nurses before using the medical chart, to keep the chart in the immediate area and to make sure the nurses know where to locate the chart if they need it. In addition, be sure that your presence is not interfering with the nurses' care of patients.

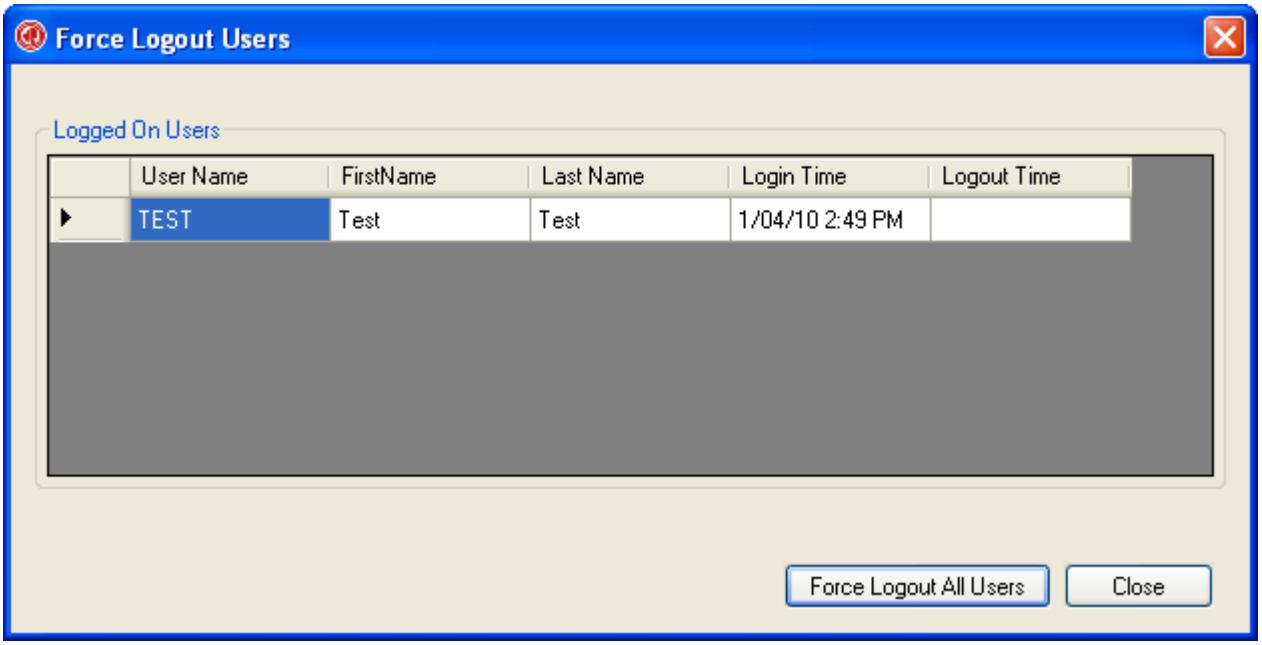
CNN Application - External Tools

The CNN Application has two tools that are used outside of the application itself. The two tools are “Logout Users” and “Unlock Case Records”.

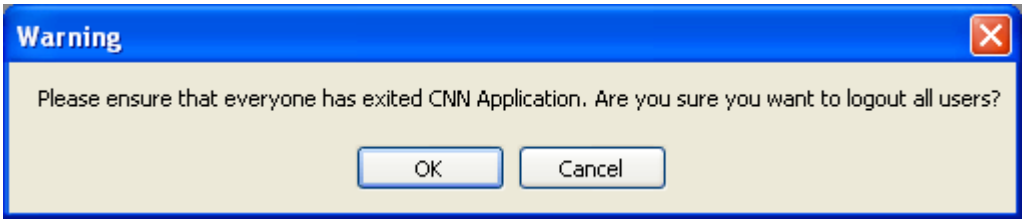
Logout Users

The “Logout Users” external tool is used when a user continues to be logged in to the CNN Application despite the application having been closed. This normally occurs when the application is closed abruptly due to a power failure or an application crash.

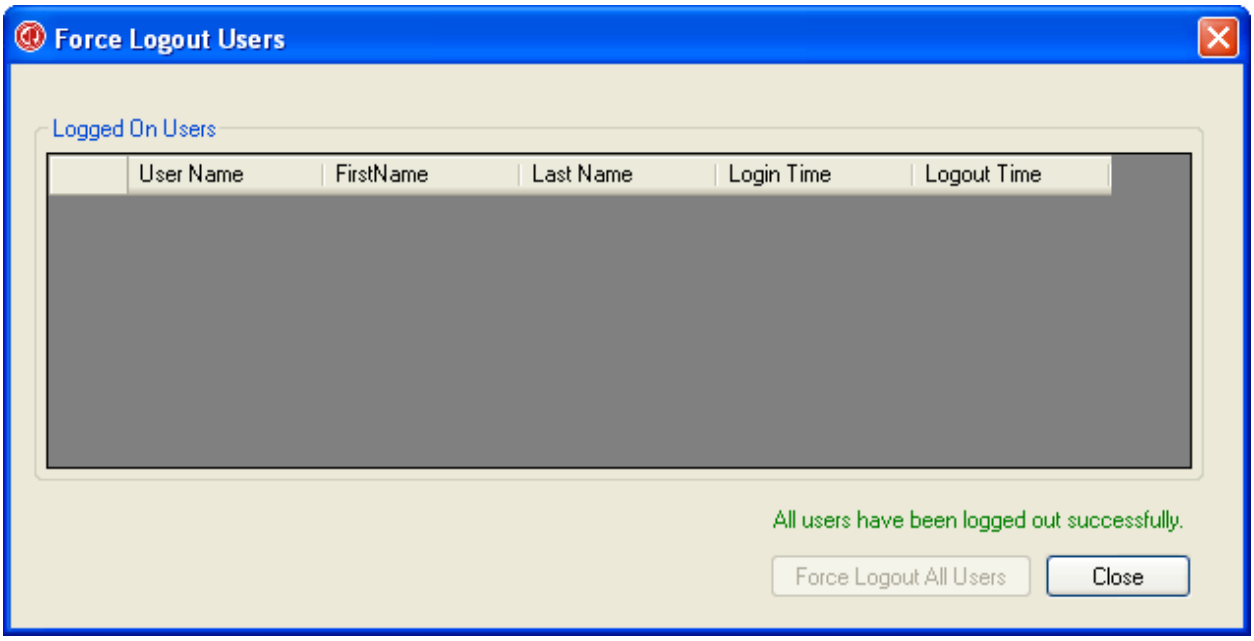
1. Click on the “Force Logout All Users” button.



2. Make sure that the CNN Application is not running and click on the “OK” button.



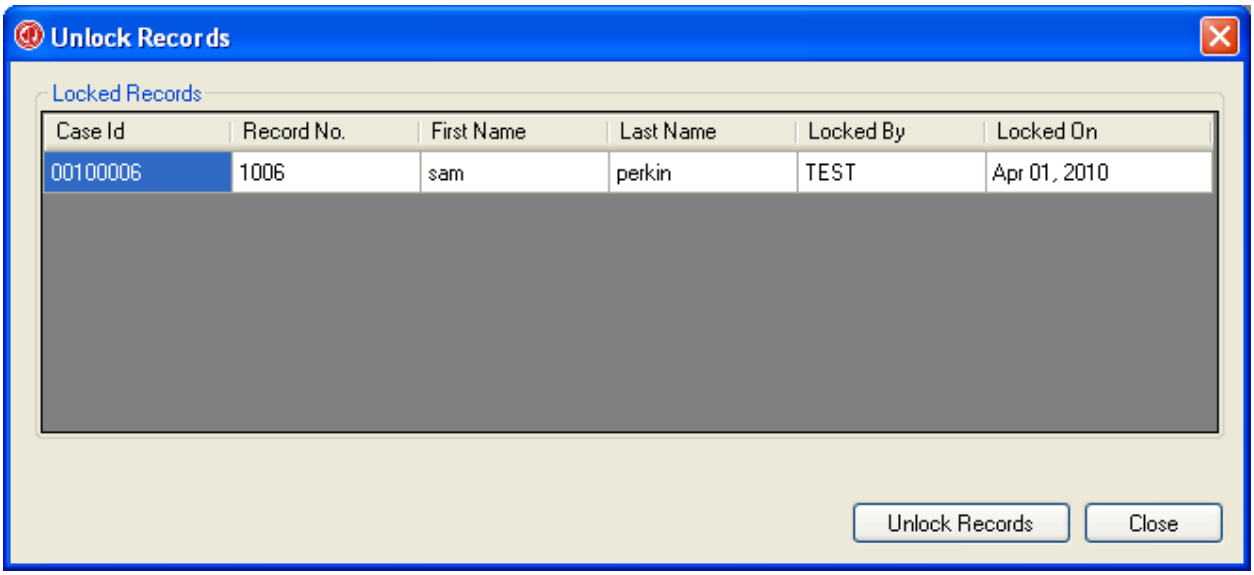
3. A message will appear stating that the users have been successfully logged out. Click the "Close" button to exit the tool.



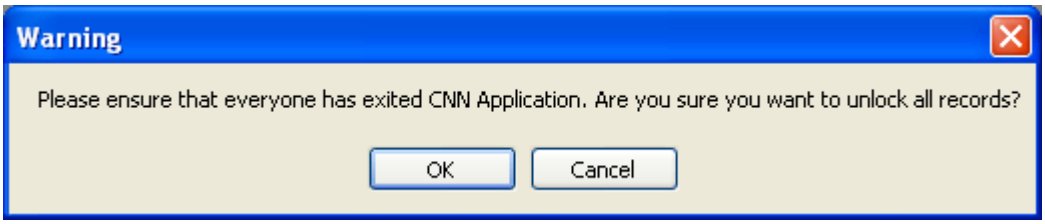
Unlock Case Records

A patient case is normally locked for other users when one user is currently accessing it. This is done to prevent two users from editing the same record and potential clashing. This tool is used when a patient case continues to stay locked despite the fact that no user is accessing the case. This normally occurs when the application is closed abruptly due to a power failure or an application crash.

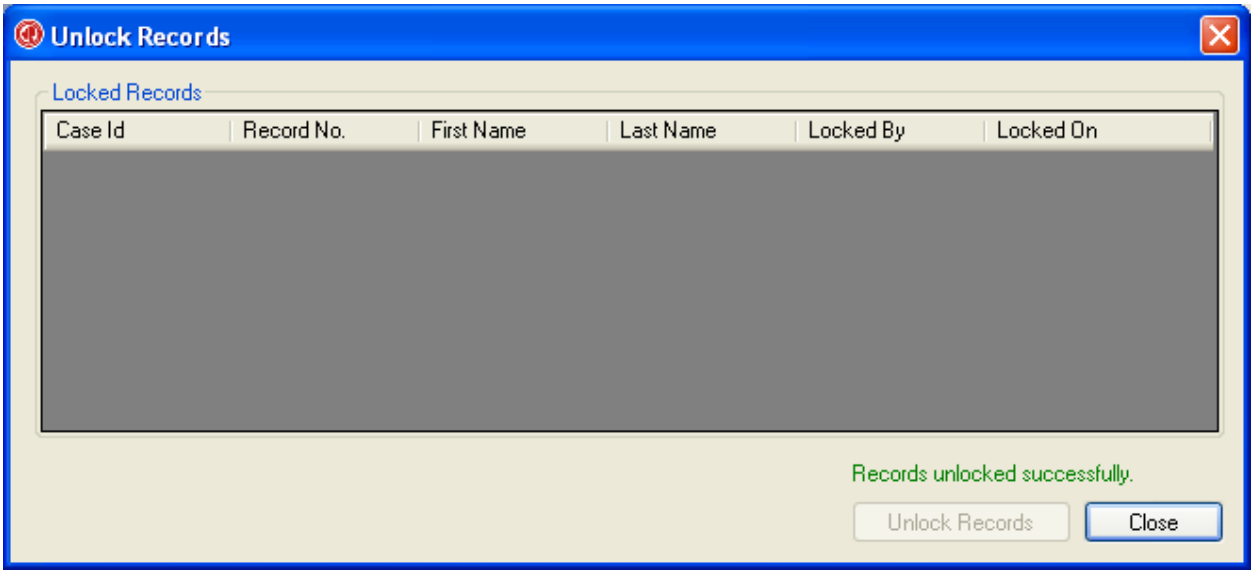
1. Click on the "Unlock Records" button.



2. Make sure that the CNN Application is not running and click on the “OK” button.



3. A message will appear stating that the users have been successfully logged out. Click the “Close” button to exit the tool.

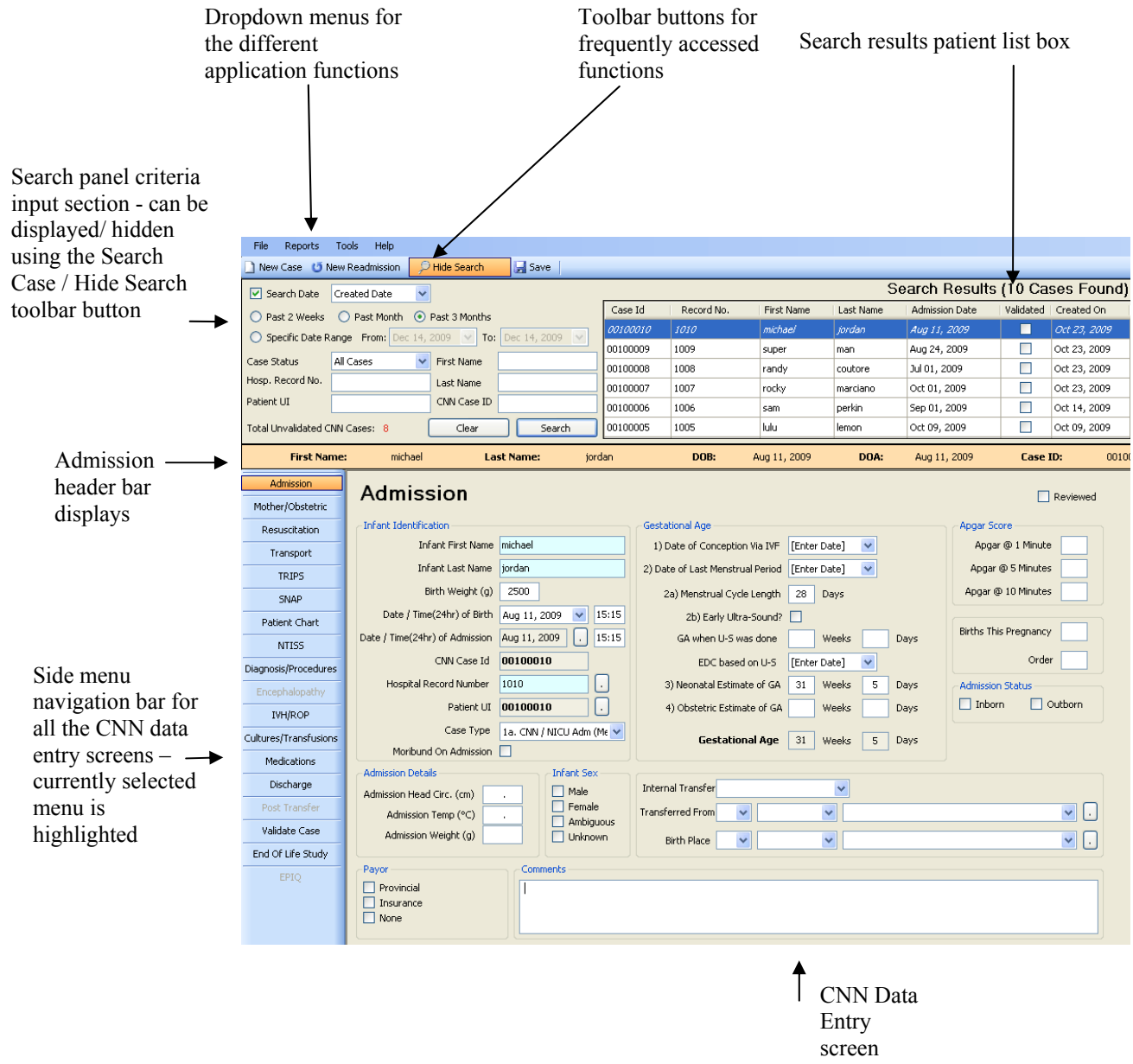


Repair Database

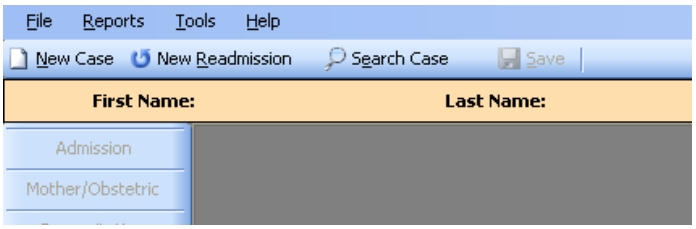
Database files can grow quickly as you use them, sometimes they would impede performance. They can also occasionally become corrupted or damaged. You can use the **Repair Database** in CNN External Tools to prevent or fix these problems. Please make sure no user is logon to the CNN application before use this feature.

GENERAL DATABASE USE

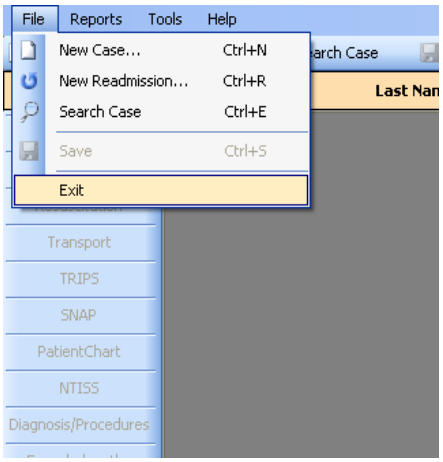
Overview of new CNN user interface

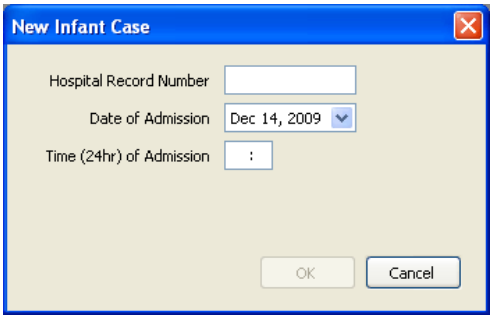
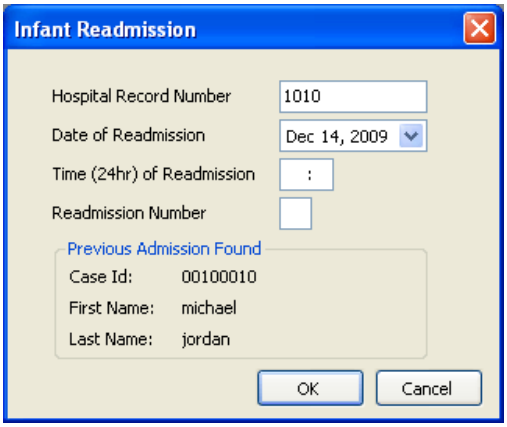


Application Menu Items



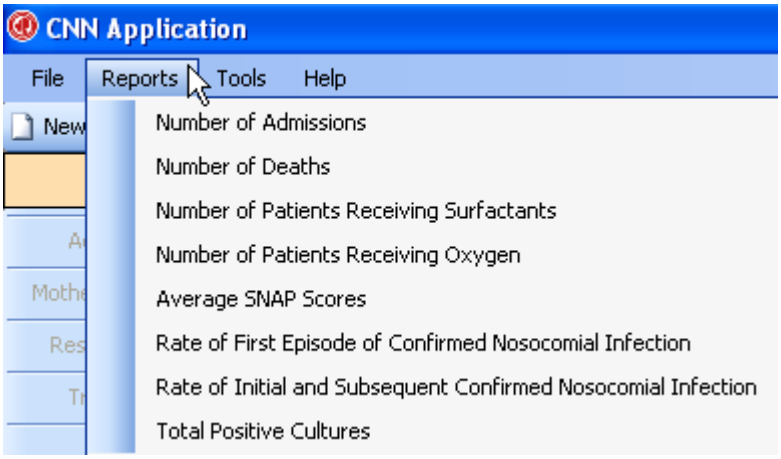
File



New Case		Selecting this option will open a new dialogue window for the abstractor to enter the details of new case. It will ask you Hospital ID, Date and Time of admission. The Time of admission is optional. When you click OK, it will open up the a new admission screen with the hospital ID, case ID, patient UI and date of admission auto-populated and the user can fill in the rest.
New Readmission		This option will open the new dialogue window specifically for readmitted babies. When you enter the correct hospital Record Number for the first admission of the baby, the case id and names are displayed for confirmation and the OK button is enabled. You enter the date of readmission, readmission number and time if available and click OK. The baby, mother and resuscitation information entered already when the first baby admission was created will automatically be populated in the baby, mother and resuscitation screens of the readmission record. There is no need to re-enter that information.
Show / Hide		Shows and Hides the search panel, as desired.

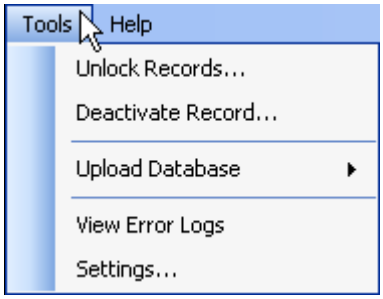
Search		You can hide the search panel to have a larger viewing area for the screens without the need to scroll.
Save		Select this option to save your input.
Exit		Select this option to exit the system. Exiting the application will automatically save any entered data.

Reports

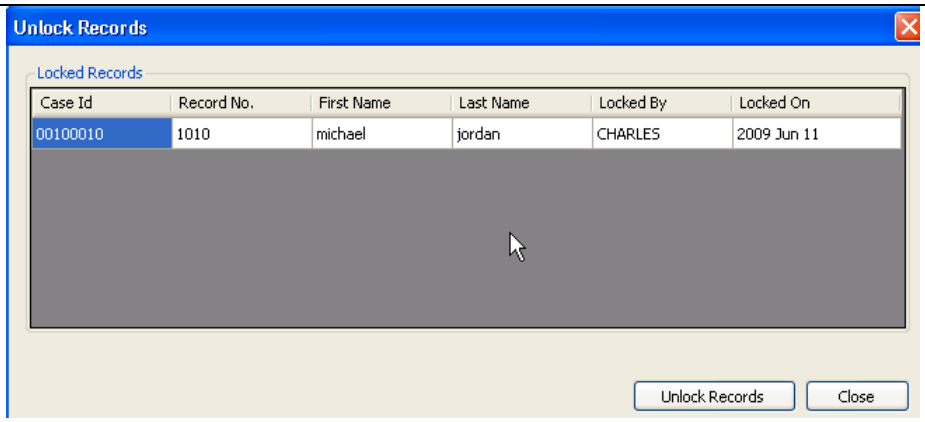
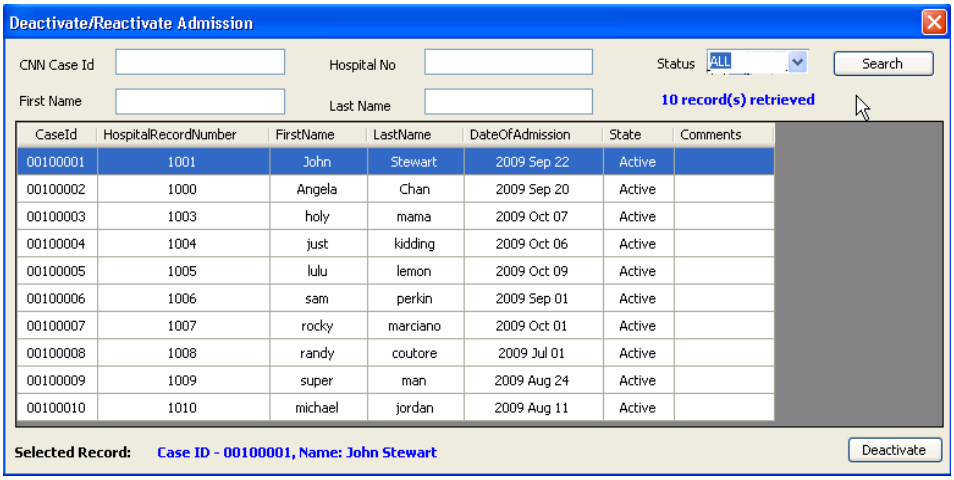
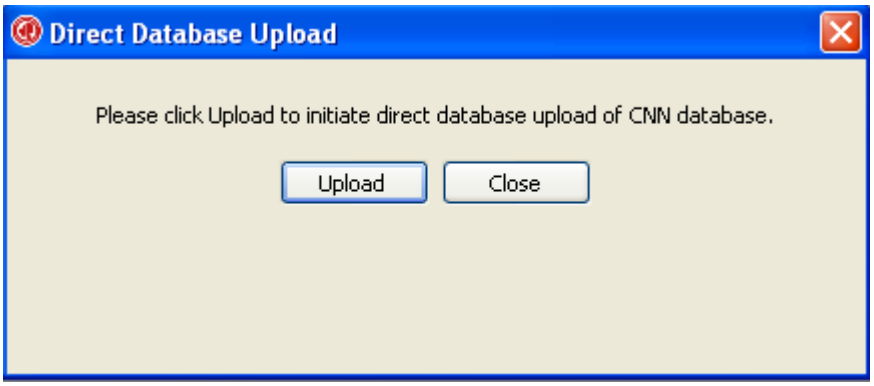


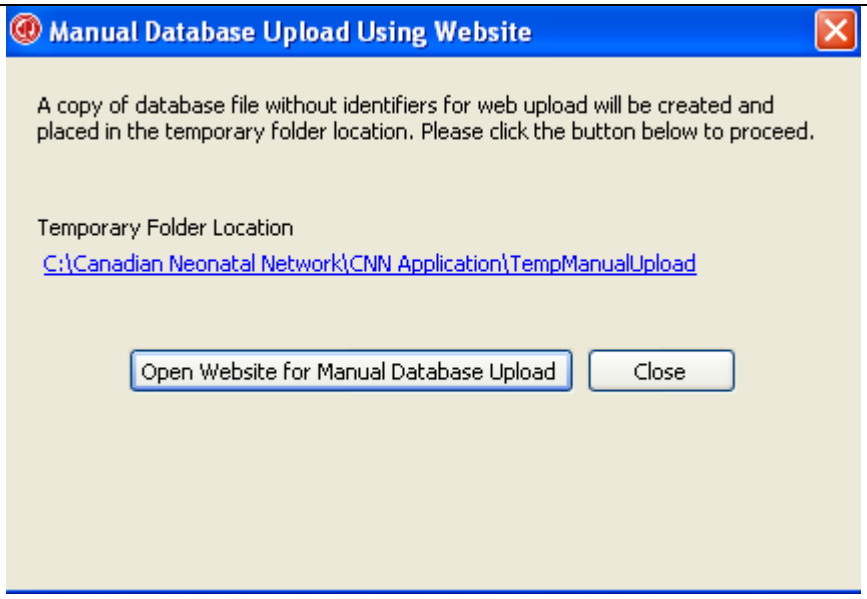
	Number of Admissions	Includes Validation Status; report output includes hospital record number
	Number of Deaths	
	Number of Patients Receiving Surfactants	Measures time from date of birth
	Number of Patients Receiving Oxygen	
	Average SNAP-II and SNAPPE-II Scores for Patients	
	Rate of first episode of confirmed nosocomial infection in a given time period	
	Rate of initial and subsequent confirmed nosocomial infection in a given time period	
	Total Positive Cultures	

Tools

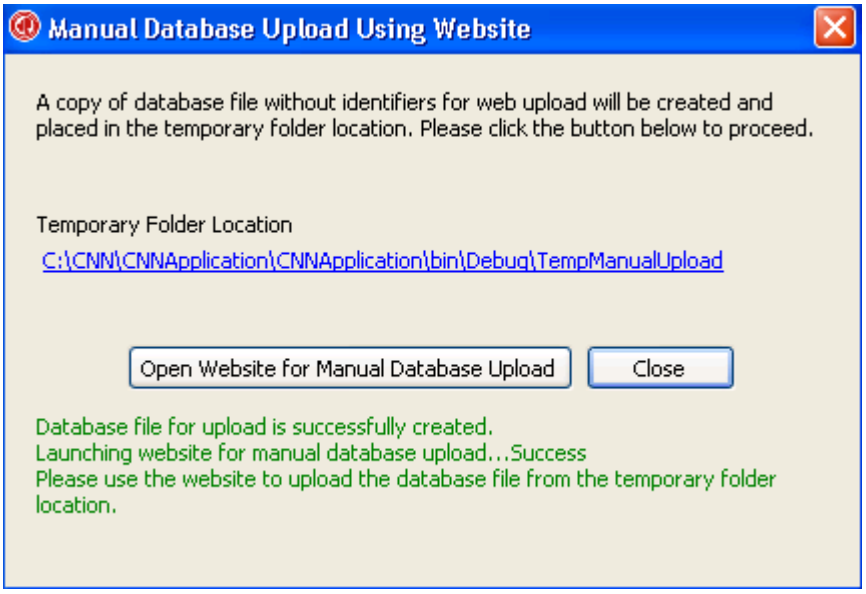


Unlock Records		This option allows you to access a locked record in the event of a system crash.

		The screen will show the currently locked records. Please make sure that the record is not really in use before you unlock it.
Deactivate Records		If a record was entered in error, this option allows abstractors to omit submission of the particular case. Search and select for the desired record and click Deactivate. Enter the deactivation reason. To reactivate a record, select it and click Reactivate.
Upload Database		Uploads the database to the Coordinating Centre.

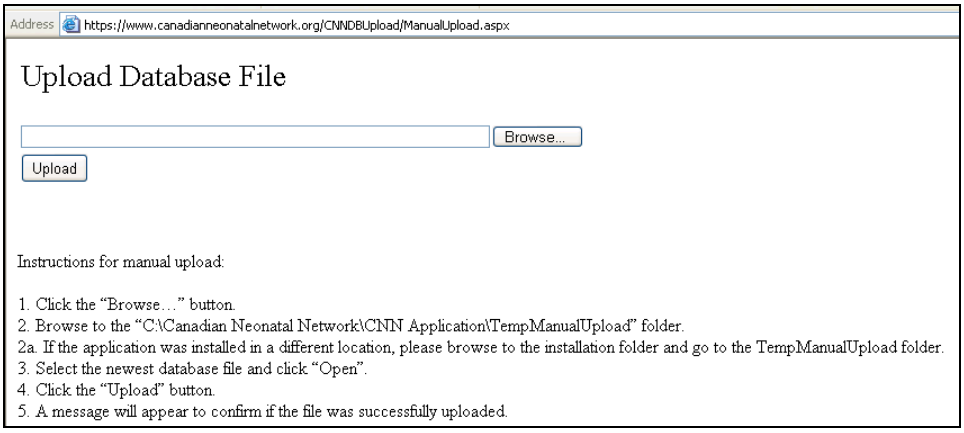


If your site has problems uploading using the direct upload method, please use the manual database upload using our website.

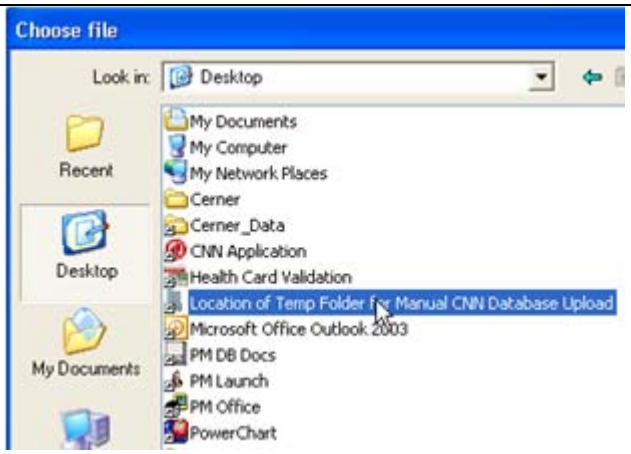
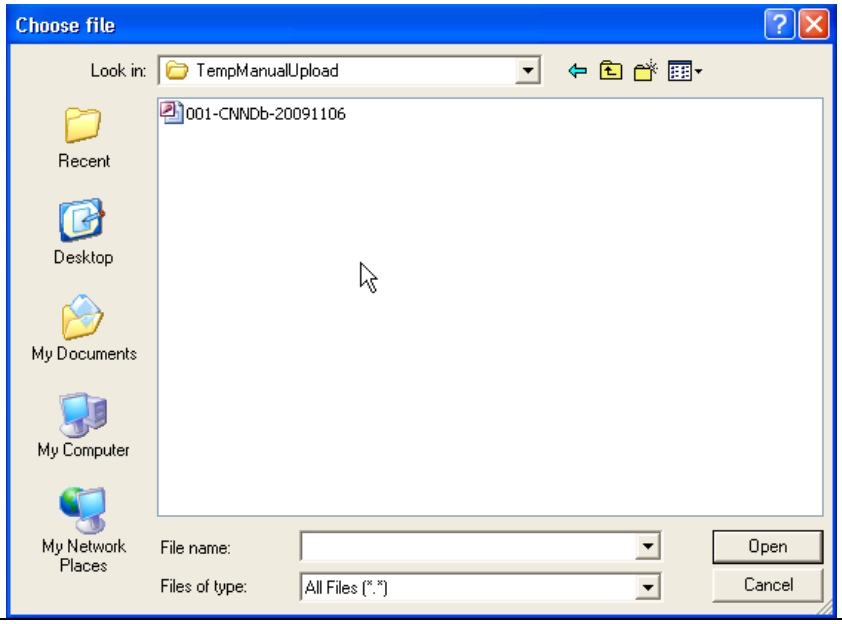
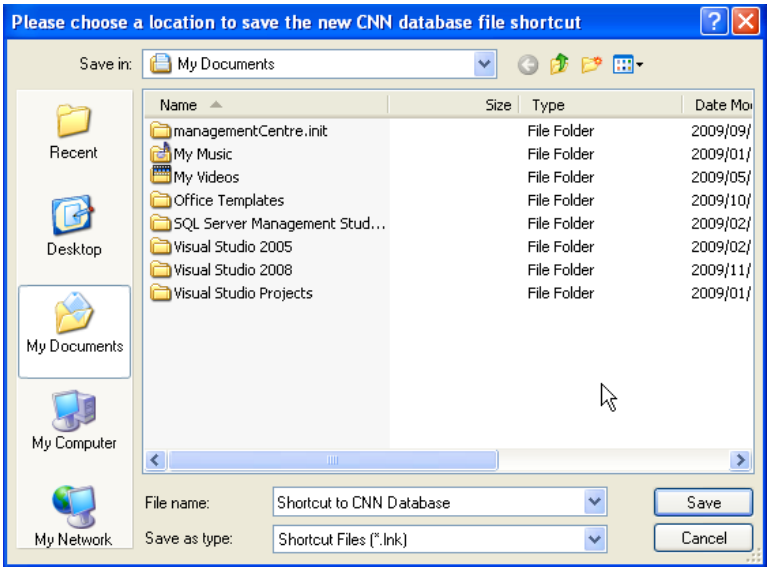


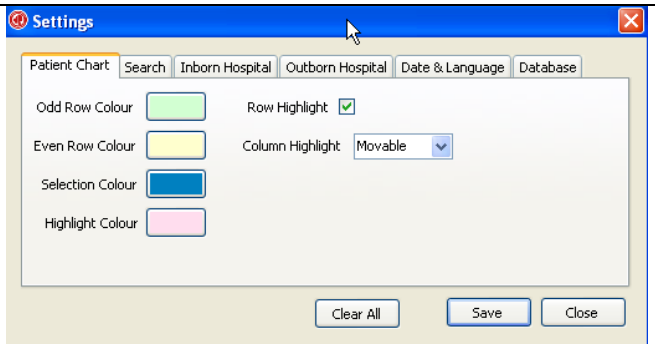
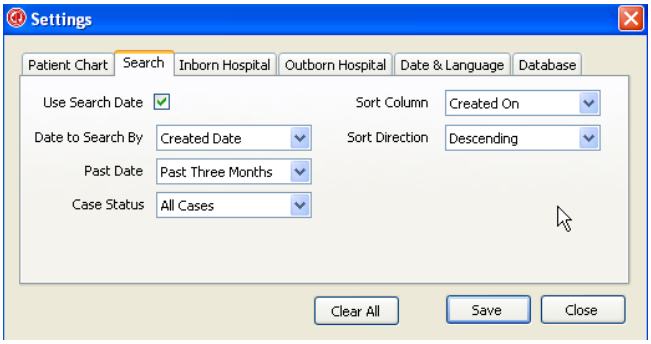
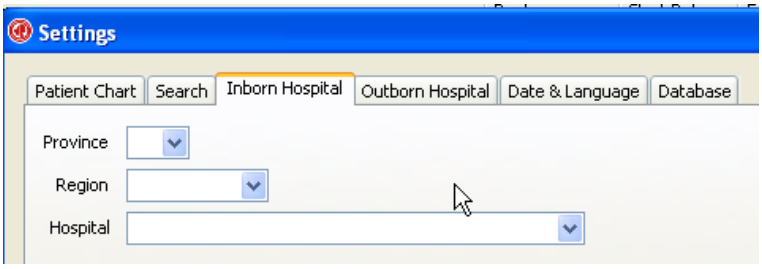
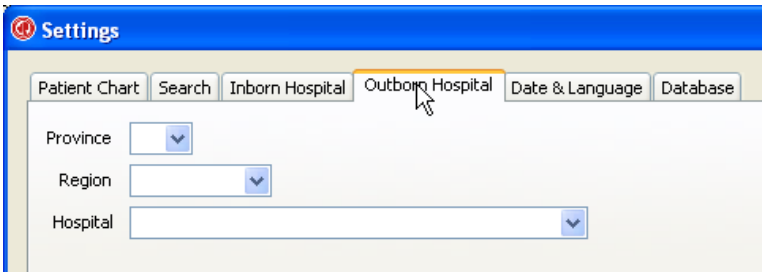
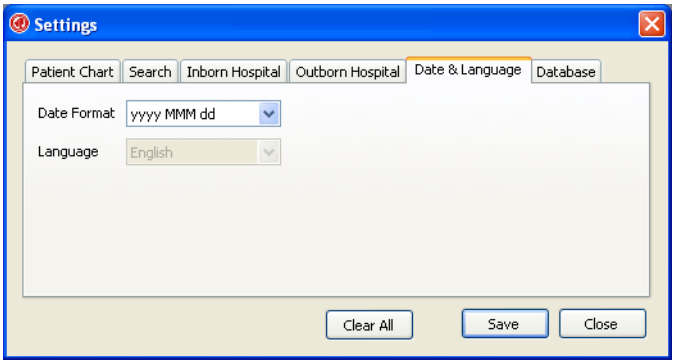
When you click on the "Open Website of Manual Database Upload", the application will prepare the database file for upload in the application temporary folder and open the web page in Internet Explorer.

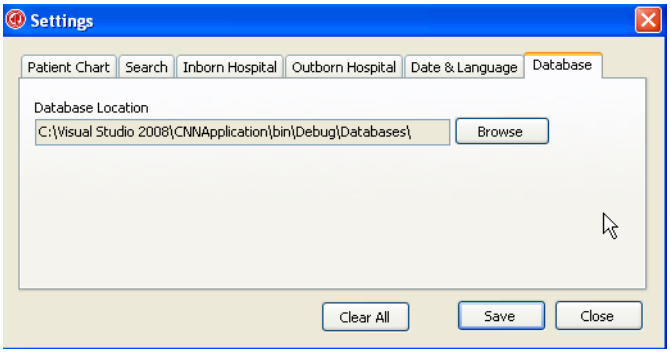
Note that the Temporary folder location where the database upload file will be created is shown on the screen for your easy reference.



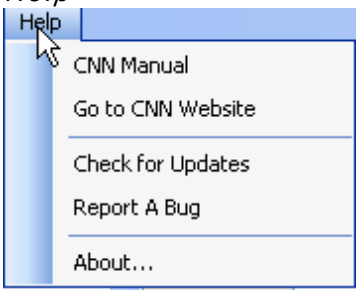
Browse to the Temporary Folder location to select the correct database file for the upload.

	 	You can make use of the "Location of Temp folder for Manual CNN Database Upload" shortcut that was automatically created during the CNN installation. Select the created database file with the correct dates for the upload.
Create Database Shortcut		Creates a shortcut to the CNN database at the desired folder location in case the original shortcut is accidentally deleted.

View Error Logs		Allows abstractors to access the error logs in the event of a system crash
Settings		Chooses the color for the patient chart and whether vertical or horizontal highlighting bars are desired.
		Sets the default searching criteria for the search panel
		Sets the default hospital if case is inborn
		Sets the default hospital if case is outborn
		Sets the Date Format and the Language

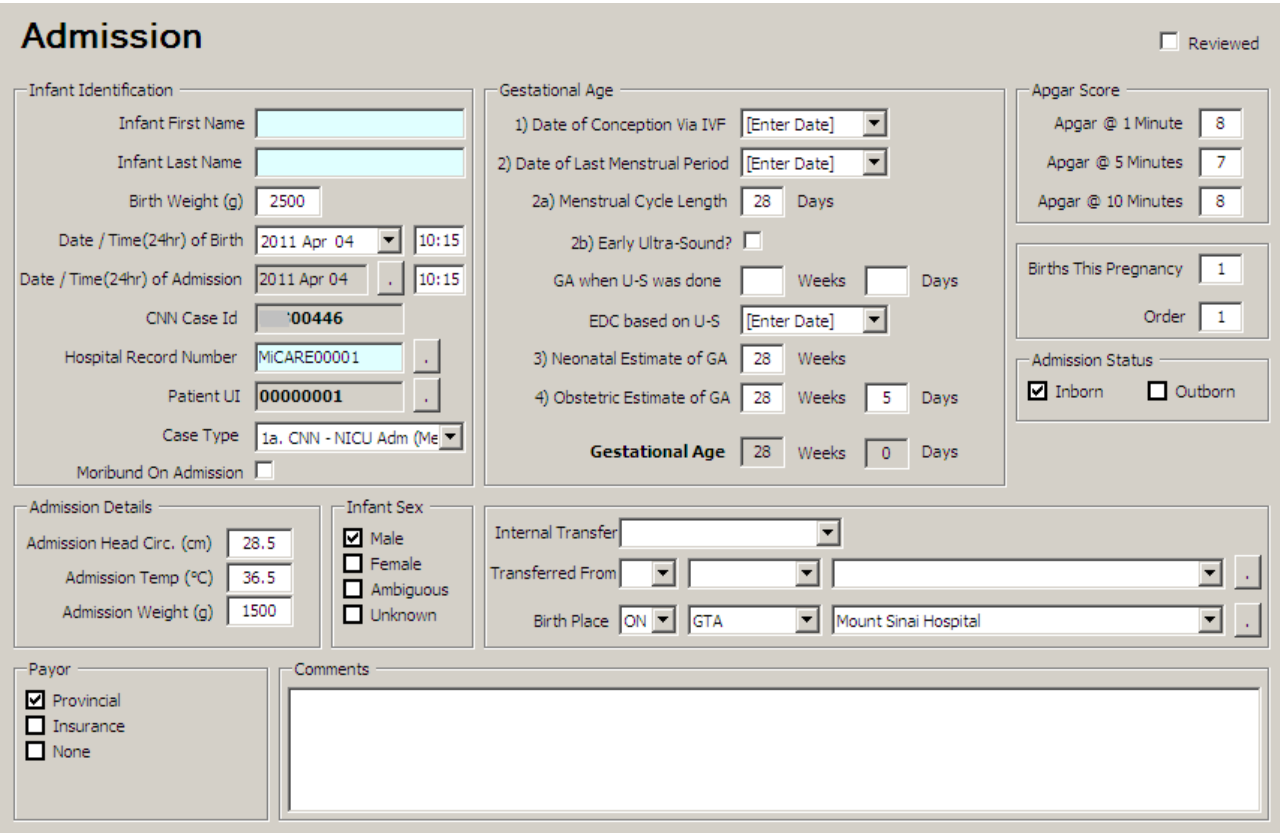
		Sets the database location when the database file path is changed

Help



CNN Manual	Access the CNN Manual for reference (section anchors pending)
Go To CNN Website	Access the Canadian Neonatal Network ™ website for reference
Check For Updates	Go to CNN Website Updates download page
Report A Bug	Go to CNN Bug Reporting / Feedback website
About…	Allows users to view information about the application version

SCREEN 1: ADMISSION SCREEN DEFINITIONS



Abstractors are responsible for abstracting every eligible admission to the NICU. ***Eligible babies are infants who stay in the NICU for at least 24 hours, who die/are transferred to another level 2 or 3 facility within 24 hours, and delivery room deaths of infants ≥22 weeks gestational age.*** (Note: For purposes of this database, time of admission is defined as the time of the first set of recorded vital signs). Please include data occurring in the resuscitation room provided that the infant is afterwards ADMITTED TO THE NICU.

Record only patient data relating to the specified admission to your NICU. You are not to record treatments/ resolved diagnosis provided at another hospital unless specific services that are not provided at your institute such as surfactant administration, PDA ligation, ROP Surgery for which infant was temporarily transferred to another facility and returns back in a reasonable period of time depending upon procedure (this should be individualized as to the procedure – PDA ligation baby if stays for <48 hours, ROP surgery <24 hours, Surfactant administration <24 hours etc.) Please use your discretion as to whether patient stayed longer than expected and how likely is that the other NICU will initiate data collection during the period infant was in other NICU.

INFANT IDENTIFICATION

Infant First Name	First name(s) of infant as recorded on the medical record. Do ***not*** type in "Baby" "Boy" or "Girl" or their abbreviations. If the infant is not given a first name upon admission to the NICU leave this field blank, you can come back to it and enter it later. If the infant has still not been given a first name upon discharge, simply leave this field blank.
Infant Last Name	Family name of infant as recorded on the medical record. If hyphenated or double name, record both. ***If the baby has a change of last name, do not record the change here or in the comments box. However, you may want to note the change for yourself elsewhere for future reference.***
Birth weight	Weight in ***grams*** at birth as recorded in birth hospital. If birth weight is unavailable, use the first weight taken up to 24 hours of life. If birth weight is only listed as an estimate, record the estimate. If weight was recorded after 24 hours and an estimate was used during first 24 hours, please record estimate (mandatory field)

Date of Birth / Time of Birth	Date of birth according to obstetric and/or admitting records. Enter by selecting from the calendar displayed or by typing in the date in the format YYYYMMDD. If date of birth is unknown leave the field blank. Enter time of birth in ***military time*** (24 hour clock). If infant is born at midnight, record as 00:00 (where midnight (00:00) is the first minute of a new day; for example: 23:59 on Jan 3rd and 00:00 on Jan 4th is 1 minute later).
Date of Admit / Time of Admit	Date of admission to the study NICU. This may be different than date of birth for late admissions or out-born babies. Auto-populated from initial screen and should not be changed carelessly as this will clear the patient chart. Time of admission is defined as the time of first vital signs (at least one vital sign) recorded in the NICU. Do not include time in transport for out-born infants, or time in the delivery room for inborn infants. Write time of admission in military time. If time of admission is midnight record as 00:00 (mandatory field).
CNN Case ID	This is an auto-generated Case Identification number. It uniquely identifies a baby admission record in CNN. You do not need to enter any data in this field. ***All screens are linked via this number*** (mandatory field)**.**
Hospital Record Number	Medical record number of the infant at the study hospital. When a patient is ***readmitted*** simply use the same record number and indicate the readmission number in the field that is displayed on the right hand side. To change this number from the one previously entered, click the button on the right of the field and proceed as instructed (mandatory field).
Patient UI	Patient Unique identifier (UI) number is assigned automatically by the program. No data entry required. It is the unique identifier for a patient and is used when transferring patients between hospitals. To change this number from the one previously entered, click the button on the right of the field and proceed as instructed.
Case Type	There are four types of patients collected under this screen. (1a) CNN / NICU admission – which will be the commonest and default regular option (1b) delivery room death (2a) Non-CNN / NICU admission not meeting CNN criteria - Certain sites collect babies in the database who are not eligible for CNN, such as short stay babies; (2b) Non-CNN / non-NICU admission – admitted to other hospital unit; (2c) Non-CNN / non-NICU admission – not admitted to our hospital; (3) Readmission from 2009 (mandatory field)
Moribund on admission	A patient will be classified as moribund at admission if patient is receiving only comfort care, without intubation, mechanical ventilation, pressor treatment, or cardiac compressions (mandatory field).

GESTATIONAL AGE (APPEAR IN ORDER OF ACCURACY)

Note that this is a change from the previous CNN application. This program is set in such a way that it will calculate GA based on the best information that is available. Abstractor will complete as **much information available from charts as** they can, even if the dates or values in the chart are estimates. Please leave field blank if information is not available. If the Neonatal and Obstetrical estimated GA is reported as weeks + then just report weeks and leave days as zero. If Neonatal estimation spans more than one week enter earlier estimate (i.e. if GA is estimated as 30-31 weeks enter 30 weeks and zero days). GA refers to gestational age at BIRTH - and NOT the Corrected GA

Date of conception via IVF	If the date of conception is available in cases of in-vitro fertilization (IVF) pregnancy, enter the date in this field.
Date of last menstrual period	Enter from maternal chart or history the date of last menstrual period.
Menstrual cycle length	Enter if this information is available. This field will contain the default entry of 28 days.
Early Ultrasound	If mother had early ultrasound (between 8-24 weeks of gestational age) then click this field.
GA when US was done	If there was an early ultrasound examination recorded, enter what was the estimated gestational age based on such an early ultrasound examination.
EDC based on US	Enter estimated date of confinement (delivery) based on the early ultrasound mentioned above. Note that this field is **not** Estimated Date of Conception.
Neonatal estimate of GA	Enter the estimate based on neonatal assessment as to how many weeks gestational age infant appears, generally by the Ballard or Modified Ballard examination. If there is no Neonatal estimate listed in the chart but the baby is referred to as a 'term baby', enter 40 weeks. (In weeks only)
Obstetric estimate of GA	Enter obstetric estimate of GA here in weeks and days.
Gestational Age	This field will be automatically populated based on input from the other fields. You do not need to enter any data here. Check that the value generated in this field is within a reasonable range of the best estimate of the infant's gestational age according to the patients chart. If there is a discrepancy, recheck data entry above.

APGAR SCORE

Apgar at 1 minute	One minute Apgar score. If the value is missing, leave the field blank.
Apgar at 5 minutes	Five minute Apgar score. If the value is missing, leave the field blank.
Apgar at 10 minutes	Ten minute Apgar score if recorded. The recording of such a score usually denotes a worrisome event in the delivery room (depressed infant) and is noted as a measure of recovery or prolonged depression. If missing or not available, leave the field blank.

Births this pregnancy	Total number of births in this pregnancy. For example triplets=3, twins=2. If fetal death occurs at or before 20 weeks, this is ***not*** counted under births this pregnancy. If the chart does not specify date of fetal death, use the date the death was discovered. If fetal death of a twin occurs in utero, make a note in the comments box (mandatory field). When this field is more than 1, a new "> 1 births" will appear. Upon clicking it, the following popup will appear for the user to choose the other existing baby admission record for that multiple birth case in order to find the existing mother record to link that baby to.  
Birth Order	Indicate the order in which the baby was born if it is part of a multiple birth. If fetal death has occurred at or before 20 weeks GA do not count in birth order. If the baby is a singleton, please leave this blank.

ADMISSION DETAILS

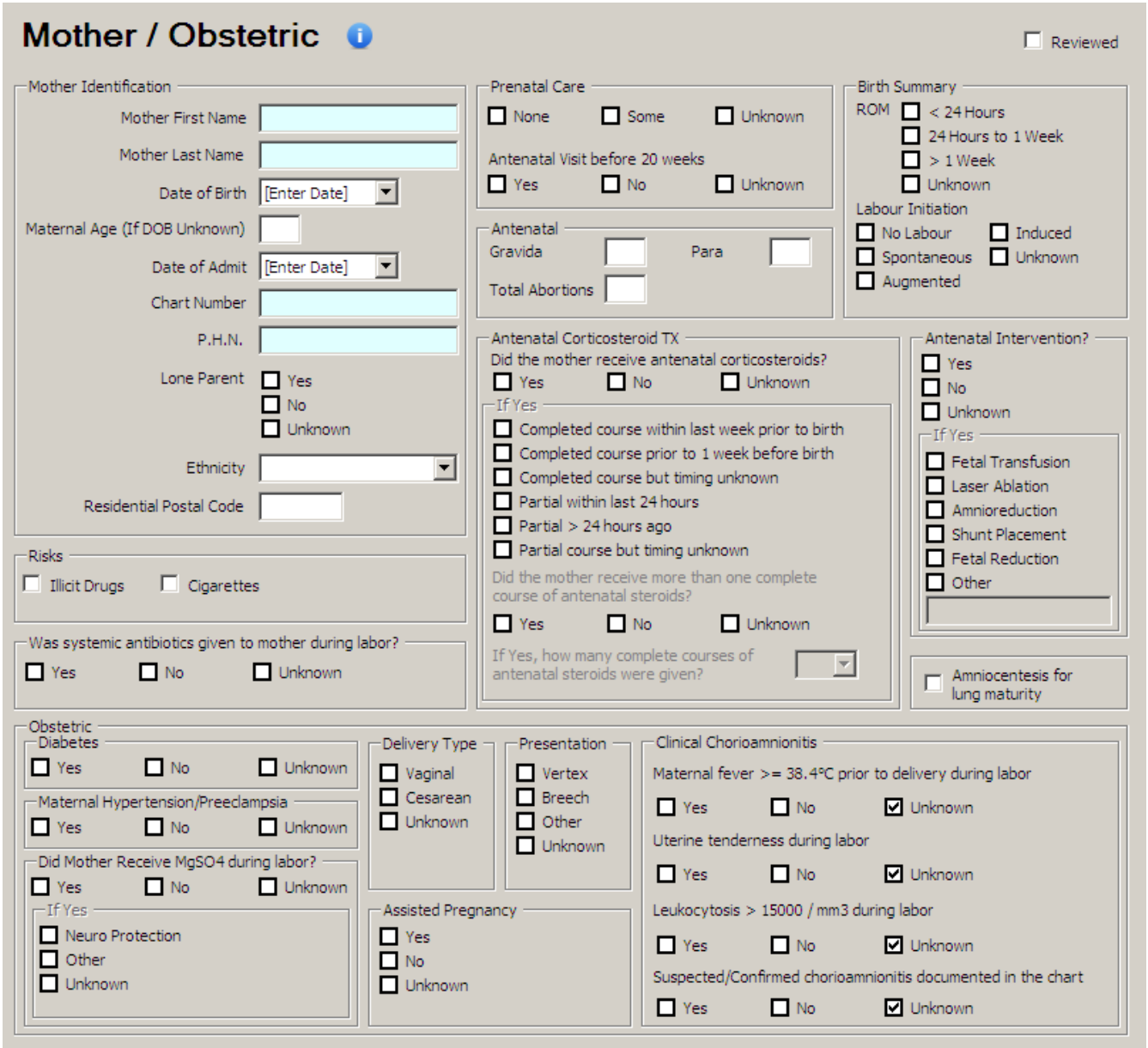
Admission Status	Admission status at the study hospital. Score as inborn or out-born (transferred in). If out-born, specify the external transfer location in the "transferred from" field. If a patient is born at your hospital, discharged home a couple of days later (without admission to the NICU) then admitted to the NICU from home this is considered an ***"inborn late admission"***. Score simply as inborn. If a patient is discharged to another hospital for 24 hours or less for surgery or other medical treatments not provided at your hospital, then this does ***not*** count as a readmission. For patients transferred out longer than 24 hours, you will need to begin a new data set and consider this now a readmission (mandatory field).
Admission Head Circumference	The first Occipito-Frontal Circumference (OFC) (Head Circumference) measured after admission, as noted in the physician or nursing notes. Record in cm. If discrepancy between two measurements, select that measured

	by the nurse. If the first recorded head circumference is after the first 48 hours of admission, or if value is not available, leave the field blank.
Admission Temp.	Body temperature in Celsius as recorded at admission to the study NICU. ***Record the first temperature listed within five hours of admission***. If the first recorded temperature is after 5 hours of admission leave the field blank. For readmissions, record the temperature at the time of this second admission to the study NICU. Use auxiliary or rectal, but not skin probe temperatures (temperature of the baby taken by the incubator). If the temperature is recorded as "<36" score as 35.9.
Admission Weight	Weight in grams as recorded at admission to the study NICU. When no admission weight is recorded – take birth weight as admission weight if baby was admitted on the first day after birth AND if baby was admitted after the first day and not weighed on admission, take weight measured in the first 24 hours after admission. If no weight is taken in the 24 hours following admission enter estimated weight on which treatment is based (mandatory field).
Infant Sex	Record sex of infant. If sex is listed as ambiguous, enter it as such; however, if later baby was identified as Male or Female, correct it before final submission. If not listed or unknown, select "unknown" (mandatory field).
Internal Transfer	Indicate from which department within your hospital the baby was transferred, if applicable. This field is optional and should only be used by sites that wish to have this data. The list of selectable items are the following. 1. PICU/PCCU (Pediatric Intensive Care Unit / Pediatric Critical Care Unit) 2. L2N/SCN (Level 2 Nursery / Special Care Nursery) 3. Operating Room 4. Outpatient Clinic 5. Emergency Department 6. CCU/CCCU (Critical Care Unit / Comprehensive Cardiac Care Unit) 7. Labor & Delivery 8. Mother/Baby Unit 9. Pediatric Ward 10. Others 11. Unknown
Transferred From	Record the name of the facility **(outside your hospital)** the infant was transferred from ***most recently***. Do ***not*** complete this item for inborn late admissions from home or from any other area within your hospital. If an infant was admitted from home (because born at home), score as an out-born and enter OT > Others > "non-medical facility" here (this is NOT considered an inborn late admission from home). For non-hospital areas or non-Canadian hospitals, you will be able to choose from the following: 1. Non-medical facility (home, school, mall, taxi, truck…etc) 2. Non-hospital medical facility 3. US Hospital 4. Non-US Hospital Outside Canada If a baby is transferred from a community hospital (or home) to your hospital emergency department which then assesses the baby condition and decides to transfer the baby to your NICU, the transferred from field refers to the **external place** from which the baby comes from when it first reached the hospital. For those types of cases, DO NOT enter the transport data in the transport screen since there was no direct transfer and admission to your NICU. For inborn cases where baby is born and then directly transferred to the NICU in the same hospital stay, leave the field empty.
Birth Place	If baby was inborn, your hospital will automatically appear here if the Settings are set appropriately (refer to page 11, "Customizability of CNN Application"). The list of selectable items is the same as for the "Transferred From" field, and will include an Unknown option (mandatory field).

PAYOR

Provincial Plan	Check if infant has provincial insurance coverage on admission. Provincial coverage is considered if mother has a personal health number (PHN), regardless of whether she has additional insurance coverage such as Blue Cross or Manulife. Only score insurance if mother has no PHN but some other form of insurance.
Insurance	Check if infant has insurance other than provincial coverage, e.g. foreign insurance. Only score insurance if mother has no PHN but some other form of insurance.
None	Check if infant has no insurance on admission.
Comments	Please enter comments for the CC here (maximum 255 characters). Do not record notes to yourself in this box. Use this item sparingly, it is not necessary to note additional maternal/obstetric information not required on the maternal screen. If you are unsure of the classification of a given congenital anomaly, diagnosis, or have a question regarding data collection please contact the CC for advice, **do not enter your question here.** **To indicate a record is invalid or erroneous, DO NOT enter "To Delete", "To Filter", "Please Ignore" or similar comments here. Use the new Deactivation feature available to deactivate invalid cases.**

SCREEN 2: MOTHER/OBSTETRIC SCREEN DEFINITIONS



Record information on this screen according to the birth mother's information. If an infant is placed in foster care, DO NOT record details regarding the foster family here.

MOTHER IDENTIFICATION

Mother First Name	First name of mother as recorded on medical records. Do not enter abbreviations. Leave blank if unknown.
Mother Last Name	Family name of mother as recorded on the medical records.
Date of Birth	Mother's date of birth. If date of birth or age is unknown leave the field blank.
Maternal Age	Enter maternal age if known.
Date of Admit	Mother's date of admission to ***birth*** hospital. If date of admission is unknown leave the field blank.

Chart Number	Mother's hospital record number for all inborn infants. For out-born infants leave the field blank.
P.H.N.	Mother's personal health number if mother has provincial coverage. If mother does not have provincial coverage or PHN is unknown leave the field blank (this information is kept locally, not transferred to CNN).
Lone Parent	Record whether the child is cared for by a lone parent (mandatory field). If a spouse (irrespective of sex) is regularly (i.e. daily) involved in the social care of this child (not financial), score "no". If no one other than the mother fits this description, score "yes". If this is unclear, score "unknown".
Ethnicity	Choose from the dropdown list the ethnicity of the mother. If there are different ethnicities recorded and the infant's birth certificate is available, use the ethnicity listed on the birth certificate. If the mother's ethnicity is unknown, record as such. ***Note:*** East Asia : Mainland China, Hong Kong, Japan, Macau, Mongolia, North Korea, South Korea, Taiwan South Asia : Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, Sri Lanka, Afghanistan, Burma, Tibet, the British Indian Ocean Territories and Iran Asia (region unknown): When Asian is mentioned, but East Asia or South Asia is not specified.
Residential Postal Code	Postal Code of mother's primary residence. Record the 6 digit number/letter code in the correct sequence (eg A1A 1A1). This should be completed for all babies, including out-born. If unknown, leave the field blank.

RISKS

Illicit Drugs	Check this box if illicit drug use applies for this pregnancy. Do not record for mothers who used illicit drugs prior to being pregnant, but **do** record for those mothers who used illicit drugs while unaware they were pregnant, although they may have stopped once they became aware of their pregnancy. The box does not define quantity so **do** record use of illicit drugs even if described as social use only. Illicit drugs include all recreational drugs (ie. marijuana, cocaine, heroin, etc.) as well as abused prescription drugs known to do damage to a developing fetus (ie. codeine, methadone). Do not count alcohol as an illicit drug and do not record its use here. If unknown or if no drugs were used during pregnancy leave the box unchecked.
Cigarettes	Check the box if cigarettes were smoked during this pregnancy. If unknown or if no cigarettes were smoked during pregnancy, leave the box unchecked.

OBSTETRIC / ANTENATAL HISTORY

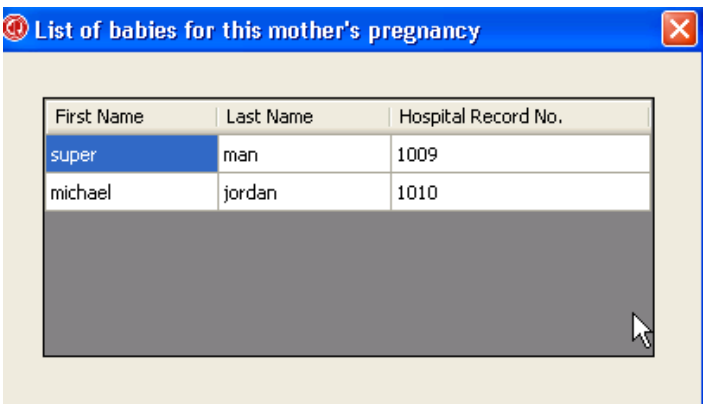
Were systemic antibiotics given to mother?	Record whether systemic antibiotics were given to the mother **in the immediate 24 hours prior to delivery**. This includes antibiotics given only enterally or parentally, not topical antibiotics. If unknown check the unknown box (mandatory field).
Prenatal Care	If the mother had ***at least one*** prenatal care visit prior to hospital admission during which delivery occurred, score as 'some'. Otherwise, score as 'none'. If a pregnancy is dated by ultrasound (U/S) (other than on this admission) or if the notes indicate the mother had prenatal screens (rubella immune or hepatitis status) assume that there was some prenatal care. If there are no obstetric records, select "unknown" (mandatory field).
Antenatal Visits before 20 weeks	Check the box if mother had prenatal visit before 20 weeks of gestational age. If mother had first trimester screen, nuchal translucency measured, anatomy scan performed, or screening for genetic anomaly performed (triple screen) then score "yes" (mandatory field).
Gravida	The number of times a woman has been pregnant, including all abortions, live and still births. Note that this number includes the current pregnancy, therefore if this is the mother's first pregnancy enter '1'.
Para	The number of viable offspring in previous pregnancies. If a mother has had twins, her para is 2.
Total Abortions	The total number of both spontaneous (miscarriages) and therapeutic (planned) abortions of mother to date.

Antenatal Corticosteroid TX	Antenatal corticosteroid treatment given to mother prior to delivery (mandatory field). These include any of the following: betamethasone, beta celestone, dexamethasone, cortisone, dihydrocortisone, but ***not*** prednisone **If Yes**: score as below a. Complete course within last week prior to birth [defined as receipt of at least two doses of corticosteroids 24 hours or more but within one week of birth] b. Complete course before 1 week of birth (defined as receipt of at least two doses of corticosteroids initiated more than one week prior to birth) c. Complete course but timing unknown (If no dates of administration are given, but the chart refers to "complete" or if chart specifies two doses were given) d. Partial course within last 24 hours (defined as any dose given less than 24 hours prior to birth) e. Partial course >24 hours ago (defined as one dose given >24 hours ago and was not repeated") f. Partial course but timing unknown (If no dates of administration are given, but the chart refers to "partial" or if chart specifies that only one dose was given) **Long course of corticosteroid for mother:** For Mothers who received systemic (oral or parenteral) corticosteroids for indications other than for lung maturity (e.g. fetal heart block, suspected congenital adrenal hyperplasia or for maternal indication etc.) for a prolonged period of time (>2 weeks), score the appropriate "Completed course" option and enter the Number of Courses as "10". If steroid was continued until the date of delivery, enter "Completed course within last week prior to birth". If it was stopped 1 week prior to birth, then enter "Completed course before 1 week of birth". Please enter the detailed reason for multiple steroid administrations in the comment box on the Admission Screen.
Number of Courses	If mother has received multiple complete courses (at least one complete and more) mark yes and indicate the number of antenatal corticosteroid courses given to mother prior to delivery. If not mentioned or unknown select unknown. If mother has received complete and partial courses in the past only enter courses that were complete (as defined above) and ignore partial courses.
Antenatal Intervention	Indicate if there were any interventions during this pregnancy to treat a fetal condition (mandatory field).
Types of antenatal intervention	If Yes was selected in the option above, indicate which intervention was performed. If the intervention is not listed, click "Other" and free text the intervention (maximum 50 characters). Shunt placement includes pleuroamniotic shunt, vesicoamniotic shunt or shunt anywhere in the body to drain fluid collection. If there was only tapping of fluid from cavity and no shunt was placed, mention it in the "other" category.
Amniocentesis for Lung Maturity	Check this box if amniocentesis was conducted purely for lung maturity, performed after 32 weeks GA (mandatory field). Please do not check this box if amniocentesis was conducted for any other reason.

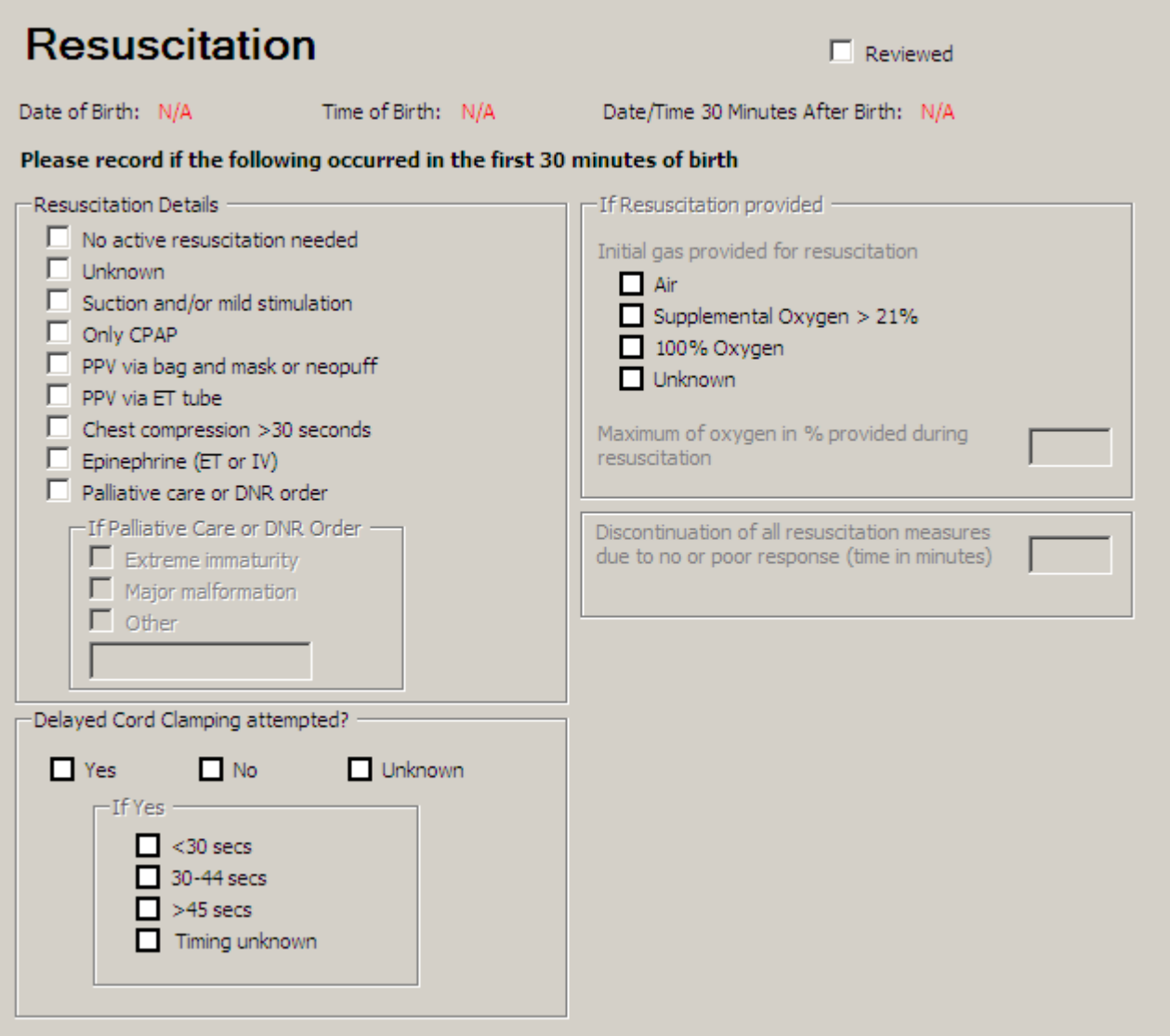
BIRTH SUMMARY (TOP RIGHT-HAND CORNER)

ROM	Rupture of maternal membranes (ROM) (either artificial or natural) recorded with regards to onset of labour. When data are available, classify them in 3 groups: <24 hours, 24 hours to 1 week and >1 week between rupture of membranes and time of birth. If data are not available mark unknown (mandatory field).
Labour Initiation	Type of labour initiation, whether none, spontaneous, augmented (speeding up labour), or induced (getting labour started). If unknown record as such. Augmentation is defined as medications given to increase the strength and/or speed of contractions (mandatory field).

OBSTETRIC

Diabetes	Answer yes, no or unknown regarding mother's status as a diabetic. This includes both gestational diabetes as well as previous maternal diabetes (i.e. prior to conception) (mandatory field).
Maternal Hypertension / Preeclampsia	Record whether maternal hypertension or preeclampsia or eclampsia are present or not, or whether this information is unknown. If obstetric information is noted, but maternal hypertension is not mentioned, select "no." If there is no obstetric data in the chart, select "unknown." Common abbreviations for this include: HTN, PIH, *HELLP* and PET. "Questionable HTN," "question of HELLP syndrome" or "rule out PET" without more information should be scored as unknown (mandatory field).
Assisted Pregnancy	Answer yes, no or unknown regarding whether or not the mother had an assisted pregnancy. This includes In-Vitro Fertilization, Intracytoplasmic sperm injection, embryo transfer or any other mechanical procedure to facilitate pregnancy or implantation. This **does not** include medication induced pregnancies such as clomiphene (mandatory field).
Maternal MgSO4	Enter YES if MgSO4 is given at any time during gestation when mom had threatened preterm labour. This includes MgSO4 given weeks before actual birth. If yes, select the reason.
Presentation	Fetal presentation at birth (mandatory field). This should be recorded as: ***VERTEX***: Head first, includes OP (occiput posterior), hand presentation with head coming with hand, or ***BREECH***: All types - footling, frank, etc.; or ***OTHER***: Includes shoulder, transverse, brow, face, oblique vertex, and compound (not vertex or breech but has other more than one parts as presenting parts) presentations. If there is no mention of presentation select "unknown." If a baby was converted to vertex presentation for delivery by c-section, ***score the initial position of the baby***. If vertex presentation can be inferred (e.g. "tried vacuum extraction"), score vertex.
Delivery Type	Record whether the delivery was vaginal or by cesarean section (mandatory field). If obstetric information is noted, but delivery type is not mentioned, "vaginal" may be assumed. If vaginal can be inferred (e.g. "vacuum extraction"), score vaginal. If there are no obstetric records, select "unknown."
Clinical Chorioamnionitis	***Chorioamnionitis*** is defined as inflammation of the chorion and amnion. Please click responses to each individual component. **All boxes are checked as unknown by default** (mandatory fields). Maternal fever ≥38.4^{0}C at any time during labor (irrespective of whether she received epidural analgesia) Uterine tenderness during labor if mentioned in the chart Leukocytosis of >15000/mm^3 during labor If there is mention in the chart of suspected or confirmed chorioamnionitis, code accordingly. Default will be unknown. If pathology report confirms chorioamnionitis, check yes in "Suspected /confirmed chorioamnionitis" box.
	The following screen will pop up to display the list of babies for this mother's current pregnancy 

SCREEN 3: RESUSCITATION SCREEN DEFINITIONS

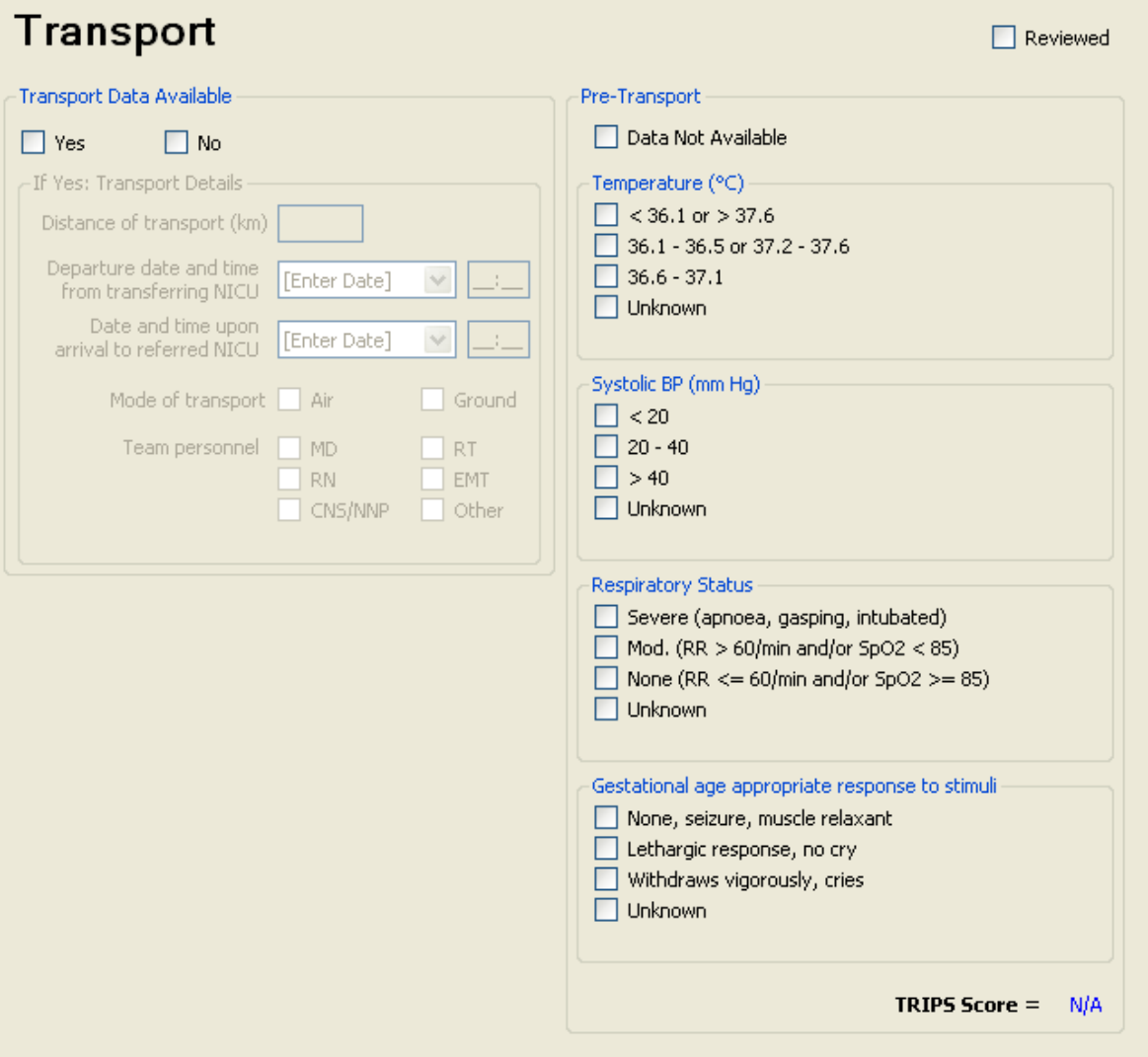


Record information on this screen according to the first 30 minutes of birth. At least one checkbox under Resuscitation Details must be selected for validation to be complete. You do not have to fill this information out for readmissions, but do for all outborns. If patient only receives CPAP, please enter PPV via bag and mask.in the Resuscitation Details category.

Resuscitation Details	Provide resuscitation details that the infant received in the first 30 minutes after birth irrespective of location of resuscitation. Note all that apply i.e. if infant required suction, stimulation, bag and mask and intubation; mark all items for the infant (mandatory field). 1. **No active resuscitation needed:** Infant did not require any resuscitation. These are typically babies with Apgar scores higher than 8. 2. **Unknown:** If the details of resuscitation are completely unknown. If the infant is intubated at birth, then infer intubation rather than unknown even if details of resuscitation before intubation are unknown. "Unknown" categories are to be used for infants for whom no details are known and cannot be inferred from available information. 3. **Suction and/or mild stimulation:** If infant required orpharyngeal or nasal suction and stimulation then code here. Typically all infants who require resuscitation beyond this stage have this stage completed except babies with meconium stained liquor. 4. **Only CPAP:** Check this box if the infant is given only CPAP without artificial inflations or positive pressure ventilation. 5. **PPV via bag and mask or Neopuff:** Check this box if positive pressure ventilation is performed,

	including artificial inflations, using bag and mask or neopuff. 6. **PPV via ET tube:** Check this box if positive pressure ventilation is performed on an infant who received endotracheal intubation. Note that ETT insertion for the purpose of suction of meconium is excluded and should not be marked here. However, if the same infant after suction requires intubation and receives positive pressure ventilation, then such infants would classify as yes in this category. 7. **Chest compression for ≥30 seconds:** For chest compressions provided for <30 seconds, do not check box. If duration is unknown and can not be inferred from supplemental information such as need for multiple doses of epinephrine etc; leave this unchecked. Compressions for <30 seconds are not collected. 8. **Epinephrine (ET or IV):** If the baby received epinephrine via ETT or PIV or umbilical catheter, then check this box. 9. **Palliative care or DNR order:** If the infant was planned to have palliative care after birth due to life limiting diagnoses and no active resuscitation was planned because of extreme prematurity or any other causes, check this box. Distinguish this clearly from first category where infant does not need resuscitation (maximum 50 characters in "Other" category).
If resuscitation provided	If the infant received any form of active resuscitation, you would indicate what was the initial gas used during resuscitation (air, supplemental oxygen or 100% oxygen). This would be the amount of oxygen the infant received at first attempt of resuscitation. Only enter value that was used during initiation irrespective whether it was increased within a few seconds or not. Usually your unit policy should clearly indicate this.
Maximum oxygen in % provided during resuscitation (note resuscitation may last <30 minutes)	Indicate what was the maximum concentration of oxygen used during resuscitation (only during resuscitation). If initial gas provided during resuscitation is 100%, this field will be automatically populated indicating that maximum concentration was 100%. If any other concentration was used, you need to indicate maximum oxygen given during resuscitation. If it is unknown, leave the field blank.
Discontinuation of resuscitation due to no or poor response	For some unfortunate infants, resuscitative measures are not successful and at times resuscitation is discontinued. Note after how many minutes of resuscitation these measures were discontinued (note that this may be longer than 30 minutes).
Delayed cord clamping	Indicate whether delayed cord clamping was attempted. If yes, select the duration of the delay. (Optional field)

SCREEN 4: TRANSPORT SHEET SCREEN DEFINITIONS



Complete the Transport Sheet for all outborn or readmitted infants transported into the study NICU from another hospital.

Do ***not*** complete, but select "**No**" for Transport Data Available and check "**Data not available**", for:

- inborn late admissions (see definition under Admission Status, pg. 22)
- patients transported between wards within your hospital
- patients admitted for the first time from home
- those born at home and transported to the hospital by ambulance
- infants transported out of your hospital
- cases admitted via emergency department or other internal departments.

Transport Data Available	Indicate whether or not any data to complete this screen is available for the infant. The rest of the fields will be activated only if the selection is "yes" (mandatory field).
Distance of transport	Refers to the distance ***between*** the referring (departing) hospital and the destination (arriving) hospital, ***one way, entered in km***. If distance is unavailable, approximate the distance for both ground and air transport.
Departure date /Departure time from transferring NICU	Date of transport from the transferring NICU. If transport occurred over midnight (i.e. two days) record the date that transport began Also record the time at which the transport team left the departing hospital. Do ***not*** record the time at which the transport team first arrived at the departing hospital. ***Note: the time at which the transport team first begins recording vitals is NOT necessarily the departure time.*** If at midnight, record as 00:00 (where midnight (00:00) is the first minute of a new day; for example: 23:59 on Jan 3rd and 00:00 on Jan 4th is 1 minute later). If unknown leave blank.

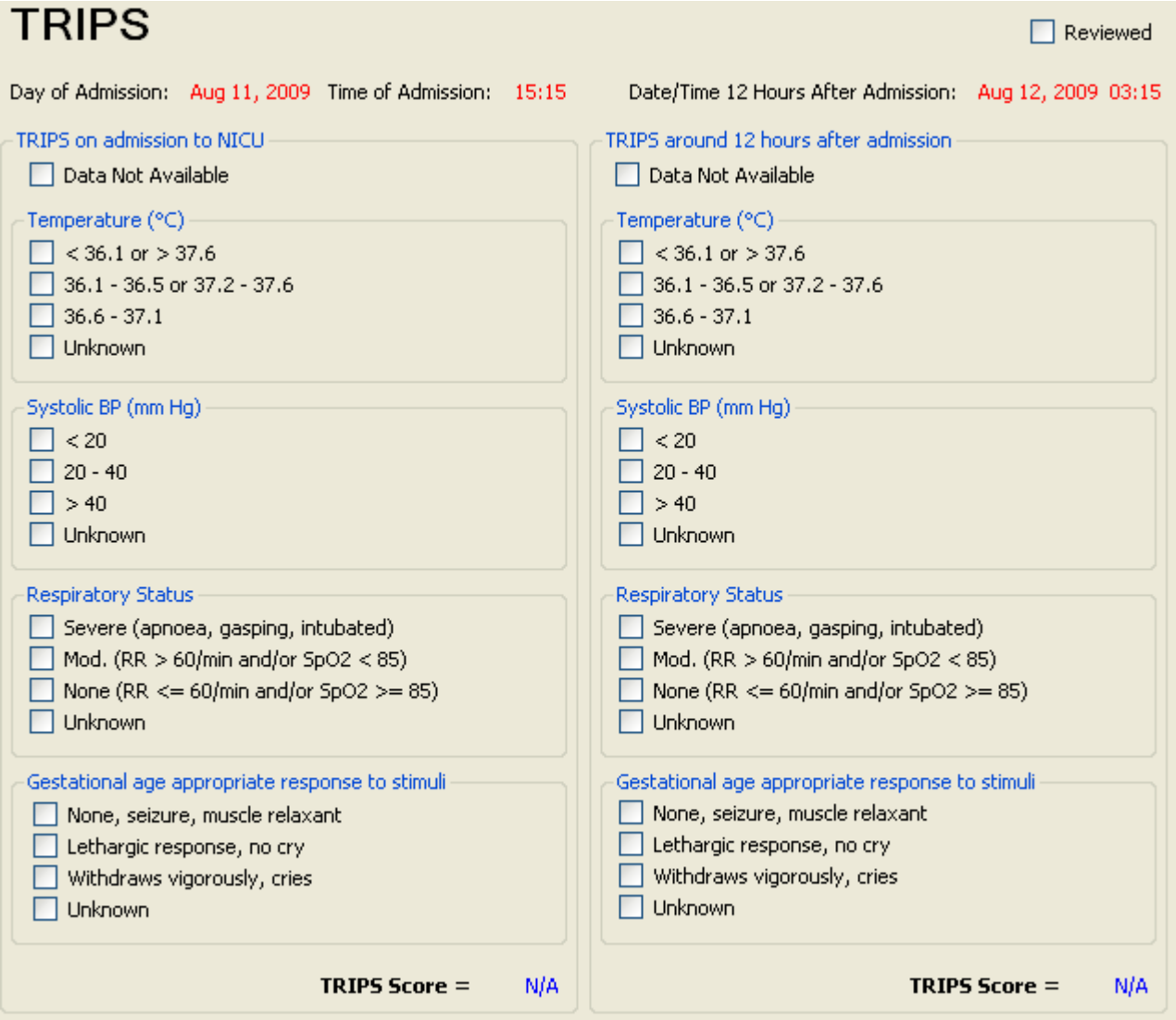
Date of transport / Arrival time	Date of transport into the study NICU and the time at which the transport team arrives at the receiving hospital and vitals are being taken by your study hospital. This time is often analogous to the admission time.
Mode of transport	Record mode of transport as air or ground. Indicate both methods of transport by checking both boxes if applicable. If unknown leave blank.
Team Personnel	Record personnel in attendance throughout transport. MD (Doctor), RN (Registered Nurse), RT (Respiratory Technician) EMT (Emergency Medical Technician; paramedic), CNS/NNP or other. Indicate multiple types of personnel in attendance by checking multiple boxes. If unknown leave blank.

PRE-TRANSPORT

Refers to the outcomes on arrival of the transport team to the referring (departing) hospital (i.e. the condition in which the team finds the infant on arrival). If, for some reason, the transport team does not assess the patient for a particular item, use measurements taken from the referring hospital within two hours of the team's arrival. If no measurement within two hours is available for a particular item, check "unknown". A TRIPS score will be generated after all necessary information has been entered (i.e. no "unknown") and you click the Save button.
If baby was not transported, select "Data Not Available" (mandatory field) in the first box.
Select "unknown" for all fields if baby was transported but information is not found.

Temperature	Body temperature in Celsius. Use auxiliary or rectal, but not skin probe (temperature of the baby taken by the incubator). If no appropriate recording select unknown (mandatory field).
Systolic BP	Systolic blood pressure in mm Hg. Arterial line pressures and cuff pressures should be weighted equally. If more than one blood pressure is recorded, score the average blood pressure. If no appropriate recording is available select unknown (mandatory field).
Respiratory Status: Severe	Record if infant is intubated and receiving mechanical ventilation. Also record if the infant is not intubated, but suffers from apneic spells or gasping or if the infant is being bagged.
Respiratory Status: Moderate	Record if respiratory rate is ***greater than*** 60 resps per minute ***OR*** oxygen saturation recording (SPO2) is ***less than*** 85 regardless of mode of ventilation (i.e. CPAP or oxygen treatment). Therefore, a patient breathing less than or equal to 60 resps per minute but who is actually on CPAP will be scored as 'respiratory status-none'. This is because we are looking to capture changes in patient condition as opposed to severity of the condition itself. If both severe and moderate symptoms are displayed, score as severe (the higher of the two).
Respiratory Status: None	Record if respiratory rate is ***less than*** or equal to 60 breaths per minute ***AND*** oxygen saturation recording (SPO2) is ***greater than*** or equal to 85 regardless of mode of ventilation (i.e. CPAP or oxygen treatment). Therefore, a patient breathing less than 60 resps per minute but who is actually on CPAP will be scored as 'respiratory status-none'. This is because we are looking to capture changes in patient condition as opposed to severity of the condition itself.
Respiratory Status: Unknown	Record if respiratory rate is missing. Selecting one field in Respiratory Status is mandatory.
Gestational age appropriate response to stimulus: none	Record if infant shows no gestationally appropriate response to stimulus. ***Also record*** if the infant has had ***seizures*** or been given ***muscle relaxants*** (i.e. pancuronium) within the last few hours of the scoring time.
Gestational age appropriate response to stimulus: lethargic response	Record if infant has a lethargic gestationally appropriate response (i.e. slow to respond, no crying, reduced activity, poor response to painful stimuli such as heel prick or venepuncture, etc.) when exposed to a stimulus.
Gestational age appropriate response to stimulus: withdraws vigorously	Record if infant shows a vigorous gestationally appropriate response when exposed to a stimulus. ***A vigorous response*** is characterized by behaviour such as crying or withdrawing. Score the most intense response demonstrated.
Gestational age appropriate response to stimulus: Unknown	Record if a gestationally appropriate response to stimulus is missing. Selecting one field in Gestational age appropriate response to stimulus is mandatory.

SCREEN 5: TRIPS SCREEN



TRIPS score data are mandatory collection for all inborn and outborn infants.

They are collected at two time points:

(a) Trips on admission to NICU: This is collected upon arrival to your NICU for outborn infants and from first set of vitals collected after stabilization and admission to NICU for inborn infants.

(b) Trips around 12 hours after admission: This is collected after 12 hours (± 4 hours) of first data collection for both inborn and outborn infants

The same four items are recorded here as in pre-transport on the transport sheet: temperature, systolic blood pressure, respiratory status and response to a gestational age appropriate stimulus.

Refer to the definitions listed above for these items, but remember to record them in the appropriate scoring time period. The TRIPS scores will be generated automatically after all necessary information has been entered (i.e. no "unknown" selections) and you click the Save button or go to another screen.

SCREEN 6: SNAP SCREEN DEFINITIONS

SNAP data on day one should be scored from the time of admission (defined as the time of first vitals in the NICU) for twelve (12) hours. Values occurring during an operation should be included. If you are missing information from the scoring period either because a flow sheet is missing, because the baby was transferred out, or died during the scoring period, complete the following screen using the information that is available. The SNAPII and SNAPIIPE scores are generated automatically once appropriate information is entered and the user clicks Save or moves to another screen. If the baby is transferred/died within the 12 hours, tick the checkbox at the top of the screen accordingly. If it is ticked, the SNAP score will not be calculated since it is based on twelve hours only.

Vital Signs:

Vital signs recorded while a baby is in the most stable condition possible. Score only non-zero values recorded in the chart for babies who are dying (i.e. ***do NOT score the low heart rate as zero for babies who die during a scoring period).***

Values listed as a range should be scored as the midpoint. Values listed as "< a certain value" should be scored as point one (0.1) less than the value listed (e.g. a low temp of <34 should be scored as 33.9). Similarly, values listed as "> a certain value" should be scored as point one (0.1) more than the value listed.

Lab Values:

Lab values should be included in the scoring period if they are ***drawn during the scoring period***. Time of draw should be taken from the flow sheet when this is explicitly recorded. If the time of the draw is not explicitly recorded on the flow sheet, assume the time the lab received the samples is within 15 minutes of the draw (in other words, include values listed as occurring within 15 minutes of the end of the scoring period).

Computer values should generally be considered more accurate than flow sheet/progress note values unless they are clearly being discounted by the clinicians. Lab values discounted by clinicians should not be recorded on SNAP. Hemolyzed values are acceptable. Pathology blood draws, cord specimens and other non-blood draws (CSF, urine) should ***not*** be scored on SNAP. Do not score "diluted" lab values or samples that are contaminated.

Transferred / Died within 12 hours	If this applies to the patient, check the box
Blood Pressure: High	Highest mean arterial pressure (MAP), also called mean blood pressure (MBP), during the ***time period***, as recorded in the nursing flow sheet. Arterial line pressures and cuff pressures should be weighted equally in choosing high/low values. However, if these values are very different, ask a staff member in the NICU or contact the CC for advice. If only systolic and diastolic pressures are recorded, assume ***mean blood pressure = diastolic + 1/3 (systolic - diastolic).*** E.g. 55/43: MBP = 43 + 1/3 (55-43) = 47. If only one blood pressure is recorded during the scoring period, enter this value as both the high and low value.
Blood Pressure: Low	Lowest mean arterial pressure (MAP), also called mean blood pressure (MBP), during the ***time period***, as recorded in the nursing flow sheet. Arterial line pressures and cuff pressures should be weighted equally. If these values are very different, ask a staff member in the NICU or contact the CC for advice. If only systolic and diastolic pressures are recorded, assume mean blood pressure = diastolic + 1/3 (systolic - diastolic). If only one blood pressure is recorded during the scoring period, enter this value as both the high and low value. ***Do NOT score the low blood pressure as 0 for babies who die during a scoring period.***
Heart Rate: High	Highest heart rate during the ***time period*** sustained for more than one minute continuously. Do not include transient heart rate values that reflect bradycardia associated with apnea/desats. If only one heart rate is recorded during the scoring period, enter this value as both the high and low value.
Heart Rate: Low	Lowest heart rate during the ***time period*** sustained for more than one minute continuously. Do not include transient heart rate values that reflect bradycardia associated with apnea/desats. If only one heart rate is taken during the scoring period, enter this value as both the high and low value. ***Do NOT score the low heart rate as zero (0) for babies who die during a scoring period.***
Respiratory Rate	Highest respiratory rate sustained for more than one minute during the ***time period***. Count spontaneous respirations only. If on ventilator with no breaths above the vent, score as zero (0). ***At some sites you may need to subtract the vent rate from the listed respiratory rate in order to find the number of spontaneous respirations.***
Lowest Temperature	Lowest body temperature during the time period (axillary or rectal but not skin probe, which is the baby's temperature recorded through the isolette) recorded in Celsius.
Lowest Serum pH	Lowest pH during the ***time period***. This may be obtained by arterial (ABG), capillary (CBG) or venous (VBG) blood gases.
First Lactate	Record the first lactate or lactic acid value reported from baby's blood. It could be venous, capillary or arterial. Do not include cord blood values.
Urine CCs	Total CCs of urine output during the ***time period***. Do ***not*** divide by birth weight. ***If notes indicate that 20% or more of the total output for the time period was lost/unmeasured*** (recorded as mixed with stool, "VOID", or overflow) ***then leave the field blank.*** To calculate whether 20% was lost, if all urine output values list specific numbers, determine whether the uncertain values (CCs recorded as mixed with stool or overflow) make up 20% of the total CCs. If some values are not recorded at all (recorded as "VOID") then determine whether the uncertain values (unmeasured diapers) make up 20% of the total number of diapers.
Seizures	If only one seizure was confirmed, score as "single." If more than one seizure was confirmed, score as "multiple." Otherwise, check "none." Confirmed is defined as witnessed by two (2) or more clinicians or diagnosed by EEG or amplitude integrated EEG. Use of antiepileptics (phenobarbital) ALONE is not enough evidence for diagnosis. However, if antiepileptics are ordered by one clinician, and seizure is observed by a DIFFERENT clinician, assume the seizure is confirmed.

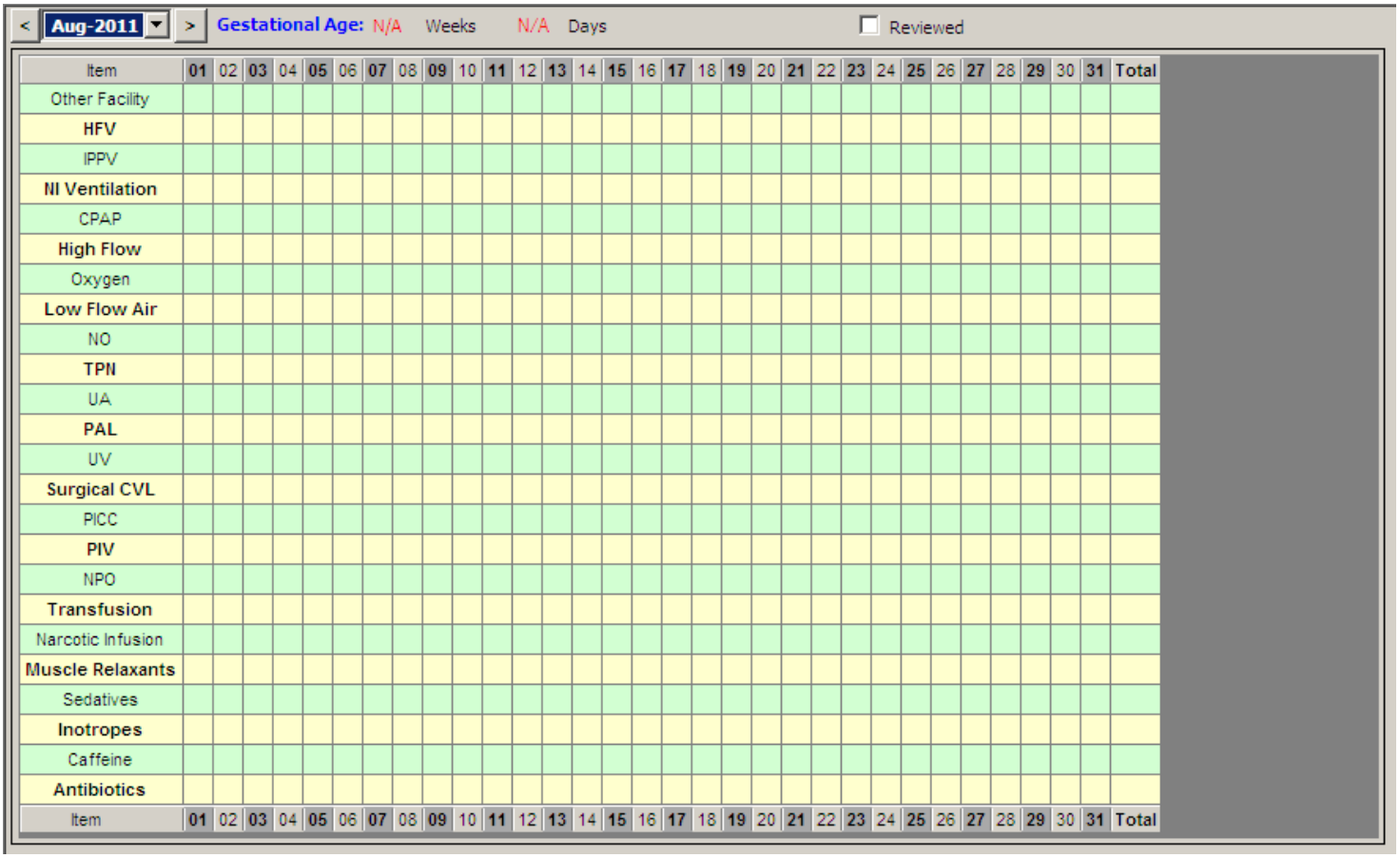
BLOOD GASES

Record only **arterial** blood gases, if there are no arterial blood gases recorded during the scoring period then leave this entire section blank. If there is only one arterial blood gas, enter the information required in the first line of blood gas with lowest pO2, and leave the remaining lines blank.

Blood Gas with lowest pO2	Select the ***arterial*** blood gas (ABG) with the lowest pO2. If there are several blood gases at the same lowest pO2, record the one occurring first. Record the FiO2 (21% - 100%) and MAWP (in cm-water) at the time blood was drawn, and the pH, PO2 and PCO2 from this blood gas. ***FiO2*** should be left blank if the baby was on blow-by oxygen at the time of the draw or if the FiO2 is unavailable. If the baby was on room air, record FiO2 as 21. FiO2s listed while "bagging" should be recorded. If the baby is on low flow oxygen during SNAP scoring period, please enter the value of the flow of additional gas in ml/min in the last column. At the same time you will need to enter how much oxygen concentration is given to the baby in the flow mixture. **Examples:** 1. If baby is getting 20 cc of low flow air- enter 20 cc in the last column and 21% in the FiO2 column. 2. If baby is getting 20 cc of low flow oxygen - enter 20 cc in the last column and 100% in FiO2 column. 3. If baby is getting 20 cc of air and 50% oxygen mixture - enter 20 cc in the last column and 50% in FiO2 column. ***MAWP***-If on CPAP only, you may use CPAP value as MAWP if there is no MAWP listed. No distinction is made between nasal (facial) and endotracheal CPAP. If MAWP recordings to do not correspond with blood gas times, assume constant MAWP between recordings. MAWP should be left blank if the baby was ***not*** receiving assisted ventilation (mechanical vent or CPAP) at the time of the draw (i.e. nasal cannula, blow-by oxygen or room air). MAWP should be left blank if the baby was receiving hand-bagging or if MAWP is unavailable.
Blood Gas with highest MAWP	Select the ***arterial*** blood gas with the highest mean airway pressure. If this is the same gas recorded above in the lowest PO2 row, select the gas with the next highest MAWP instead. If there are several blood gases at the same highest MAWP, record the one with the lowest PO2. If there are several gases with the same highest MAWP ***and*** the same lowest PO2, record the gas occurring first. If MAWP is '0' for the entire scoring period because the baby was never on assisted ventilation or no MAWPs are available, leave this row blank. Record the FiO2 (21% - 100%) and MAWP (in cm-water) at the time blood was drawn, and the pH, PO2 and PCO2 from this blood gas. ***FiO2*** should be left blank if the baby was on blow-by oxygen at the time of the draw or if the FiO2 is unavailable. FiO2s listed while "bagging" should be recorded. If the baby is on low flow oxygen during SNAP scoring period, please enter the value of the flow of additional gas in ml/min in the last column. At the same time you will need to enter how much oxygen concentration is given to the baby in the flow mixture. **Examples:** 1. If baby is getting 20 cc of low flow air- enter 20 cc in the last column and 21% in the FiO2 column. 2. If baby is getting 20 cc of low flow oxygen - enter 20 cc in the last column and 100% in FiO2 column. 3. If baby is getting 20 cc of air and 50% oxygen mixture - enter 20 cc in the last column and 50% in FiO2 column. ***MAWP***-If on CPAP only, you may use CPAP value as MAWP if there is no MAWP listed. No distinction is made between nasal (facial) and endotracheal CPAP. If MAWP recordings to do not correspond with blood gas times, assume constant MAWP between recordings. MAWP should be left blank if the baby was ***not*** receiving assisted ventilation (mechanical vent or CPAP) at the time of the draw (i.e. nasal cannula, blow-by oxygen or room air). MAWP should be left blank if the baby was receiving hand-bagging or if MAWP is unavailable.

Blood Gas with highest FiO2	Select the ***arterial*** blood gas with the highest FiO2. If this is the same gas recorded above in the lowest PO2 row OR in the highest MAWP row, select the gas with the next highest FiO2 instead. If there are several blood gases with the same highest FiO2, select the one with the lowest PO2. If there are several gases with the same highest FiO2 ***AND*** the same lowest PO2, select the gas occurring first. Record the FiO2 (21% - 100%) and MAWP (in cm-water) at the time blood was drawn, and the pH, PO2 and PCO2 from this blood gas. ***FiO2*** should be left blank if the baby was on blow-by oxygen at the time of the draw or if the FiO2 is unavailable. FiO2s listed while "bagging" should be recorded. If the baby is on nasal canula or oxygen hood during SNAP scoring period, please enter the value of the flow of additional gas in ml/min in the last column. At the same time you will need to enter how much oxygen concentration is given to the baby in the flow mixture. **Examples:** 1. If baby is getting 20 cc of low flow air- enter 20 cc in the last column and 21% in the FiO2 column. 2. If baby is getting 20 cc of low flow oxygen - enter 20 cc in the last column and 100% in FiO2 column. 3. If baby is getting 20 cc of air and 50% oxygen mixture - enter 20 cc in the last column and 50% in FiO2 column. ***MAWP***-If on CPAP only, you may use CPAP value as MAWP if there is no MAWP listed. No distinction is made between nasal (facial) and endotracheal CPAP. If MAWP recordings to do not correspond with blood gas times, assume constant MAWP between recordings. MAWP should be left blank if the baby was ***not*** receiving assisted ventilation (mechanical vent or CPAP) at the time of the draw (i.e. nasal cannula, blow-by oxygen or room air). MAWP should be left blank if the baby was receiving hand-bagging or if MAWP is unavailable.

SCREEN 7: PATIENT CHART SCREEN DEFINITIONS



This chart describes daily resource utilization by individual patients (absolute calendar day value. Day is considered from 00:00 hours to 23:59 hours on that calendar date). You need to click only boxes that apply to your patient. The chart will start from the date of admission and can be moved forward or backward as needed in terms of time. Until you submit the data this chart is editable. You can easily correct mistakes made in data entry. A group of respiratory support variables are included. Please read the explanation carefully as we would like to collect only the highest support received to a patient on a particular day. The chart is customizable for colour of row and column highlight as well as day to start and complete database. Please note that you can select multiple consecutive days by clicking on the start date, pressing and holding down the "Shift" key, and clicking again on the end date to automatically select all in between. ***Therapies administered during an operation should be included***.

Item	Standard list of treatment items to select if patient is on item on a given day. Up to four additional items can be added for an individual site's own data collection upon request to CC.
Day column	Day on which an item is administered. If the selected month is the admission month, the first day column displayed will be the admission day. If the selected month is the current month and baby is not discharged, the last day column shown will be today. If the selected month is the current month and the baby is discharged already, the last day column shown will be the discharge day. This is the absolute calendar day value. Day is considered from 00:00 hours to 23:59 hours on that calendar date.

	The Day Of Admission and Day Name can be displayed if you hover over the header cell.
Total	Total number of days **during the entire patient stay** that a certain item was administered. This value is updated dynamically when cells are checked/unchecked.

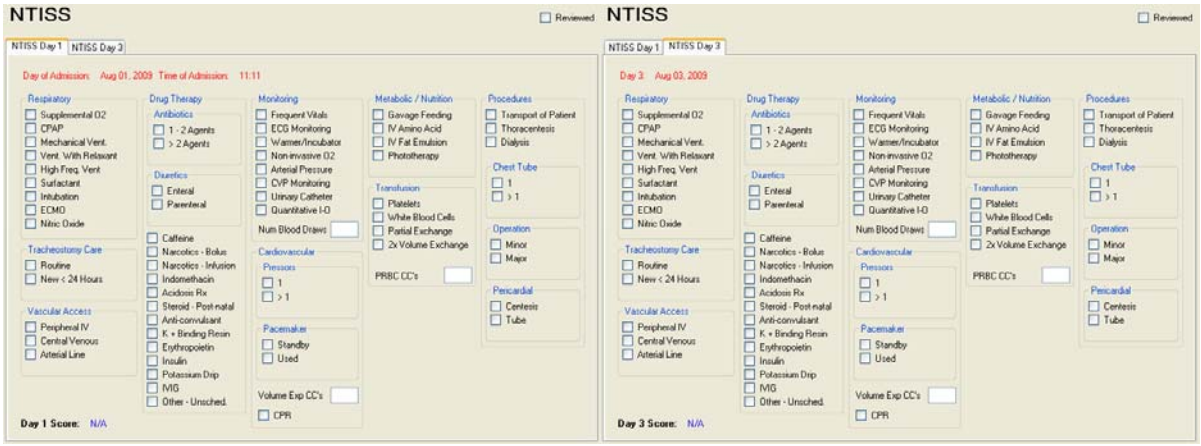
Below are details and explanation of what should be included in each grid of data collection. Note that for respiratory support, you will have to select the highest support received by infant on a particular day and not all types of support that the patient received.

#	Item	Description of Item and Selection Criteria	
1	Other facility	If patient has gone to other facility for >a majority of part of 24 hours and returned back to your facility click this box. Do not use this box if patient is discharged from your hospital and is not expected/not returned within 24 hours. This box is only for those patients who have left your unit temporarily and are likely to return or have returned to your institute within 24 hours.	
2	HFV	High frequency ventilation which includes HFOV (oscillatory) and HFJV (Jet) ventilation.	These five items are indicative of respiratory support. **Only one of these items should be checked for a particular day. The highest support received by an infant should be checked for each day.** Please do not include bagging for the treatment of apnea. The hierarchy would be HFV followed by IPPV, followed by NI Ventilation followed by CPAP and then High Flow. Enter the maximum support even if baby did not respond to the highest support.
3	IPPV	Intermittent positive pressure ventilation. This includes all forms of mechanical ventilation with endotracheal tube (except HFV).	
4	NI Ventilation	Non invasive ventilation: This includes all forms of non-invasive positive pressure support such as nIPPV, BiPAP (Biphasic positive airway pressure), SNIPPV (synchronized nasal intermittent positive pressure ventilation), SiPAP (synchronized intermittent positive airway pressure) where on the ventilator machine the respiratory rate is set. NIHFOV (non-invasive high frequency oscillation ventilation) is included.	
5	CPAP	Continuous positive airway pressure: Includes bubble CPAP, infant flow driver CPAP.	
6	High Flow	Click this if the infant is receiving oxygen or air at a rate >1.5 litres/minute	
7	Oxygen	Click this if infant is receiving oxygen higher than 21% at any given time of day. This is irrespective of whether patient is receiving mechanical ventilatory support or not. This includes if patient is receiving oxygen only for suctioning or while bottle feeding etc. This will also capture low flow oxygen as only this box will be checked.	
8	Low Flow Air	Click this if infant is receiving low flow air via nasal cannula and not oxygen. Low flow air can be selected only if the patient is on low flow air without oxygen and is not receiving any of items 2-6 (HFV, IPPV, NI ventilation, CPAP, or High Flow) at any time during the 24 hour period.	
9	NO	Use of nitric oxide on that day	
10	TPN	Use of total parenteral nutrition (aminoacids with or without lipids) on that day	
11	UA	Umbilical arterial catheter on that day. Only report if it was being used in NICU.	
12	PAL	Peripheral arterial catheter on that day. Only report if it was being used on that day. Patients with two catheters on same day will be marked once only.	
13	UV	Umbilical venous catheter on that day. Only report if it was being used on that day. Mark even if it is only saline locked or heparin locked. Patients with two catheters on same day will be marked once only.	
14	Surgical CVL	Central venous catheter other than umbilical venous catheter inserted surgically or by cutdown. This includes surgically placed catheters, broviac lines, HICKMAN ™ catheters, central portacath etc. Only report if it was being used on that day. Patients with two	

		catheters on same day will be marked once only. This also includes PICC lines inserted via "cut down" in the NICU or OR.
15	PICC	Peripherally inserted central catheter typically placed in the NICU. It may be placed by image guided therapy by a radiologist. Only report if it was being used on that day. Mark even if it is only saline locked or heparin locked. Patients with two catheters on same day will be marked once only.
16	PIV	Peripheral intravenous catheter (including intraosseous line) on that day. Only report if it was being used on that day. Mark even if it is only saline locked or heparin locked. Patients with two catheters on same day will be marked once only.
17	NPO	Days when infant is not fed anything orally over entire 24 hour period.
18	Transfusions	Days when infant had received blood or platelet transfusion. Do not include any other blood products.
19	Narcotic Infusion	Days when infant is receiving narcotic infusion. This includes morphine, fentanyl, alfentanyl and newer narcotics. Continuous infusion and not bolus infusion.
20	Muscle Relaxants	Days when infant is receiving muscle relaxants such as succinyl choline, pancuronium, vecuronium, atracurium, rocuronium, or any other muscle relaxants. It includes intermittent administration and infusion of these agents.
21	Sedatives	Days when infant is receiving sedatives such as midazolam, chloral hydrate, etc. This could be oral or parenteral, and intermittent or infusion.
22	Inotropes	Days when infant is receiving dopamine, dobutamine, epinephrine, norepinephrine, milrinone and phenylephrine. Use of epinephrine for resuscitation does not count in this field.
23	Caffeine	Days when infant is receiving caffeine. Do not enter theophylline or aminophylline here.
24	Antibiotics	Days when infant is receiving infection treatment doses of systemic antibiotics. This includes antibiotics used in pre- and post-surgery. Excludes: topical antibiotics, antibiotics used for other conditions (such as Trimethoprim for reflux, UTI prophylaxis)

Note: For items 19-24, please indicate the days on which medication was actually administered.

SCREEN 8: NTISS SCREEN DEFINITIONS (OPTIONAL ENTRY)



General:

Date of birth should be counted as DAY 1 for this screen.

NTISS should be scored from the time of admission (defined as the time of first vitals in the NICU) for twenty-four (24) hours and on **Day 3 from 0:00am to 23:59pm**. In the final calculation of scores for NTISS, points are assigned only for the most intense therapeutic intervention. For example, a patient who began a scoring period on nasal CPAP and was then placed on mechanical ventilation, would receive only final points for mechanical ventilation. In completing the scoring period data collection, however, both of these respiratory therapies should be selected, as this provides maximal information regarding the patient's hospital course. Review both the NICU flow sheet and the nursing/physician progress notes in order to obtain all valuable information regarding the performance of procedures. ***Therapies administered during an operation should be included***. NTISS scores (Day I and III) will be generated once relevant information is entered and screens are saved.

Medications:

The best strategy is to check the medication sheets to confirm that each medication was administered during the time period. Score medications (diuretics, aminophylline, narcotics, steroids) administered during the time period whether given po, pg, ng, IV, IM or aerosol. Score any medications classified as pressor, antibiotic, acidosis treatment, insulin drip, IVIG and "other" (unscheduled) only if the medication was administered via IV (parenterally), IM or via aerosol (inhaled, nebulized). ***For categorizing medications into types refer to appendix I***.

RESPIRATORY

Supplemental O2	Receipt of ***continuous*** enriched oxygen concentration (>.21 FiO2) by oxyhood, nasal cannula, nasal catheter, facemask ***or other forms of respiratory support***. Continuous means that the patient is receiving oxygen throughout the time period and not just in brief episodes as needed, ie. during feeds. "Blow-by" oxygen does not count unless it is the mode of oxygen administration used in a transport situation. ***Do not score oxygen given as part of a hyperoxia test.***
CPAP	Use of Continuous Positive Airway Pressure (or Continuous Negative Airway Pressure). This may be administrated either by a nasal prong or nasopharyngeal CPAP apparatus, or via an endotracheal tube. Nasal cannula oxygen (occasionally labeled "prongs") does not count as CPAP, but should be counted as Supplemental O2. Do not assume that "prongs" means nasal cannula: score as CPAP if there is pressure recorded, otherwise score as Supplemental O2. ***Do not score facial CPAP as CPAP, even if there is a pressure recorded.***
Mechanical vent.	Use of conventional mechanical ventilation during the ***scoring period***, regardless of IMV rate. If pavulon/pancuronium was used then score as mechanical ventilation with muscle relaxation.
Vent. with relaxant	Mechanical Ventilation along with administration of muscle relaxants (pancuronium, pavulon, succynyl choline (sux), vecuronium (vec)). At least one dose of relaxant must be given during the ***scoring period***. Residual effects of drug given before the beginning of the ***scoring period*** do not count. Score HIFI with relaxants as HIFI only. In this case, do not score Pavulon ***(or other muscle relaxants)*** under "other meds."

High freq. vent.	Use if HIFI (high frequency ventilation, by oscillator, jet or flow-interrupter) at any time during the SCORING PERIOD. Score HIFI with relaxants as HIFI only. In this case, do not score Pavulon ***(or other muscle relaxants)*** under "other meds."
Surfactant	Receipt of exogenous surfactant replacement therapy (Bles, Exosurf, Survanta, Curosurf, Infasurf) during the ***scoring period***.
Intubation	Undergoing an intubation procedure during the ***scoring period***. This can be placement of new endotracheal tube (ETT), the exchange of an existing ETT for a new one (for example replacing of an oral tube with a nasal tube) or the reinsertion of an ETT which had become dislodged. Continuous presence of an ETT does NOT score points, nor does re-taping of an existing ETT. Do not count intubation occurring prior to the ***scoring period***, such as intubation in the delivery room. ***Nasal prong CPAP insertion does not count as endotracheal intubation.***
ECMO	Infant was on Extra Corporeal Membrane Oxygenation (ECMO) at any time during the scoring period. ECMO starts when the patient is removed from pump/bypass, ***not*** at the time of decannulation.
Nitric Oxide	Treatment with ***nitric oxide*** (NO) by inhalation. It is included on the NTISS checklist in order to identify treated infants and to track the frequency of use.

TRACHEOSTOMY CARE

Routine	Tracheostomy routine care on any patient with a tracheostomy in place for more than 48 hours.
New, <24 hr	Presence of a tracheostomy placed surgically within the ***scoring period or the 24 hours preceding the scoring period***. Do not double count this with Major Operation.

VASCULAR ACCESS

Peripheral IV	***Presence*** of one or more intravenous catheters (including heparin locks for drug administration) during the ***scoring period***.
Central venous	***Presence*** of a central line (CVL) during the ***scoring period***, including: ***umbilical venous lines (UVL), BROVIAC™ catheter lines (or other surgically placed, i.e. CVL lines) or percutaneous ("spaghetti") lines*** which are placed centrally. Score lines regardless of whether central placement is achieved. Do ***not*** score lines that are never successfully placed. Where it is unclear whether the line was successfully placed, score based on whether the line has begun infusing solutions or not. CVP monitoring is scored separately.
Arterial line	***Presence*** of any arterial line (umbilical (i.e. UAL) or peripheral (i.e.PAL) during the ***scoring period***. If the arterial line is monitored for on-line blood pressure, score "Arterial Pressure Monitoring" as well.

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DRUG THERAPY

Antibiotics: 1-2 agents *or* >2 agents	Receipt of ***intravenous*** antibiotics during the ***scoring period***. Topical antibiotics ***should not be scored***. If ***one or two*** antibiotics are administered ***concurrently***, select ***"1-2 agents."*** If ***three or more*** antibiotics are administered ***concurrently***, select ***">2 agents." If three antibiotics are administered during the scoring period, but one is terminated before another is initiated (only two are administered concurrently), select "1-2 agents."*** Antibiotics include acyclovir, amphotericin, ampicillin, cefazolin, cefotaxime, clindamycin, fluconazole, gentamicin, kefzol, penicillin and vancomycin.
Diuretics: Enteral or Parenteral	Administration of any diuretics during the ***scoring period***. If ***any of*** the diuretics are administrated intravenously at any time during the scoring period, select ***"parenteral."*** If all diuretics are administrated orally (po/pg), select ***"enteral."*** If no diuretics are given, do not score. Diuretics include: aldactone (spironolactone), diamox, diuril (chlorothiazide or CTZ), hydrochlorothiazide (HCTZ) and lasix (furosemide).
Caffeine	Caffeine administration PO or IV during the ***scoring period***.

Narcotic-bolus	Any single or multiple dose (also known as "push") administration of narcotics, IV or PO during the ***scoring period*** that is not a continuous infusion. Narcotics include fentanyl, meperidine, methadone, morphine, morphine sulphate (MSO4) and opium solutions (i.e. Dilute tincture of opium (DTO)).
Narcotic-infusion	Any ***continuous infusion*** of narcotics during the ***scoring period***. Narcotics include fentanyl, meperidine, methadone, morphine, morphine sulphate (MSO4) and opium solutions (i.e. Dilute tincture of opium (DTO)).
Indomethacin	Receipt of ***any*** dose (complete or not) of indomethacin (Indocin) during the ***scoring period***.
Acidosis Rx	Use of IV bicarbonate ("neut"), ***THAM*** or ***NaHCO3 (sodium bicarbonate)*** during the ***scoring period***. These drugs are usually used to treat serious acidosis, although this is ***not*** a requirement for scoring. Use of acetate in the IV fluid (i.e. Na acetate or K acetate) does ***not*** count for this variable.
Steroid - post-natal	Steroid use (IV, po or nebulized ***but not topical***) during the ***scoring period***, regardless of indication. Steroids include beclamethasone, beclovent puffs**,** cortisol (solucortef), dexamethasone (decadron), hydrocortisone**,** methylprednisolone (solumedrol) and prednisone.
Anti-convulsant	Anti-convulsants given regardless of reason for administration, during scoring ***period***. Includes ativan, diazepam, dilantin, diphenyl hydantoin (DPH), lorazepam, phenobarbital, phenytoin and Valium.
K+ binding resin	Administration of potassium binding resin (Kay-exylate) either via gavage or rectal tube ***during the scoring period***.
Erythropoietin	Administration of erythropoietin during the ***scoring period***.
Insulin	Use of insulin (IM or IV but usually by infusion) during the ***scoring period***.
Potassium drip	***Initiation*** of a concentrated potassium (K+) infusion or bolus during the ***scoring period***. Concentration must be at least 60 meq\L (6 meq\100 ml) or 450 mg\100ml or 60 mmol\L (6 mmol\100ml) (Conversion: 1 mEq\L of potassium = 75 mg\L)
IVIG	Intravenous Immune Globulin (IVIG) given for any reason during the ***scoring period***. Usually documented in the nursing medication sheets as single dose medication.
Other - unscheduled	Any parental or inhaled drug beyond those already noted (antibiotics, diuretics, aminophylline, narcotics, indomethacin, acidosis treatment drugs, steroids, anticonvulsants, erythropoietin, insulin, potassium, surfactant, pressors). Such drugs might include sedatives, inhaled agents or clotting factors. In general, ***drugs given by mouth are not scored.*** However, if you are unsure contact the CC for advice. Do ***not*** count routine vitamin K injections, eye prophylaxes, routine IV fluids (including electrolyte (NaCl, KCl) and heparin additives) or glucose solutions (i.e. D10W). Do ***not*** count hepatitis vaccine. Do ***not*** score calcium given routinely in IV fluids, ***but do*** score calcium bolus/push ordered separately. Do ***not*** score any topical medications or vitamins.

MONITORING

Frequent vital	3 out of the 4 vital signs (heart rate, respiratory rate and either temperature or blood pressure) recorded in nursing notes\flow sheet ***2 or more times*** in any given hour, ***OR 6 or more times*** in any 8 hours. Ventilator rate may be substituted for respiratory rate where applicable. Score based on heart rate and either temperature or blood pressure only, for babies on HiFi ventilation when no respiratory rates are listed. ***Skin probe temperatures*** (the baby's temperatures taken through the incubator) ***do not*** count as temperature for this item.
ECG monitoring	Use of a cardiac and/or apnea monitor during the ***scoring period***.
Warmer/incubator	Use of an infant warming device during the ***scoring period***. This includes warming tables and incubators. Short term use in the delivery room does not qualify, nor do portable warming lights.
Non-invasive O2	Use of any non-invasive blood gas monitoring devices during the ***scoring period***. Such devices include: Transcutaneous O2 monitors (TcO2 or TCM), Transcutaneous CO2 monitors (TcCO2), Pulse oximeters (SaO2, SpO2, or Sat monitors), End-tidal CO2 (ETCO2), Mass Spectrometer.

Arterial pressure	On-line arterial pressure monitoring during the ***scoring period***. This may be umbilical or peripheral. ***Score transducer (invasive), but not Doppler (non-invasive) monitoring.*** Points for this variable are additive with those for arterial line.
CVP monitoring	Monitoring of Central Venous Pressure (CVP) at any time during the ***scoring period***. This is differentiated from CVL by the use of a pressure transducer. CVL presence should be scored separately.
Urinary catheter	***Presence*** of a urinary catheter ***regardless of reason used*** during the ***scoring period***. This should be scored when present in addition to scoring strict monitoring of Input & Output.
Quantitative I-O's	Strict measurement of Input & Output for any portion of the ***scoring period***. This would be marked by numeric measurement of urinary output, such as weighted diapers or measured output from a urinary catheter. Qualitative output (checks or plus signs for voids) do not score.
Num Blood draws	Number of ***separate blood draws during the scoring period***, regardless of the number of tests obtained per blood draw, or the volume withdrawn for tests. A blood draw is indicated by a cluster of tests noted on the flow sheet as drawn at the same time. Glucose reagent strips (Dextrostix, others) ***also count as a draw*** if done by heel or finger prick. If no blood draws occurred during the scoring period enter 0, if number of draws unknown leave the field blank.

CARDIOVASCULAR

Pressors: 1 or >1	Use of ***intravenous blood pressure medications*** (pressors or vasoactive drug infusions) given ***concurrently during the scoring period***. If only a single infusion is administered at once, score as "1". If a second infusion was in use **at the same time** during the scoring period then ">1" should be scored instead. Blood pressure medications include dobutamine, dopamine, hydralazine***,*** isoproterenol (isuprel), nitroglycerine (NTG), nitroprusside (nipride), phenylephrine, priscoline***,*** prostaglandins and tolazoline. Epinephrine (epi drip) should be scored here ***unless*** given as part of CPR. If given as part of CPR, score as CPR only. Do ***not*** score inhaled nitric oxide here.
Pacemaker: Standby or Used	If cardiac pacemaker available on standby but never used during the ***scoring period***, then select "standby". If the pacer is actually used during the ***scoring period*** select "used." Any form of external pacing qualifies including direct pacer wires, trans-esophageal pacing, trans-catheter.
Volume Exp CCs	Total CCs of volume support ***initiated during the scoring period***, even if some of the volume is administered ***after*** the scoring period. This should be distinct from routine IV stock, and includes albumin (5%), albumin (25%), fresh frozen plasma (FFP), lactated ringers (LR), NaCl bolus***,*** normal saline (NS, 0.9% Saline), plasmanate and thawed plasma. If different types of volume expansions are given during the ***scoring period***, include the sum of all these. This should ***not*** include bolus volume administered of bicarbonate, THAM or RBCs. Do ***not*** score such things as D10W, .25NS, .5NS or routine HepNS. If no volume given for expansion support , or if volume unknown leave the field blank.
CPR	Cardio-Pulmonary Resuscitation (CPR) ***administered during the SCORING PERIOD***. There must be documentation of cardiac compressions for either bradycardia or electro-mechanical dissociation. The use of bicarbonate and/or epinephrine alone is insufficient.

METABOLIC / NUTRITION

Gavage feeding	Feeding using tubes to deliver formula. Specific modes include: naso-gastric (NG) or oro-gastric (OG), naso duodenal (ND), or via gastrostomy. This should be scored if ***any*** feeding is delivered in this manner, including water. ***Do NOT score gavage feeding if a gavage tube was not being used to deliver formula, but rather was in place only to deliver medications.*** Gavage feeding is often marked in nursing flow sheets with numbers in the "feeding type" column (i.e. "#8" for use of an 8-french feeding tube) or with an abbreviation such as PG, NG, G or g.
IV amino acid	Parenteral nutrition (PN) / hyperalimentation (HAL) ***initiated or continued*** during the ***scoring period***. The IV stock must contain ***amino acids (AA)*** to be scored as parenteral nutrition; high glucose concentration alone is not sufficient.
IV fat emulsion	Use of IV fat emulsion (intra-lipids, lipids) ***initiated or continued*** during the ***scoring period***.

Phototherapy	Phototherapy ***initiated or continued*** during the ***scoring period***.

TRANSFUSION

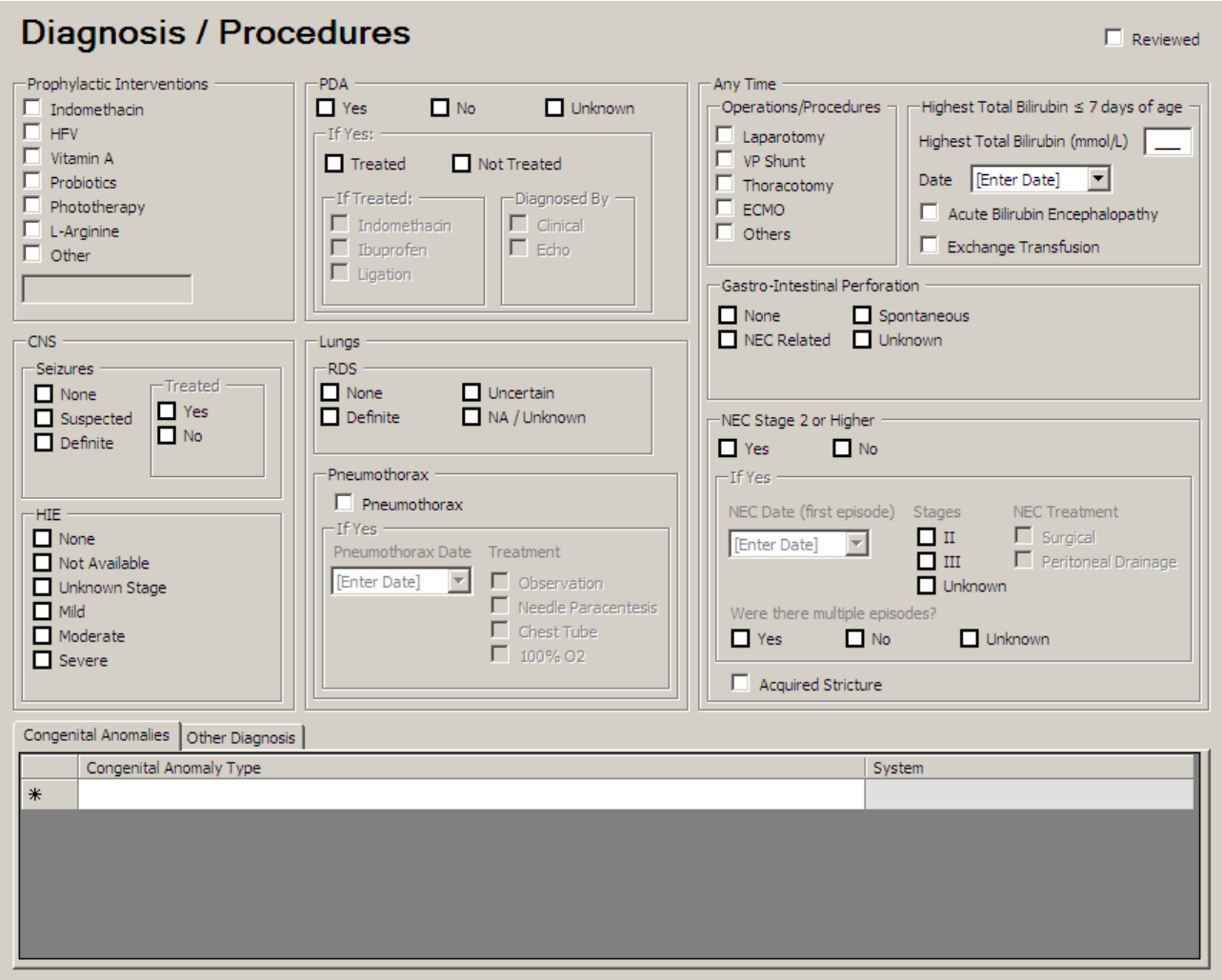
Platelets	Transfusion of platelets ***given at any time during the scoring period***.
White blood cells	White Blood Cell (neutrophil) transfusion ***initiated during the scoring period***.
Partial or reduction exchange	Partial or reduced volume exchange transfusion ***initiated during the scoring period***. This is done to treat polycythemia (high hematocrit). It does not matter whether volume is replaced with albumin or normal saline (but not PRBC's or Whole Blood). Fluid given as part of exchange should ***not*** count as part of volume for the variable ***volume expansion***.
Double Volume exchange	Exchange transfusion ***initiated during the scoring period***. The volume of blood (double volume, single volume, partial) does not make any difference. The blood volume used in the exchange transfusion should ***not*** be counted towards the transfusion or extensive transfusion variable.
PRBC CCs	Total CCs of blood given in transfusions ***initiated during the scoring period***, even if some volume was administrated ***after*** the scoring period. ***Do not*** include volume from transfusions initiated ***before*** the scoring period, even if some volume was administrated during the scoring period. This can be either packed cells (PC, PRBC) or whole blood. Blood used for exchange transfusions does not count. If no blood was transfused during the scoring period , or if unknown leave the field blank.

PROCEDURES

Transport of patient	Transport of patient within the hospital or between hospitals if applicable (e.g. radiological procedure ***such as fluoroscopy, CT scan or MRI***). Do ***not*** score for outborn infants who arrive via ambulance. It is mutually exclusive with trips to the operating room or cath lab (Major Operation and Minor Operation). ***Do not score if the infant is transported for non-medical reasons (e.g. baby transported to be with the mother) and do not score for circumcision.***
Thoracentesis	Needle thoracentesis or paracentesis (diagnostic needle aspiration from chest) during the ***scoring period***. If the needle aspiration occurs as part of chest tube insertion then it should ***not*** be counted.
Dialysis	Dialysis initiated or continued during the ***scoring period***. The presence of a dialysis catheter alone is not sufficient.
Chest tube: 1 or >1	***Presence*** of a chest tube at any time during the ***scoring period***. Needle or Angiocath aspiration alone should be scored as Thoracentesis.
Operation or Procedures	Operations initiated or continued during the ***scoring period***. Operations defined as all operations/procedures performed in the operating room and/or requiring anesthesia. If multiple operations were performed under the same anesthesia episode include them all. Four major operations/procedures we would like to capture: Laparotomy: Includes bowel resection, ileostomy, repair of abdominal omphalocele, NEC. This does not include laparoscopy. V-P shunt: This does not include craniotomy for other reasons. Thoracotomy: This includes ASD closure, BTS for tricuspid atresia, coarctation repair, vascular ring operation. This does not include thoracoscopy. ECMO: Others: all other operations/procedures go under this category. This includes placement of a HICKMAN™ catheter, reservoir or shunt CNS, re-section of an occipital encephalocele, myelomeningocele or omphalocele, bronchoscopy, cytoscopy, cryo/laser treatment, balloon septostomy, cardiac catheterization, CVL placement (with anesthesia), examination under anesthesia, gastrostomy, herniorrhaphy, laryngoscopy, nephrotomy**,** rectal biopsy, skin grafting and surgically placed catheters. *(continue on next page)*

	PLEASE do not include: Chest tube placement, cutdown venous access, ECMO, extra digit removal, peripheral arterial line placement, thora/paracentesis and UAL or UVL placement. ***For a complete list of major/minor and exclusion operations see appendix II***.
Pericardial: Centisis	Pericardiocentisis performed at any time during the ***scoring period***. This might be done to remove fluid or air. Centesis done as part of pericardial tube placement should score only as Pericardial Tube-not both. However, if a pericardiocentesis is followed several hours later by tube placement, both should be scored.
Pericardial: Tube	***Presence or placement*** of a pericardial tube during any part of the ***scoring period***. Points can also be scored for a pericardiocentesis performed before pericardial tube placement, but not concurrent with it.

SCREEN 9: DIAGNOSIS/PROCEDURES SCREEN DEFINITIONS



Score all major diagnoses and procedures that that you are aware for the infant on this screen. If a baby is transferred into your NICU, score only issues pertaining to the baby ***at the time of transfer*** into your NICU. If the initial diagnosis of a current issue occurred at the transferring hospital, use the admission date to your NICU as the diagnosis date.

Likewise for readmission records, you are not required to record diagnoses that have already been resolved in the initial admission. Note that only ongoing and new issues pertinent to this particular (readmission) visit need be recorded. Do ***not*** score questionable diagnoses except where the data item has an uncertain/suspected category (i.e. RDS, seizures)***. If there are conflicting diagnoses, where available use autopsy findings as they are more reliable than diagnostic tests.***

Prophylactic Interventions	Check off any applicable interventions that have been given to the patient. These interventions have to be given for prophylactic purposes only. They have to be administered before a relevant diagnosis is ascertained. These interventions are usually given in the first 24-36 hours after birth. For interventions not listed, select "other" and write the intervention in in the free text box (maximum 50 characters).
Indomethacin	If indomethacin is used within first 24 hours and is not used for the purpose of treatment of PDA.
HFV	If high frequency ventilation is used from beginning of the resuscitation and not when it is used as a rescue therapy.
Vitamin A	If infant received thrice weekly injections of Vitamin A to prevent CLD.
Probiotics	If infant was started on any form of probiotics within first 3 days after birth.
Phototherapy	If infant was commenced on prophylactic phototherapy without bilirubin levels were either measured or if measured it was started before infant meeting threshold for commencing phototherapy.
L-Arginine	If infant received additional dose of L-arginine in TPN or via other parenteral route. This will be dictated by your unit policy.
Other	If infant was commenced on any other intervention that were reported to be of prophylactic nature.
CNS: ***Seizures***	Occurrence of seizures at any time during the hospital stay. ***Score "None" if*** there were no seizures or seizure-like movements mentioned during the hospital stay. ***Score "Suspected" if:*** ➢ observed by only one clinician ➢ there were movements of uncertain significance observed by more than one person. Descriptions of seizure like movements should be considered movements of uncertain significance when not accompanied by a diagnosis of seizures or administration of phenobarbital. ***Score "Definite" if:*** ➢ witnessed by 2 or more clinicians ➢ diagnosed by EEG or a-EEG ➢ there is one clinical observation of seizure like movements coupled with administration of phenobarbital ***or*** with a diagnosis of seizures by a ***different*** clinician. The use of antiepileptics/ anticonvulsants (i.e. phenobarbital) is not alone evidence of definitive diagnosis, but can be considered as confirmation if prescribed by a second clinician. When an EEG is normal and contradicts a seizure diagnosis, score according to attending physician/neurologist diagnosis made ***after*** reviewing the EEG results. ***Indicate whether the seizure was treated by checking the appropriate box to the right.***
CNS: ***Hypoxic-Ischemic encephalopathy (HIE)***	Score this section ***only*** if all of the following preliminary conditions are met 1. Documented evidence of an acute perinatal event such as fetal distress, cord prolapse, uterine rupture, reduced fetal movements, abruption, antepartum hemorrhage or emergency cesarean section due to fetal distress 2. Evidence of intrapartum hypoxia: at least one of: a. Apgar score of ≤5 at 10 minutes; b. Mechanical ventilation or resuscitation within 10 minutes; c. Cord pH < 7.00 (venous or arterial), or an infant arterial pH < 7.00 or base deficit ≥ 12 within 60 minutes of birth ***Record data for encephalopathy if the above criteria are met.*** 1. **None:** either baby does not meet entry criteria, or baby meets <u>some</u> criteria but has <u>no</u> evidence of encephalopathy 2. **Not available:** baby died before a diagnosis could be made or data is unavailable 3. **Unknown Stage:** (either of) a. baby meets entry criteria but data on staging could not be ascertained b. baby did not meet entry criteria but hypothermia treatment initiated 4. If the chart mentions staging of encephalopathy, use the highest grade at any time during the stay in NICU (Stage 1 = **Mild**; Stage 2 = **Moderate** and Stage 3 = **Severe**) 5. If seizures are present, record as Stage 2 or Moderate encephalopathy 6. If the chart is unclear about staging, check for data on neurological examination and record a. Stage 1 or Mild: irritability, jitteriness, hyperalertness b. Stage 2 or Moderate: lethargy, hyper-reflexia, miosis, bradycardia, seizures, abnormal tone, weak suck and Moro reflex c. Stage 3 or Severe: stupor, flaccidity, small to mid-position pupils which react poorly to light, decreased stretch reflexes, hypothermia and absent Moro reflex The Encephalopathy screen will activate only when Mild, Moderate, Severe, or Unknown Stage is selected.

PDA	First question would be whether infant has PDA or not, or if it is unknown. If infant has no clinical suspicion of PDA – enter no. If infant received treatment for PDA – enter yes. If infant had clinical or echocardiographic suspicion of PDA – enter yes. ***If PDA was detected, then was it treated? yes or no*** If it was treated – how? 1. Indomethacin 2. Ibuprofen 3. Surgical ligation ***(also score as Operations/Procedures "Others")*** You can choose multiple options here. Indicate how PDA was diagnosed – clinical or via echocardiography. Do not score only for the fact that infant had an echocardiogram, but score if PDA was diagnosed by this route. You can select both options if applicable.
RDS	***Respiratory distress syndrome (RDS)***, sometimes called hyaline membrane disease (HMD), should be diagnosed within the first two days after birth (ie on day 1 or 2). The classical signs of RDS are less commonly seen today because of the use of exogenous surfactants for RDS prophylaxis and early rescue. RDS most commonly occurs in preterm babies but can occur in term babies. RDS is recorded by clinical certainty and not by severity. There is a hierarchy to the identification of a baby with RDS: firstly, the chest x-ray report from day 1 or 2; secondly according to physician diagnosis; and thirdly, if there is surfactant administration after 2 hours of age (on day 1 or 2). This hierarchy is to be used when there are conflicting diagnoses. However, if any one of the sources is definite, and the others are not, score RDS according to what definite information you have. If the evidence is conflicting, you may seek clarification from an involved physician. Score "***Definite***" if: (1) a chest x-ray report from day 1 or 2 reports definite RDS, Hyaline membrane disease (HMD) OR (2) clinicians specify definite RDS based on typical symptoms and signs (grunting and retractions and/or oxygen requirement), and/or a typical chest x-ray (diffuse granularity, "ground glass"), OR (3) exogenous surfactant is administered beyond 2 hours of age (on day 1 or 2) but not for meconium aspiration syndrome or pneumonia or pulmonary hemorrhage. If the CXR expresses doubt about the diagnosis, review the physician diagnosis with attention to dates of diagnoses as compared with x-ray dates, and find out if surfactant was given. Score "***None***" if: (1) the clinicians describe "respiratory distress" without a specific diagnosis of RDS, no X-ray confirmation, and no administration of surfactant, OR (2) there is a confirmed alternative pulmonary condition (for example "transient tachypnea of the newborn", "meconium aspiration syndrome", "congenital pneumonia") and no RDS according to any of the three definitions, OR (3) if there is no respiratory distress and none of the three definitions are satisfied. Score "***Uncertain***" if: (1) there was respiratory distress in the first 2 days of age but the clinicians recorded doubt about the diagnosis of RDS, OR (2) surfactant was given in the first 2 hours after birth and there was no subsequent confirmation of diagnosis of RDS by CXR or clinically, and no further treatment with surfactant. Do not score uncertain if you are unsure about what the clinicians are saying. In this case, investigate further in the chart, or ask one of the clinicians in the NICU about RDS. Score "***Unknown/NA***" if the baby died shortly after birth and no diagnosis of RDS was made.
Pneumothorax	Occurrence of pneumothorax, as diagnosed by chest x-ray, thoracentesis with documented removal of air or autopsy report. While placement of a chest tube is a common response, it is not necessary for diagnosis. This field does not include pulmonary interstitial emphysema (PIE).

Pneumothorax date and treatment	Date of occurrence of the ***first definite*** pneumothorax by chest x-ray, documented needle aspiration ***or autopsy report***. ***If the first time a pneumothorax is diagnosed is by autopsy report, score the date of death (not the date of autopsy) as the pneumothorax date***. If the baby is transferred in with a pneumothorax, record the pneumothorax date as the admission date and record the date ***of the first pneumothorax diagnosed*** at the transferring hospital in the comments box, if available. If date of first pneumothorax is unknown, leave the field blank. If no pneumothorax during this hospital visit, leave blank. Treatment of pneumothorax: 1. Observation (No intervention was performed) 2. Needle paracentesis or needle thoracentesis: This means draining air from pleural space with a needle and syringe and not leaving any permanent drainage. 3. Chest tube placement: This means placing a tube in chest wall and draining air via negative pressure suction. 4. 100% oxygen: Provision of 100% oxygen for treatment of pneumothorax.

OPERATIONS / PROCEDURES

*Record operations that occurred at any time during infant's stay. Some operations may not have been performed in your hospital (such as PDA ligation or ROP surgery). These should be documented in patient charts as for some of them an infant may go to another hospital for less than 24 hours and the data may not be captured. If relevant make a note of these instances in the comments box.

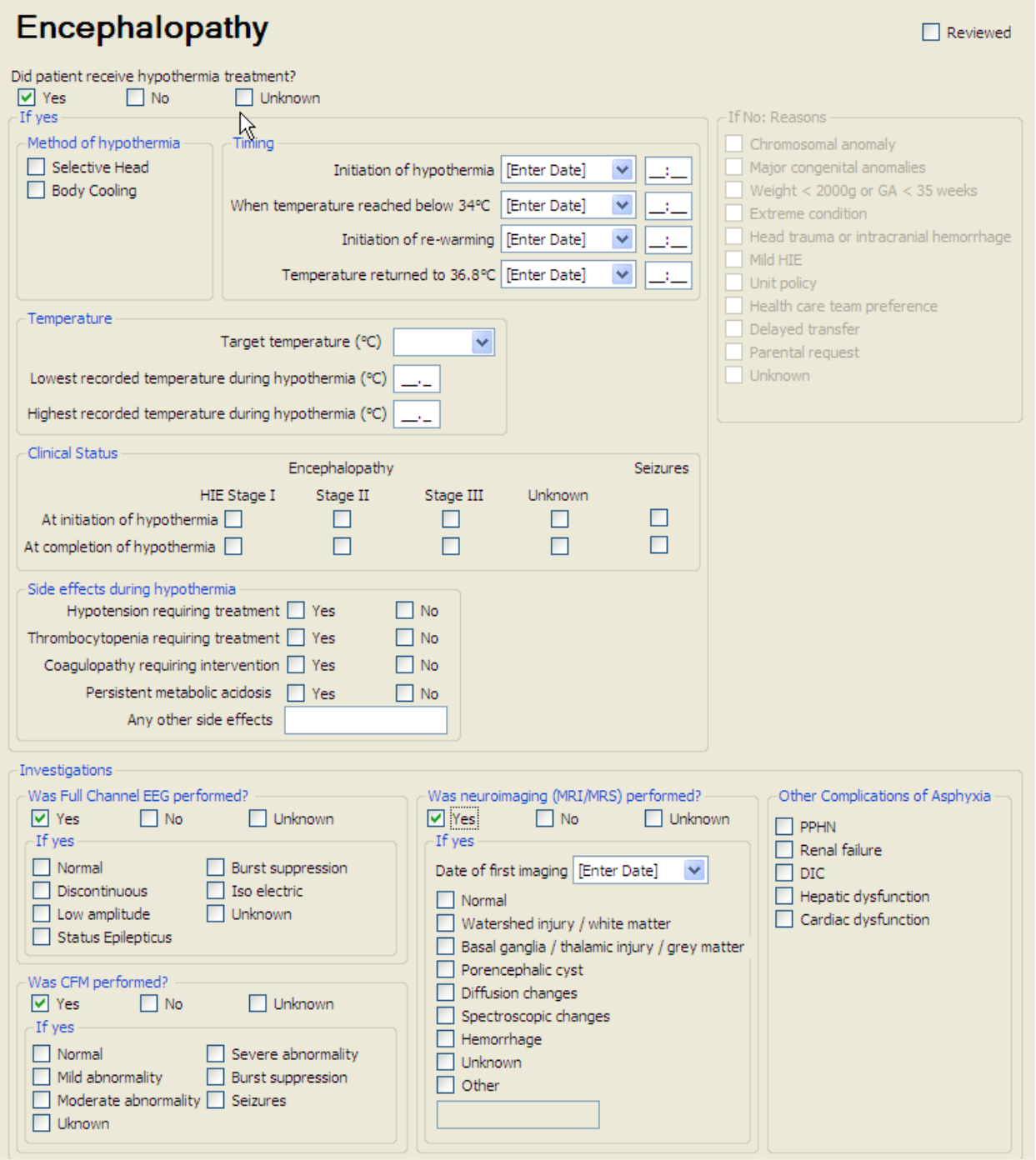
Laparotomy	Laparotomy (***abdominal exploration***) for surgical resolution of a variety of problems, excluding laparoscopy. *For a complete list of procedures included under laparotomy, see appendix II*.
VP shunt	Placement of reservoir or shunt for drainage of cerebro-spinal fluid (CSF).
Thoracotomy	Thoracotomy (***chest exploration***) for surgical resolution of a variety of reasons, excluding thorascopy. *For a complete list of procedures included under thoracotomy, see appendix II*.
ECMO	On extra corporeal membrane oxygenation (ECMO) at any time during the hospital stay. ECMO given as part of an operation ***should*** be scored here, but a note should also be made in the comments box that ECMO was given as part of an operation and not as a procedure unto itself.
Others	Check box for any other operation. You can score operations such as BAS, surgically placed catheters, gastrostomy tube insertions, hernia repairs, rectal biopsies, PDA ligations and ROP therapies. *Refer to appendix II for a list of operations that can be included in Others.*
Highest Total Bilirubin	Highest ***total*** bilirubin within first 7 days of birth (conjugated and unconjugated). If no bilirubin measurements were performed during first 7 days, leave this field blank. Consider Day 1 as the day of birth and include day 7 in your calculation.
Highest Total Bilirubin: Date	Date of highest ***total*** bilirubin within first 7 days of age (conjugated and unconjugated). . If several dates on which the same highest bili occurs, record the first date. Record as YYYYMMDD. If no bilirubin measurements were performed or date of highest bilirubin is unknown leave the field blank.
Acute bilirubin encephalopathy	In a severely hyperbilirubinemic infant presence of increasing hypertonia, especially of extensor muscles, with retrocollis and opisthotonos, in association with varying degrees of drowsiness, poor feeding, hypotonia, and alternating tone is classified as acute bilirubin encephalopathy. If chart mentions "possible kernicterus", "kernicterus" or "bilirubin induced neurological dysfunction (BIND)" then also click Acute bilirubin encephalopathy (mandatory field).
Exchange transfusion	Check if patient received single volume or double volume or partial **exchange transfusion** (mandatory field)**.**
Gastro-Intestinal Perforation	Presence of free air under diaphragm or aspiration of intestinal contents from abdominal cavity suggest intestinal perforation . Possible causes are 1. **NEC related:** Perforation in a patient who is also diagnosed as having NEC (see below)

	2. **Spontaneous:** In a patient who does not show evidence of NEC. Typically this occurs in the first week after birth. 3. **Unknown:** If the type is not identified then select unknown. This also includes gastric perforation.
NEC Stage 2 or Higher	Necrotizing enterocolitis (NEC) according to Bell's criteria, stage 2 or higher (mandatory field). If there is ***definite pneumatosis (air in the bowel wall) or portal/hepatic air (air in the liver)*** diagnosed by x-ray, or if there is a surgical or autopsy diagnosis of NEC. If surgical/autopsy diagnosis conflicts with x-ray diagnosis, the surgical/autopsy diagnosis takes priority. ***X-rays showing free air WITHOUT pneumatosis do NOT count as NEC diagnoses.*** Bloody stools without pneumatosis may lead to a suspected diagnosis and treatment, but is ***not*** counted as NEC diagnosis. ***Score "No" if:*** there was no NEC diagnosed according to our definition during the hospital stay. If yes, mention stages: 1. Stage II: medical suspicion confirmed by pneumatosis 2. Stage III: Perforation 3. Unknown: If it is not known whether to call stage 2 or 3.
NEC Date	Date of the first definitive diagnosis of NEC (by x-ray of pneumatosis, or by surgery). Record as YYYYMMDD. If pneumatosis is suspected on x-ray and then NEC is diagnosed definitively by surgery/autopsy, score the date of onset of NEC as the date of the first x-ray that showed a suspicion of pneumatosis. If unknown leave the field blank.
NEC Treatment	Record if patient required surgical treatment or peritoneal drainage. Surgical treatment includes laparotomy. **Peritoneal drainage alone is not considered surgical treatment. However, if your unit practices "mini-laparaotomy" it should be included under surgical treatment and operations.** You will be able to select both if patient initially had peritoneal drainage and later went for surgery.
Multiple Episodes	Indicate if more than one episode of NEC occurred prior to discharge.
Acquired Stricture	If patient was later diagnosed as stricture possibly related to NEC, mention it here. Patients may or may not have stage 2 or stage 3 NEC diagnosis in the early period (mandatory field).

CONGENITAL ANOMALIES / OTHER DIAGNOSIS

Congenital Anomaly Type	Record all diagnosed congenital anomalies of a patient. Record only confirmed anomalies, anomalies that are "questionable" or "pending" should ***not*** be recorded. Anomalies are grouped under the systems they relate to and then listed alphabetically. Selecting the appropriate system from the system scroll down list will limit the anomalies that appear in the type scroll down list. If you cannot find a specific anomaly listed here check appendix IV for additional help in identifying how a given anomaly is recorded in the database. If you think a major anomaly is not listed, or if it requires specification, contact the CC for advice.
Other Diagnosis	Record additional major diagnoses included in the scroll down list provided. Record only confirmed diagnoses, diagnoses that are "questionable" or "pending" should ***not*** be recorded. Note that some diagnoses may be worded differently at various hospitals. For example a diagnosis of "hypoglycemia" is listed on the scroll down list as "hypoglycaemia". If you cannot find a given diagnosis in the list, check appendix III for additional help in identifying how a given diagnosis may be recorded in the database. Optional: For any diagnoses that are not listed in the "Diagnosis Type" scroll down menu, "Other" may be chosen and a free text field (maximum characters=100) for "Other Diagnosis Description" may be entered.

SCREEN 10: ENCEPHALOPATHY SCREEN DEFINITIONS

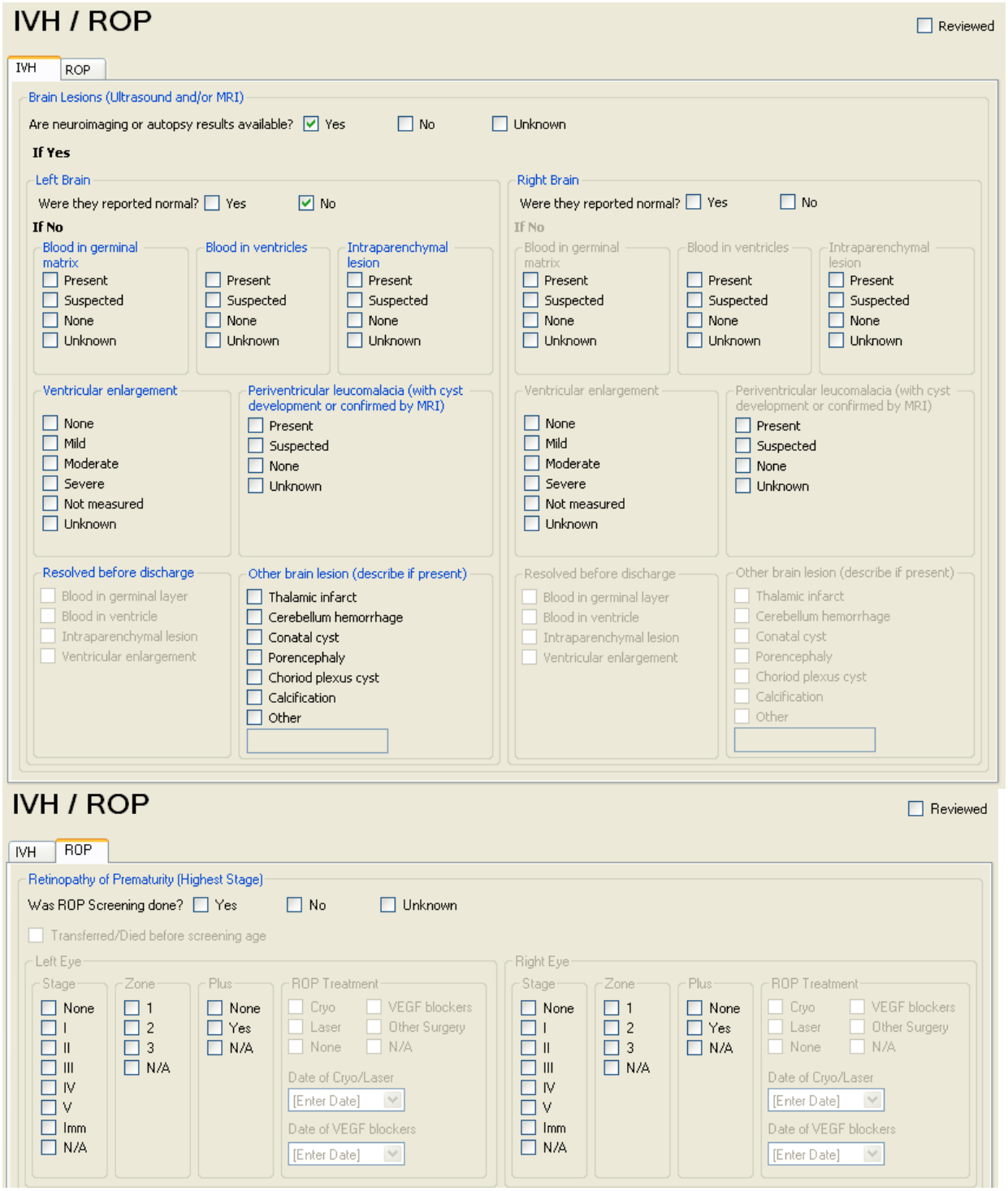


This screen will be activated if in the "Diagnosis / Procedures" screen it was recorded that baby has any degree of encephalopathy except for none. You need to complete this screen if it is activated in order to complete the case.

Hypothermia treatment	Mention here whether patient received hypothermia treatment or not. If patient has received hypothermia further screen detailing treatment will be activated. Hypothermia treatment is defined as active attempts to maintain temperature below 35.5^0C after HIE was diagnosed (mandatory field).
Method of Hypothermia	If hypothermia was given mention method of hypothermia. This usually confines to standard method used in your unit and very rarely changes between patients.
Timing	Enter timings for initiation of hypothermia, time when temperature reached target range, time when warming was initiated and time when temperature reached back to 36.8^0C. In the event of baby's death whilst receiving hypothermia, please enter time of death as the time of rewarming.

Temperature	Select target temperature range that was planned. This will again conform to your unit policy and would be constant in your unit. From continuous monitoring of patient, enter the lowest and the highest recorded temperature during hypothermia treatment.
Clinical Status	From clinical records, enter HIE staging before (within 6 hours of initiation of hypothermia) and after hypothermia (6 hours after completion of hypothermia). Document if patient had seizures. If it is unknown, mention unknown.
Side Effects	If patient developed any side effect during hypothermia record it here. 1. Hypotension requiring treatment: Treatment could be in the form of fluid or inotropes. 2. Thrombocytopenia requiring treatment: Treatment would be in the form of platelet transfusion. 3. Coagulopathy requiring intervention: Intervention could be in the form of FFP, Plasma or blood transfusion. 4. Persistent metabolic acidosis: Defined as pH <7.0 on two consecutive samples obtained at least 6 hours apart after initiation of hypothermia 5. Any other complication / side effect not mentioned above can be free-texted (maximum 50 characters). Bradycardia should not be included in this as it is a known effect.
Reasons if No	In the area to the upper right, if hypothermia was not provided please identify reason.
Investigations: EEG	Indicate if full channel EEG (12 or 16 channels/electrodes placed and full EEG tracing taken) was performed and classify findings of background activity as indicated. This refers to background activity only (mandatory field).
Investigations: CFM	If Cerebral Function Monitoring or amplitude integrated EEG (limited channel mostly 2 channel/electrodes are placed to capture this form of EEG) was performed indicate that here. If it was performed, indicate what the results were. If seizures were detected during CFM record it as well (mandatory field).
Investigations: MRI	If neuroimaging in the form of MRI or MRS was performed indicate the results and date of scan. Note that some of the results collected are broad (diffusion changes, restriction changes etc). In the initial period of data collection, this will be kept like this (mandatory field). The “Other” field can hold a maximum of 50 characters.
Other complications of asphyxia	Complications of asphyxia should be mentioned here. You can choose multiple options. 1. PPHN: Diagnosis will ideally require echocardiographic evidence; however, it may not be practical at every site and we will take any definition used in the chart. 2. Renal failure: Urine output <0.5 ml/kg/hr OR rising creatinine >100 mmol/l at any time within first 72 hours 3. DIC: Evidence of Coagulopathy for which no explanation could be provided. 4. Hepatic dysfunction: AST or ALT >100 IU at any time in the first 7 days after birth 5. Cardiac dysfunction: Need for inotrope to support BP or echocardiographic evidence of cardiac dysfunction.

Screen 11: IVH / ROP SCREEN DEFINITIONS



Score the IVH portion of the screen based on all head ultrasounds, CT scans and MRIs done during this NICU admission and taken during the appropriate time periods. If you come across any serious outcomes, which are not included on the IVH & ROP screen mention them in "other" section. ***The following should not be scored here:*** "possible" or "questionable" diagnoses, subarachnoid hemorrhages, subdural hemorrhages, tentorial bleeds, fluid collections in the brain, arachnoid cysts, caudothalmic groove cysts, choroid plexus cysts, subependymal cysts or cysts other than those found in the brain parenchyma (the brain itself). ***If there are conflicting diagnoses, where available use autopsy findings as they are more reliable than diagnostic tests. Also note that MRI findings should be used over U/S findings.***

See appendix III to confirm hemorrhages that are to be included under 'other diagnosis' on the diagnosis/procedures screen. Record only "congenital cerebral cysts" (found in the brain parenchyma) under congenital anomalies (nervous cyst); other cysts not mentioned below need not be scored.

INTRAVENTRICULAR HEMORRHAGE

- ❖ Score "questionable" and "possible" as None
- ❖ Score "suggestive of…" and "most likely…" as Suspected

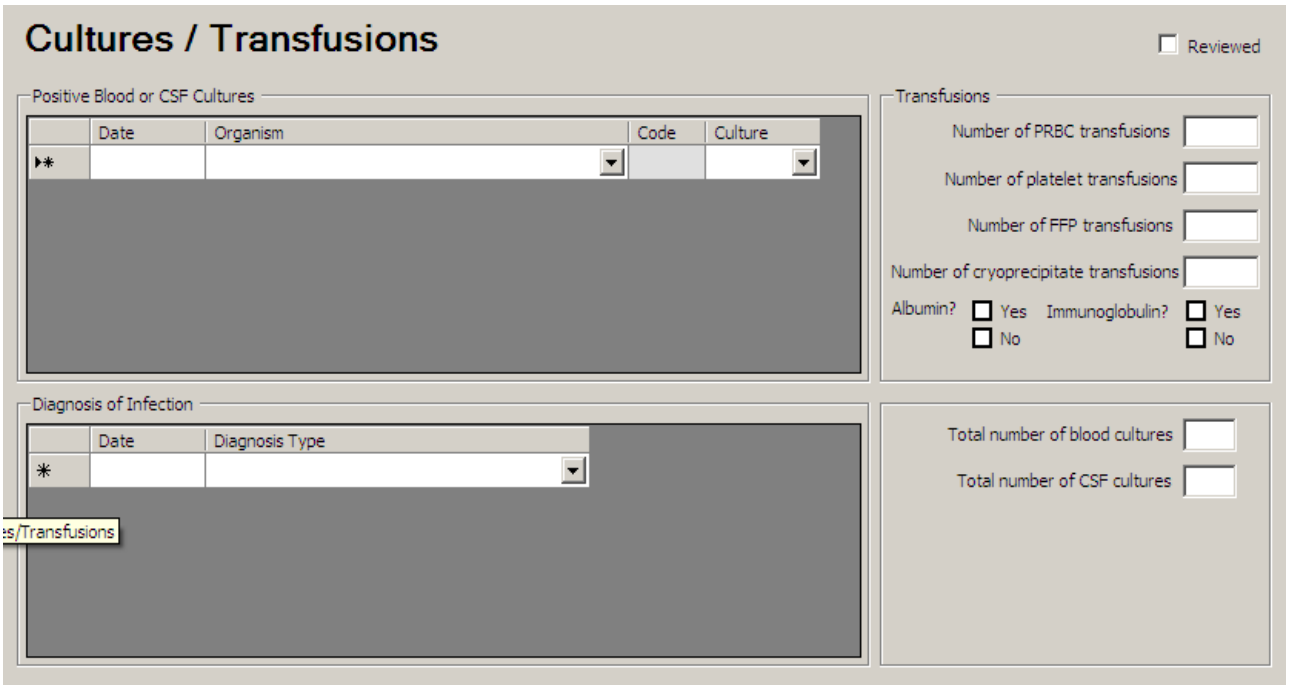
Brain Lesions (Ultrasound and/or MRI)	Was any neuroimaging performed during infant's stay in NICU. Mark yes, no or unknown. Mark yes if you have report from autopsy of brain (mandatory field).
If Yes (both left and right brain)	If it was performed you will be asked to provide a report for both sides. If you report that it was abnormal, then the following explanation will help you to fulfill appropriate boxes.
Findings on neuroimaging or autopsy	We are interested mainly in 5 types of cerebral ultrasound (or MRI) abnormalities, and any or all of these may be present at different times so you need to review all reports during the stay of an infant in the NICU and report any or all of these lesions if present at any time during the hospital stay. 1. Evidence of blood in the germinal matrix or "germinal layer/matrix hemorrhage", "subependymal hemorrhage", "grade I intraventricular hemorrhage (IVH) (according to Papile)". This is usually seen in the first 7 days of life. It is recorded as "present", "suspected", "none", or "unknown" irrespective of the presence of other lesions. 2. Evidence of blood in the ventricles or in the lining of the ventricles, also known as "intraventricular blood", "intraventricular hemorrhage", "grade II intraventricular hemorrhage (IVH) (according to Papile)". This is usually seen in the first 7 days of life. It is recorded as "present", "suspected", "none", or "unknown" irrespective of the presence of other lesions. 3. Evidence of enlargement of the ventricular cavity (cavities) beyond the upper limits of normal (with or without intraventricular hemorrhage), also known as "hydrocephalus", "ventriculomegaly", "ventricular enlargement", "post-hemorrhagic hydrocephalus/ventriculomegaly", "grade III IVH (according to Papile)". If "grade III IVH" is reported indicate that both blood in the ventricles *and* ventricular enlargement are present. This is usually seen in the first 14 days, but may arise later. Document the most severe of the following: a. **"None":** Measurement of ventricles is <7 mm at any level section of lateral ventricle. b. **"Mild":** Measurement is 7 to 10 mm at any level of the larger lateral ventricle. Use this if no mention is made of "ventricular enlargement", "ventriculomegaly" or "hydrocephalus", or if the most severe report is of "mild ventriculomegaly" or "mild ventricular enlargement", or if described as "suspected" c. **"Moderate":** Measurement is 11 to 15 mm at any level of the larger lateral ventricle on sagittal scan. Use this if the terms "grade III IVH", "ventricular enlargement", "ventriculomegaly" or "hydrocephalus" are used with "moderate", or with no descriptors. d. **"Severe":** Measurement >1.5 cm at any level of the larger lateral ventricle on a sagittal scan, or requiring ventricular drainage/shunting. If no measurement is made, document if the terms "severe" or "significant" are used to describe "grade III IVH", "ventricular enlargement", "ventriculomegaly" or "hydrocephalus". e. **Not measured** f. **Unknown** 4. Evidence of focal intraparenchymal lesions (echodense or echolucent) in the white or grey matter (with or without intraventricular hemorrhage) also known as "parenchymal lesion", "parenchymal echodensity or echolucency", "focal infarction", "venous infarction", "intraparenchymal hemorrhage", "grade IV IVH (according to Papile)". Remember to indicate whether there is blood in the ventricles or ventricular enlargement if you document a focal lesion. This is usually seen in the first 14 days. A single "porencephalic cyst", or "cystic change" within a focal lesion also falls in this category – this should be distinguished from "cystic leukomalacia" which is more extensive, occurs later in age, is usually bilateral, and usually consists of multiple cysts. 5. Evidence of diffuse brain lesions (usually echodense) in the white matter consistent with

	periventricular leukomalacia (PVL) or "white matter injury". To be "present" these *may* be confirmed by noticing development of multiple cysts on MRI or ultrasound ("cystic periventricular leukomalacia"). Potentially all the boxes could be checked. When multiple ultrasounds have been taken, document all abnormalities noted. **Note the highest degree of hemorrhage or lesions.**
Other lesions	Mention any other lesions that were identified in the imaging or autopsy. Co-natal cyst is a term used for cystic lesions in the front of the lateral ventricles (frontal horn). The "Other" field can hold a maximum of 25 characters.
Resolved before discharge	These fields only become activated when corresponding indications are checked in previous selections. If from last imaging it is determined that there was resolution of abnormalities detected before, indicate here. If it is not known, leave boxes unchecked.

RETINOPATHY OF PREMATURITY (HIGHEST STAGE)

Was Screening Done	Mark yes, no or unknown . Patient may have been transferred to another facility before complete vascularization is noted. If one screen was performed in your hospital – mark it yes. If you select "no" or "unknown", a question will appear whether the reason for no is because patient died or was transferred to another facility prior to discharge (mandatory field).
Left/Right Eye: Stage	Selecting N/A in any field generates a default N/A selection for the other two. These selections, however, can be changed if desired. Maximum stage of retinopathy of prematurity (ROP) in left/right eye as defined by the International Committee on Retinopathy of Prematurity (ICROP). Score according to the grade of ROP assigned on an eye exam done by an ophthalmologist. If there is no explicit grade listed, then score according to the descriptions given by the ICROP: -***None*** denotes that there are no indications of an immature retina or ROP from the eye exam. -***Stage 1*** is characterized by a demarcation line between the normal retina near the optic nerve and the non-vascularized retina more peripherally. -***Stage 2*** ROP has a ridge of scar tissue and new vessels in place of the demarcation line. The white line now has width and height, and occupies some volume. It may take on a pink color as it becomes more vascularized. Small tufts of new vessels ("popcorn vessels") may appear posterior to the ridge. -***Stage 3*** ROP shows an increased size of the vascular ridge, with growth of fibro-vascular tissue on the ridge and extending out into the vitreous. Fibrous scar tissue is beginning to form in this stage, with attachments between the vitreous gel and the ridge. -***Stage 4*** refers to a partial retinal detachment. The scar tissue associated with the fibrovascular ridge contracts, pulling the retina away from the wall of the eye. There may also be an exudation of fluid under the retina, contributing to the detachment. -***Stage 5*** ROP implies a complete retinal detachment, usually with the retina pulled into a funnel-shaped configuration by the fibrovascular scar tissue. Eyes with stage 5 ROP usually have no useful vision, even if surgery is performed to repair the detachment. -***Imm*** is the abbreviation for 'immature' retina. If a patient's eye exam states "imm" or "immature" look to see if this progresses further into a stage of ROP. If not, then score as 'imm'. - Score "***N/A"*** if there is no eye exam during this hospital stay.
Left/Right Eye: Zone	Record location of ROP in left/right eye by zone. Score according to eye exam having the greatest degree of ROP severity. Disease severity is worst in Zone 1 (optic disk to macula), very serious in Zone 2, (macula to periphery) and worrisome in Zone 3 (peripheral vision). If there is no eye exam or if stage is scored as "none", score as "N/A".
Left/Right Eye: Plus	Presence of plus disease at any stage of ROP in the left/right eyes. Plus disease is indicated by extreme tortuosity and redness of vessels, often accompanied by rapid progression of ROP disease. If an eye exam was completed, but there is no eye exam results available, score as "N/A".
Left/Right Eye: ROP Treatment	Record if cryotherapy ***(Cryo)*** or laser photocoagulation ***(Laser)*** treatment was required for Retinopathy of Prematurity (ROP) in the left/right eye during this hospitalization. Enter ROP surgery even if it was not performed at your site. Note that many units have used a new therapy called "Vascular endothelial growth factor inhibitors" , "VEGF BLOCKERS" or "Bevacizumab" or 'Avastin" . Record this if used with date of treatment. ***This should also be scored as Operations/Procedures > "Others" on the Diagnosis/Procedures screen.***
Left/Right Eye: Date of Cryo/Laser or VEGF Blockers	Only activated if cryo or laser therapy is selected. Selecting both options is not possible. Date of cryotherapy or laser photocoagulation treatment of ROP or "VEGF" blockers in left/right eye. Record as YYYYMMDD . from the pull-down calendar. If scored "None" or "N/A" for ROP treatment then date will not be activated.

SCREEN 12: CULTURES/TRANSFUSIONS SCREEN DEFINITIONS



POSITIVE BLOOD OR CSF CULTURES

- Record only positive cultures that occur at your study hospital. If a blood culture is drawn at another hospital prior to this admission visit it should ***not*** be recorded. However, if this culture is positive AND the baby is considered to have an infection at the time of arrival to your hospital, this should be recorded as an infection episode under diagnosis of infection (given that this is an ongoing concern of the patient). In this instance, record the infection type according to the definitions of infection diagnosis listed in appendix V, and make a note in the comments box regarding the details of the positive culture including the organism discovered.
- Enter positive blood cultures found on **autopsy** here, and enter date of death as date of the blood or CSF draw.
- **Admissions to NICU from your ER Department:** Include positive cultures drawn in the emergency department of your hospital immediately prior to admission to NICU. Record the appropriate date of the culture (this may be the day before your admission date for those who are admitted after midnight.) These should also be counted in the "Total # of blood cultures" and "Total # of CSF cultures".

Date	***For each positive blood or CSF culture,*** record the date of the blood draw, NOT the date the culture was found to be positive. Only positive cultures are listed in detail. Negative cultures are to be included in counting the total number of blood/CSF cultures, but are not listed in detail. Enter the date using the pull-down calendar. If date unknown leave the field blank.
Organism	Select the organisms found in all positive cultures from the scroll down list. ***For a list of organism names listed in alphabetical order with their coded abbreviations see Appendix VI***. If an organism does not appear in the scroll down list, contact the CC to have it coded. Record all positive cultures even if noted or thought to be contaminants. If multiple organisms are found in the same culture, enter each organism separately on a new line in the table. ***Do not record repeat cultures that are considered part of the same infection.*** Therefore, a second positive blood culture containing the same organism (repeat culture) is **NOT** included if the culture date is within 7 days of the initial positive blood culture. However, a positive CSF culture OR a positive blood culture containing a new organism **is** included, even if the culture date is within 7 days of the initial positive blood culture. Any positive culture drawn after 7 days is considered a new episode of infection and should be included (regardless of the type of organism). If patients are transferred in with a positive culture, do ***not*** record here, but make a note in the comments box. Do not record information about resistance to antibiotics.

Code	An organism code is automatically entered once an organism has been selected. It has been included to easily identify contaminants. A ***contaminant*** is defined as 2 or more organisms identified in a single culture or more than 1 culture if the cultures are taken on the same day. Remember to include all positive cultures, even if noted to be contaminants. (This will become more useful in identifying valid infection diagnoses in the following section "Diagnosis of Infection".)
Culture	Source of positive culture. Choose from ***blood or CSF*** (cerebrospinal fluid).

TRANSFUSIONS

Include transfusions that took place in the Operating Room.

Number of PRBC Transfusions	Include total number of Packed Red Blood Cell transfusions during infant stay – default will be blank.
Number of platelet transfusions	Include number of platelet transfusions during infant stay– default will be blank.
Number of FFP transfusions	Include number of Fresh Frozen Plasma transfusion during infant stay– default will be blank.
Number of cryoprecipitate transfusions	Include number of cryoprecipitate transfusion during infant stay– default will be blank.
Albumin	Score yes if 5% or 25% albumin is infused.
Immunoglobulin	Did patient receive immunoglobulin during stay? Infant may have received generic hyperimmune immunoglobulin for hyperbilirubinemia, thrombocytopenia. Do not include specific immunoglobulin such as Hepatitis B immunoglobulin (mandatory field).

DIAGNOSIS OF INFECTION

An "episode" of infection is defined as any event where infection is suspected and as a result begins with:

(a) bacteriological or viral samples taken; OR
(b) antibiotics are initiated; OR
(c) a diagnosis of infection is made.

If samples are taken: an "episode" of infection includes all cultures drawn within 7 days of the initial positive culture, except in the following circumstances (which indicate then a new infection episode):

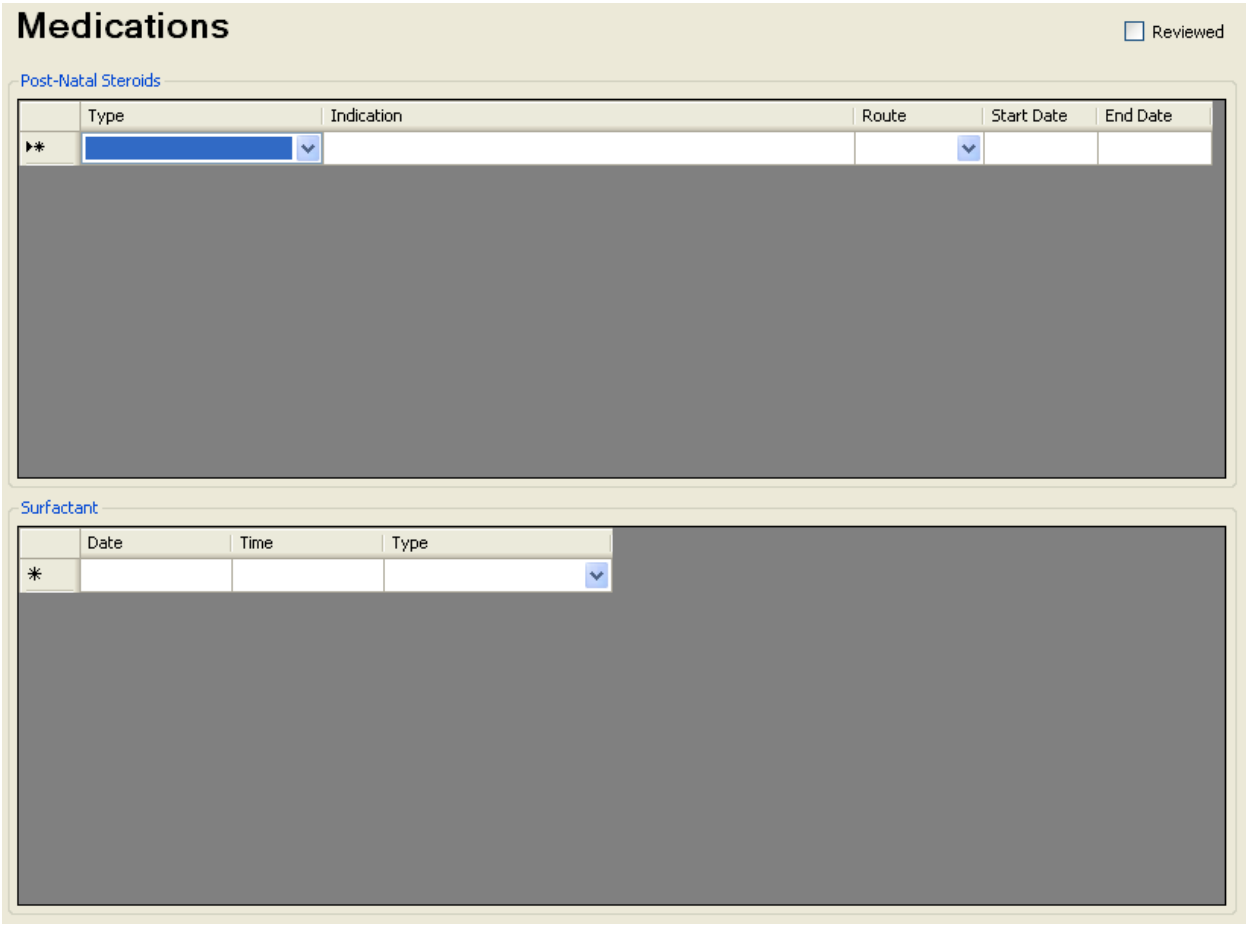
1. A new organism is drawn in a repeat culture within 7 days of the initial culture draw date.
2. The same (or new) organism is drawn in a *new type* of culture within 7 days of the initial culture draw date (provided neither the initial nor the new culture are blood cultures).

Contaminant cultures should never be used in determining the diagnosis of an infection episode (see "Code" above for definition of a contaminant).

After 7 days any persistent infection should be considered a new infection episode. However, any repeat culture after 7 days that proves to be negative should be excluded entirely as it is neither the start of a new episode nor part of the previous episode (as it is beyond the 7 day limit).

Date	Record the date of all diagnoses of infection. Enter the date using the pull-down calendar. If the date of infection is unknown record the date treatment began (i.e. day antibiotics initiated), otherwise leave the field blank. If the infection began at a previous hospital, but is still considered an ongoing concern at the time of arrival to your hospital, enter the date of admission as the infection date.
Diagnosis Type	Select the diagnosis type for each episode of infection from the scroll down list according to the descriptors of infection types given in appendix V.
Total # of blood cultures	Total count of all blood culture draws (regardless of whether culture is positive or negative) received by the clinical laboratory during this NICU admission. Two blood cultures taken at the same time from different sites (2 blood draws) count as two blood cultures. Two bottle aerobic/anaerobic combination count as 1 culture (1 blood draw). Also include blood cultures drawn in the ER if the patient is then admitted to the NICU.
Total # of CSF cultures	Total number of CSF culture draws (regardless of whether culture is positive or negative) received by the clinical laboratory during this NICU admission. If CSF is obtained without culture, do not include. Also include CSF cultures drawn in the ER if the patient is then admitted to the NICU.

Screen 13: Medications Screen definitions



Refer to appendix I for a complete list of drugs and the categories they are classified under. If you are unsure what category a medication should be classified under contact the CC for advice. Record each complete course of a particular medication as a single line. Therefore if Dexamethasone is given for 11 days but only given every other day, this would be scored as 1 'course', and each day need **not** be scored separately on a new line. Generally if a medication is stopped for more than 48 hours and restarted, this is considered the start of a new 'course'..

If a patient is transferred in on a particular medication, record the date of admission to your unit as the start date.
If a patient is transferred out while still receiving a particular medication, record the discharge date as the end date.

Post-Natal Steroids

Type	Select from the scroll down list the type of post-natal steroid administered. Common steroids include: ***dexamethasone, budesonide, hydrocortisone and beclamethasone***. If a steroid is not included in the list, select "Other"
Indication	Select indication from the list. Select "other" when an indication is not in the list and "unknown" when not specified. The list of relevant items will be displayed for the given selected steroid type.
Route	Select route of administration from the pull-down list. If the route is IM, select "parenteral".
Start Date	First date of administration of all post-natal steroids given during this hospital admission. Record regardless of method of administration (i.e. bolus or infusion). ***Do NOT score steroids given to the mother prior to the infant's birth.*** Enter the date using the pull-down calendar.
End Date	Last date of administration of the listed steroid. Enter the date using the pull-down calendar. ***If a medication is only given for 1 day score that day as both the start and end date.***

SURFACTANT

Here you will enter date, time and type of surfactant administration.

Once you enter details of first dose a second row will be populated which will allow you to enter subsequent doses if patient has received. Note that date of second dose could not be prior to first dose.

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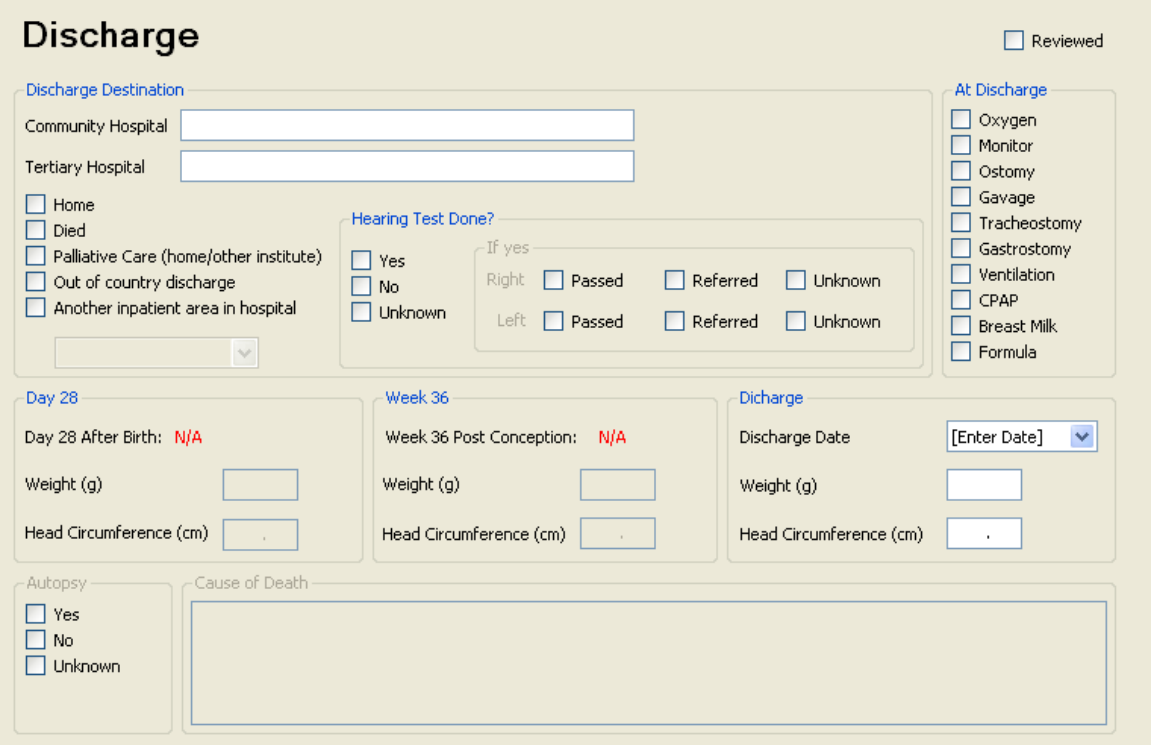
Date of administration	Enter the calendar date in which the dose of surfactant was given (regardless of whether the dose was given **while the infant was admitted to your NICU or not**). The default date of the calendar will be set to the birth date, however if this is not correct, you will need to edit this date. If the date on which surfactant is given is unavailable, leave the field blank.
Time of Dose	Record the time in *military time* (24 hr clock) at which the dose of the particular surfactant was given (should correspond to the date listed above). Record midnight as 00:00 (and the first minute of a new day; for example: 23:59 on Jan 3rd and 00:00 on Jan 4th is 1 minute later). If the time at which surfactant is given is unavailable, leave blank.
Type	Score all surfactants (i.e. BLES, Survanta, Exosurf, etc.) given to a patient using the pull-down menu. *Score regardless of whether given at your hospital or at a different transferring/birth hospital.* If surfactant was given at a previous hospital record all the information below if available.

SCREEN 14: DISCHARGE SCREEN DEFINITIONS



Complete this screen for all patients that are discharged from your NICU, regardless of whether or not they are transferred out of your hospital or to another ward/nursery within your hospital. If a patient is transferred within your hospital enter your hospital name and the nursery name under the appropriate level of care received there. If a patient is ***discharged to another hospital for less than 24 hours for either surgical or medical care*** that can not be given at your hospital, you need ***not*** count them as a discharged patient. Mention "other facility" in Patient Chart screen and continue data collection for the rest of the patient's hospital stay in the current data set. If however the patient is discharged for more than 24 hours, complete the discharge information and record their return as a readmission, entering the remainder of the hospital stay in the new 'readmission' data set.

Discharge Destination	Indicate the destination on discharge from your NICU. ***Select "Community Hospital" if:*** the baby was transferred to any term (level 1/level II/regular/healthy baby) nursery/ community hospital. Select from drop-down list (in which case you should follow up on this baby with the post-transfer screen, if possible). ***Score "Tertiary Hospital" if:*** the baby was transferred to one of the other study sites (in which case you should follow up on this baby with the post-transfer screen) or to another tertiary care centre. Enter the destination hospital in the space provided. ***Score "Home" if:*** the baby was discharged home (or into home foster care) from your NICU. If the baby is discharged into foster care it is ***not*** necessary to make a note in the comments box. We are only interested in the type of care the baby is to receive, i.e. home care versus hospital care. However, if the infant is discharged home on palliative care, record this as palliative care. ***Score "Died" if:*** the baby died during this hospital stay. ***Score "Palliative Care" if:*** Patient was discharged to home or other institution for palliative care. ***Score "Out of Country discharge" if:*** Patient was discharged to a facility outside of Canada or home outside of Canada ***Score "Another inpatient area in hospital" if:*** Patient was discharged to an inpatient area within your hospital. Selection of this field will activate the Post Transfer screen. The list of places are as follows:

	1. PICU/PCCU 2. L2N/SCN 3. Operation Room 4. CCU/CCCU 5. Labor & Delivery 6. Mother/Baby unit 7. Pediatric Ward 8. Others 9. Unknown ***If the baby was transferred to the OR***, and does not return to the NICU (i.e. discharged from the NICU on the way to the OR), enter as OR (at your hospital), but do not score this operation on the diagnosis and procedures screen.
Hearing Test Done	Mention the results of hearing test if it was done in your hospital (mandatory field).

SUPPORT AT DISCHARGE

If the infant was not on any of the supports listed below at the time of discharge or transfer, leave this section blank. ***Do NOT mark anything in this column if the baby died.***

Oxygen	Score this if the patient is on ***continuous oxygen/***supplemental oxygen (FiO2 >21%) ***at the time of discharge/transfer. Do not score*** blow-by oxygen or nasal cannula oxygen given for feeds only as this is not a form of continuous oxygen.
Monitor	Score this if the patient is receiving continuous cardiac or apnea monitoring ***at the time of discharge/transfer***. If the chart does not specify and discharge is to a level 2 or 3 community hospital, score monitor at discharge. If the chart does not specify and discharge is to the routine (level 1) nursery, do not score. If discharged home, there must be clear evidence of plans for home monitoring to score this item.
Ostomy	Score this if the patient has any ostomy (ileostomy or colostomy, ***but not*** tracheostomy or gastrostomy) ***at the time of discharge/transfer***.
Gavage	Score this if the patient received gavage feeding (any PG or NG feeds) ***at any time in the 24 hours prior to discharge/transfer***. If you are already scoring gastrostomy at discharge, ***do not*** score gavage at discharge as well.
Tracheostomy	Score this if the patient has a tracheostomy in place ***at the time of discharge/transfer***.
Gastrostomy	Score this if the patient has a gastrostomy in place ***at the time of discharge/transfer***.
Ventilation	Score this if patient is receiving artificial or mechanical ventilation at the time of discharge. Do not score this if patient died while on ventilator. Note that only one of "ventilation" and "CPAP" can be scored.
CPAP	Score this if the patient is on CPAP (nasal, facial or endotracheal) ***at the time of discharge/transfer***. Do ***not*** score if the patient died while on CPAP. Score this if patient is on High Flow ***at the time of discharge/transfer***.
Breast Milk	Record if patient was receiving any breast milk in the previous 24 hours of discharge. If only powder supplements are being added to breast milk and there are no liquid supplements (other than those who use the Similac version of HMF which is liquid), then it should be classified as breast milk.
Formula	Record if patient was receiving any formula in the previous 24 hours of discharge

DAY 28 / WEEK 36 / DISCHARGE

The scoring period for "day 28" data should be from 00:00 am on day 28 of life to 23:59 (24 hours). For your convenience the calendar date of day 28 has been calculated and is listed in red. If you are missing part of the day 28 flow sheet and you can get accurate information from other sources (i.e. progress notes), then score based on these other sources. Otherwise, you should use the closest complete 24 hour scoring period (it is okay to adjust times of day), but it should not be more than 48 hours off from day 28.

The scoring period for "week 36" data should be from 00:00 on day one of ***week 36*** to 23:59 (24 hours). Otherwise, you should use the closest complete 24 hour scoring period (it is okay to adjust times of the day). For your convenience, the calendar date of the first day of week 36 has been calculated where appropriate and is displayed in red on the right upper corner of this screen.

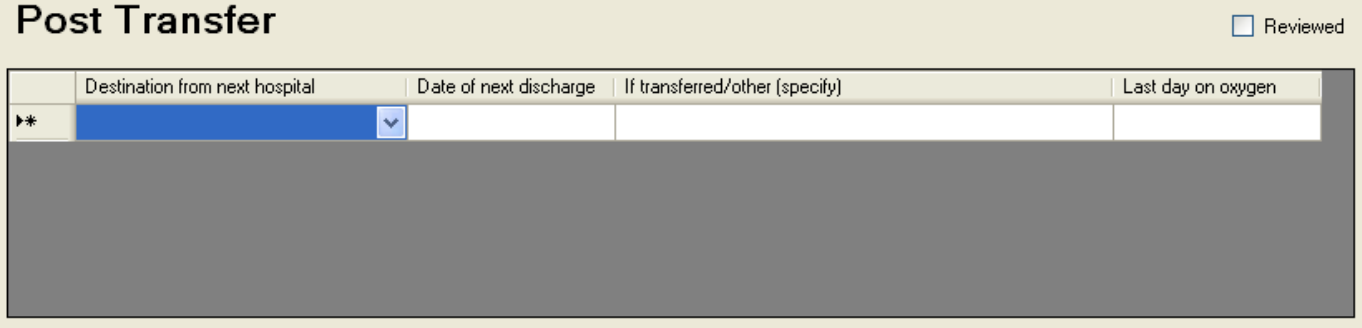
Week 36 data need never be collected if the gestational age (see above for which gestational age to use) is 32 weeks or more. Week 36 also need not be collected if the baby is discharged home, to a level 1 nursery, or if the patient dies before 36 weeks. In these instances, the Week 36 weight and head circumference will be grayed out and you will not need to enter anything under this section. If a baby is transferred to another ***level 2 or level 3*** hospital before week 36 where available, score according to the receiving hospital's records.

Date	These dates will be automatically calculated from the admission screen (mandatory field).
Weight	Record infant's weight nearest day 28, week 36 and discharge (within 2 days). If not weighed or data not available, leave the field blank.
Head circumference	Record infant's head circumference nearest day 28, week 36 and at discharge (within 7 days). If the information is unavailable, or if head circumference is not measured within 7 days, leave the field blank.

If the death is selected as disposition of the infant during this admission, then the following screen will be activated and require completion.

Autopsy	Record whether autopsy consent was obtained. This information will be used to recall charts later to verify causes of death.
Cause of death	***Record the principle cause of death as stated by the attending physician or autopsy findings*** (maximum 255 characters)***.*** Where there is a discrepancy, ask the physician to verify the cause of death. ***Use underlying diagnoses, NOT terminal events*** like "cardiac arrest." Field is only activated if "Died" was selected from the Discharge Destination field and it becomes mandatory in this case.

SCREEN 15: POST TRANSFER SCREEN DEFINITIONS



Complete this screen only for patients that are discharged to another level 2 or level 3 nursery from your NICU. If patients are discharged home or to a level 1 nursery from your NICU leave this screen blank. Once a patient has been classified as being included under 'post-transfer' then you should continue to complete this screen for each time there is a transfer, until the patient is finally discharged home or to a level 1 nursery. If the information for certain items will never be available (e.g. the baby has been discharged from the next hospital and they do not have the oxygen information anymore), score these items as "unknown" or leave the field blank where appropriate.

Destination from next hospital	Record destination on discharge from second hospital here. If second discharge is to another hospital or the baby died at the subsequent location ***score "other"*** and ***record the destination/death in the "if transferred/other (specify)" box***. If second discharge is unknown score as "unknown or N/A". If baby has died, select "Death".
Date of next discharge	Record the date of discharge from the subsequent location. If that discharge was to a destination other than home, record the next discharge information again in the box that pops up below.
If transferred/other, specify	If discharge destination is other than home, record destination from second hospital here.
Last day on oxygen at hospital	If the infant was still on oxygen at the time of the primary discharge, attempt to ascertain from the receiving hospital what day supplemental oxygen was finally discontinued. If the baby did not receive O2 at the receiving hospital, leave blank. If the baby went home or to another hospital/nursery on O2 and last day on O2 is unknown, use the date of discharge.

SCREEN 16: VALIDATE CASE SCREEN DEFINITIONS

Here you can enter any notes that you did not have enough room previously to enter (maximum characters=255). Press "Validate Case" for an error report that will highlight missing, inaccurate or conflicting data and dates, or an acknowledgement of a correctly entered case.

You can print off a status report if you so desire by selecting the "Print Status" link to the upper right of the "Validate Case" button.

APPENDIX I

CNN/EPIQ DRUG CLASSIFICATION LIST

CNN medications include only those drugs classified as: nitric oxide, narcotics, sedatives, muscle relaxants, inotropes, caffeine, antibiotics, post-natal steroids, surfactant.

DRUG NAME	CLASSIFICATION	Description
ACETAMINOPHEN (Tylenol)	ANALGESIC	NOT SCORED
ACETAZOLAMIDE	DIURETIC	Score as Diuretic on NTISS screen only
ACYCLOVIR	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
ADENOSINE	NOT SCORED	this is not inotrope
ALBUTEROL	BRONCHODILATOR	NOT SCORED (bronchodilator)
ALDACTAZIDE	DIURETIC	Score as Diuretic on NTISS screen only
ALDACTONE	DIURETIC	Score as Diuretic on NTISS screen only
ALFENTANYL	NARCOTIC	Score as either Infusion or Bolus on NTISS Screen If Infusion, also Score as Narcotic on Patient Chart Screen
ALLOPURINOL	NOT SCORED	
AMICAR	NOT SCORED	
AMIKACIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
AMINOPHYLLINE	RESPIRATORY STIMULANT	Score as Caffeine on Patient Chart Screen and NTISS Screen
AMIODARONE	ANTIARRYTHMIC, CARDIOTROPIC	NOTSCORED
AMOXICILLIN (same as Amoxil)	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
AMPHOTEROCIN B	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
AMPICILLIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
ANCEF	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
ANECTINE (same as Succynylcholine)	PARALYTIC	Score as Musc. Relaxant on Patient Chart Screen
ANESTHESIAS	NOT SCORED	
ASPIRIN	NOT SCORED	
ATIVAN (same as Lorazepam)	SEDATIVE, ANTICONVULSANT	SEDATIVE, Score as sedative on patient chart screen
ATRACURIUM	PARALYTIC	Score as Musc. Relaxant on Patient Chart Screen
ATROPINE	NOT SCORED	
ATROVENT	BRONCHODILATOR	NOT SCORED (bronchodilator)
AZT (same as Retrovir and Zidovudine)	HIV medication	Score as Antibiotic on Patient Chart Screen and NTISS Screen
BACITRACIN	NOT SCORED	
BACTIGRAS	NOT SCORED (topical dressing)	
BACTRIM (same as Septra)	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
BACTROBAN (same as Mupirocin)	NOT SCORED (topical antibiotic)	
BECLOMETHASONE	STEROID	Score as Post-Natal Steroid on Medications Screen
BECLOVENT PUFFS	STEROID	Score as Post-Natal Steroid on Medications Screen
BENADRYL (same as Diphenhydramine)	NOT SCORED	

BETAMETHASONE	STEROID	Score as Post-Natal Steroid on Medications Screen
BIAXIN (same as Clarithromycin)	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
BICARBONATE	NOT SCORED (acidosis treatment)	
BICITRA	NOT SCORED	
BLES	SURFACTANT	Score as Surfactant on Medications Screen
BUDESONIDE	STEROID (inhaled)	Score as Post-Natal Steroid on Medications Screen
CA GLUCONATE (bolus or IV drip)	NOT SCORED	
CAFFEINE	RESPIRATORY STIMULANT	Score as Caffeine on Patient Chart Screen and NTISS Screen
CALCIUM BOLUS	NOT SCORED	
CAPTOPRIL	NOT SCORED (antihypertensive agent)	
CARNITINE	NOT SCORED	
CEFAZOLIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CEFIXIME	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CEFOTAXIME (same as Claforan)	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CEFOXITIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CEFTAZIDIME	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CEFTRIAXONE	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CEFUROXIME	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CEPHALEXIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CHLORAL HYDRATE	SEDATIVE	Score as Sedative on Patient Chart Screen
CHLORAMPHENICOL	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CHLORPROMAXINE	NOT SCORED	
CHOLORTHIAZIDE (CTZ)	DIURETIC	Score as Diuretic on NTISS screen only
CIMETIDINE	NOT SCORED (anti-ulcer medication)	
CIPROFLOXACIN (CIPRO)	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CISAPRIDE	NOT SCORED	
CLAFORAN (same as Cefotaxime)	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CLARITHROMYCIN (same as Biaxin)	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CLINDAMYCIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CLOXACILLIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CODEINE	NARCOTIC	Score as either Infusion or Bolus on NTISS Screen If Infusion, also Score as Narcotic on Patient Chart Screen
COSYNTROPIN	STEROID	Score as Post-Natal Steroid on Medications Screen
CO-TRIMOXAZOLE (same as Septra)	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
CREON 8	NOT SCORED	

CROMOLYN (same as Intal)	NOT SCORED (antihistamine)	
CTZ (CHLORTHIAZIDE)	DIURETIC	Score as Diuretic on NTISS screen only
CUROSURF	SURFACTANT	Score as Surfactant - Other on Medications Screen
CYCLOPENTOLATE	NOT SCORED	
D10W BOLUS	NOT SCORED	
DECADRON	STEROID	Score as Post-Natal Steroid on Medications Screen
DEXAMETHASONE	STEROID	Score as Post-Natal Steroid on Medications Screen
DIAMOX	DIURETIC	Score as Diuretic on NTISS screen only
DIAZEPAM (same as Valium)	SEDATIVE, ANTICONVULSANT	Score as Sedative on Patient Chart Screen if used as sedative and not as anticonvulsant, If uncertain as to reason score as sedative
DIAZOXIDE	NOT SCORED (antihypertensive agent)	
DIGOXIN	NOT SCORED (anti-arrhythmia agent)	
DILANTIN (same as Phenytoin)	NOT SCORED (anticonvulsant)	
DIPHENHYDRAMINE (same as Benadryl)	NOT SCORED	
DITROPAN	NOT SCORED	
DIURIL	DIURETIC	Score as Diuretic on NTISS screen only
DOBUTAMINE	PRESSOR	Score as Inotropes on Patient Chart Screen
DOMPERIDONE	NOT SCORED (acid reflux med.)	
DOPAMINE	PRESSOR	Score as Inotropes on Patient Chart Screen
DOXAPRAM	NOT SCORED	
DPH (DIPHENYL HYDANTOIN)	NOT SCORED (anticonvulsant)	
DTO (DILUTE TINCTURE OF OPIUM)	NARCOTIC	Score as either Infusion or Bolus on NTISS Screen If Infusion, also Score as Narcotic on Patient Chart Screen
EDECRIN	DIURETIC	Score as Diuretic on NTISS screen only
ENERGIX	NOT SCORED	
ENOXAPARIN	NOT SCORED (anti-coagulant agent)	
EPINEPHRINE (EPI DRIP)	PRESSOR	Score as Inotropes on Patient Chart Screen
ERYTHROMYCIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
ERYTHROMYCIN EYE OINTMENT	NOT SCORED	
ETHACRYNIC ACID	DIURETIC	Score as Diuretic on NTISS screen only
EXOSURF	SURFACTANT	Score as Surfactant - Other on Medications Screen
FENTANYL	NARCOTIC	Score as either Infusion or Bolus on NTISS Screen If Infusion, also Score as Narcotic on Patient Chart Screen
FERRINSOL	NOT SCORED	
FILGRASTIM	NOT SCORED	
FLAGYL (same as Metronidazole)	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
FLAMAZINE	NOT SCORED (topical antibiotic)	
FLORANE	NOT SCORED	
FLORINEF	STEROID	Score as Post-Natal Steroid on Medications Screen
FLOVENT (same as flonase, fluticasone)	STEROID (inhaled)	Score as Post-Natal Steroid on Medications Screen

FLUCONAZOLE	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
FLUCYTOSINE	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
FLUDROCORTISONE	STEROID	Score as Post-Natal Steroid on Medications Screen
FLUTICASONE	STEROID	Score as Post-Natal Steroid on Medications Screen
FOLIC ACID	NOT SCORED	
FORANE (Anaesthetic)	NOT SCORED	
FUROSEMIDE	DIURETIC	Score as Diuretic on NTISS screen only
GANCYCLOVIR	ANTIVIRAL	Score as Antibiotic on Patient Chart Screen and NTISS Screen
GARAMYCIN	NOT SCORED (topical)	
GARAMYCIN OPHTHALMIC OINTMENT	NOT SCORED (topical)	
GARASONE OPHTHALMIC OINTMENT	NOT SCORED (topical)	
GENTAMYCIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
GENTAMYCIN EYE DROPS	NOT SCORED	
GLUCAGON	NOT SCORED	
GLYCERINE SUPPOSITORY	NOT SCORED	
HALOTHANE (Anaesthetic)	NOT SCORED	
HCTZ (HYDROCHOLORTHIAZIDE)	DIURETIC	Score as Diuretic on NTISS screen only
HEPARIN	NOT SCORED	
HEPATITIS VACCINE	NOT SCORED	
HOMOTROPINE	NOT SCORED	
HYDRALAZINE	NOT SCORED	
HYDROCHOLORTHIAZIDE (HCTZ) (same as hydrodiuril)	DIURETIC	Score as Diuretic on NTISS screen only
HYDROCORTISONE	STEROID	Score as Post-Natal Steroid on Medications Screen
HYDROCORTISONE CREAM	NOT SCORED	
HYDRODIURIL (same as hydrocholorothiazide)	DIURETIC	Score as Diuretic on NTISS screen only
IBUPROFEN	COX INHIBITOR	If Prophylactic, score on Diagnosis / Procedures Screen
IMIPENEM	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
INDERAL (same as Propanolol)	NOT SCORED (anti-arrhythmia agent)	
INDOCIN (same as Indocid)	INDOMETHACIN (for PDA treatment-score on D&P screen)	Score on NTISS screen If Prophylactic, also score on Diagnosis / Procedures Screen
INDOMETHACIN	INDOMETHACIN	Score on NTISS screen If Prophylactic, also score on Diagnosis / Procedures Screen
INFASURF	SURFACTANT	Score as Surfactant - Other on Medications Screen
INHALED STEROIDS	STEROID	Score as Post-Natal Steroid on Medications Screen
INSUFLON	NOT SCORED	
INSULIN	NOT SCORED	
INTAL (same as Cromolyn)	NOT SCORED (antihistamine)	
IRON, ELEMENTAL	NOT SCORED (given for anemia)	

ISO (ISOFLUORINE) inhalation (Aneasthetic)	NOT SCORED	
ISOFERAN	NOT SCORED	
ISONIAZID	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
ISOPROTERENOL	BRONCHODILATOR	NOT SCORED (bronchodilator)
ISUPREL	NOT SCORED	
IV BICARBONATE (NEUT OR THAM)	NOT SCORED (acidosis treatment)	
KEFLEX	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
KEFZOL	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
KETAMINE (Anesthetic)	SEDATIVE	Score as sedative on Patient Chart Screen
KETOCONAZOLE	NOT SCORED (anti-fungal agent)	Score as Antibiotic on Patient Chart Screen and NTISS Screen
L-ARGININE	Prophlactic for NEC	If Prophylactic, Score on Diagnosis / Procedures Screen
LASIX	DIURETIC	Score as Diuretic on NTISS screen only
LEBETALOL	NOT SCORED (vasodilator)	
LIDOCAINE (Anesthetic)	NOT SCORED	
LINEZOLID	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
LORAZEPAM (same as Ativan)	SEDATIVE, ANTICONVULSANT	Score as Sedative on Patient Chart Screen if used as sedative and not as anticonvulsant, If uncertain as to reason score as sedative
LUGOL'S SOLUTION (same as Potassium Iodine)	NOT SCORED (anticonvulsant)	
MAGNESIUM SULFATE	DIURETIC	
MEPERIDINE	NARCOTIC	Score as either Infusion or Bolus on NTISS Screen If Infusion, also Score as Narcotic on Patient Chart Screen
MEROPENEM	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
METHADONE	NARCOTIC	Score as either Infusion or Bolus on NTISS Screen If Infusion, also Score as Narcotic on Patient Chart Screen
METHYLPREDNISOLONE	STEROID	Score as Post-Natal Steroid on Medications Screen
METHYLPREDNISONE	DIURETIC	Score as Post-Natal Steroid on Medications Screen
METICILLIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen
METRONIDAZOLE (same as Flagyl)	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
MEZLOCILLIN	SEDATIVE	Score as Sedative on Patient Chart Screen
MIDAZOLAM	SEDATIVE	Score as Sedative on Patient Chart Screen
MILRINONE	PRESSOR	Score as Inotropes on Patient Chart Screen
MIVACURIUM	PARALYTIC	Score as Musc. Relaxant on Patient Chart Screen
MOGADON (same as Nitrazepam)	NOT SCORED (anticonvulsant)	
MORPHINE	NARCOTIC	Score as either Infusion or Bolus on NTISS Screen If Infusion, also Score as Narcotic on Patient Chart Screen
MORPHINE SULFATE (same as MSO4)	NARCOTIC	Score as either Infusion or Bolus on NTISS Screen If Infusion, also Score as Narcotic on Patient Chart Screen
MUPIROCIN (same as Bactroban)	NOT SCORED (topical antibiotic)	
MYCOSTATIN (same as Nystatin)	See Nystatin (oral vs. topical)	
NAFCILLIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS

		Screen
NaHCO3 (same as Sodium Bicarb)	NOT SCORED (acidosis treatment)	
NARCAN (same as Naloxone)	NOT SCORED	
NEOSTIGME	NOT SCORED	
NEOSYNEPHRINE	NOT SCORED	
NETILMICIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
NEVIRAPINE	HIV medication	Score as Antibiotic on Patient Chart Screen and NTISS Screen
NIFEDIPINE	NOT SCORED (vasodilator)	
NIPRIDE	NOT SCORED	
NITRAZEPAM (same as Mogadon)	NOT SCORED (anticonvulsant)	
NITRIC OXIDE (iNO)	NITRIC OXIDE (vasorelaxant)	Score as NO on Patient Chart Screen
NITRIC OXIDE GAS (Anaesthetic)	NOT SCORED	
NITROGLYCERINE (NTG)	NOT SCORED	
NITROPRUSSIDE	NOT SCORED	
NYSTATIN ORAL SUSPENSION	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
NYSTATIN POWDER/OINTMENT/CREAM	NOT SCORED (topical antibiotic)	
OMEPRAZOLE	NOT SCORED (ulcer treatment)	
ONDANSETRONE (same as Zofron)	NOT SCORED	
OPIUM SOLUTION	NARCOTIC	Score as either Infusion or Bolus on NTISS Screen If Infusion, also Score as Narcotic on Patient Chart Screen
OPTIMYXIN EYE DROPS	NOT SCORED	
OXACILLIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
PALIVIZUMAB	RSV IMMUNIZATION	NOT SCORED
PANCURONIUM (PAVULON)	PARALYTIC	Score as Musc. Relaxant on Patient Chart Screen
PARALDEHYDE (given rectally)	NOT SCORED (anticonvulsant)	
PAVULON	PARALYTIC	Score as Musc. Relaxant on Patient Chart Screen
PEDIAPRED	STEROID	Score as Post-Natal Steroid on Medications Screen
PENICILLIN G	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
PENTOBARBITAL	SEDATIVE	Score as Sedative on Patient Chart Screen
PHENOBARBITAL	SEDATIVE, ANTICONVULSANT	Score as Sedative on Patient Chart Screen if used as sedative and not as anticonvulsant, If uncertain as to reason score as sedative
PHENOXYBENZAMINE	NOT SCORED (vasodilator)	
PHENTOLAMINE (same as Regitine)	NOT SCORED	
PHENYLEPHRINE	PRESSOR	Score as Inotropes on Patient Chart Screen
PHENYLEPHRINE EYE DROPS	NOT SCORED	
PHENYTOIN (same as Dilantin)	NOT SCORED (anticonvulsant)	
PIPERACILLIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS

		Screen
POLYSPORIN	NOT SCORED (topical)	
POLYSPORIN OPTHALMIC OINTMENT	NOT SCORED	
POLYTRIM EYE DROPS	NOT SCORED	
POTASSIUM IODINE (same as Lugol's Solution)	NOT SCORED	
PREDFORTE	NOT SCORED	
PREDNISOLONE	STEROID	Score as Post-Natal Steroid on Medications Screen
PREDNISONE	STEROID (post-natal only)	Score as Post-Natal Steroid on Medications Screen
PRESSORS	NOT SCORED	
PRISCOLINE (same as Tolazoline)	NOT SCORED	
PROBIOTICS	PROBIOTICS	If Prophylactic, Score on Diagnosis / Procedures Screen
PROCAINAMIDE	NOT SCORED (anti-arrhythmia agent)	
PROLASTIN	NOT SCORED	
PROPAFENONE HCL	NOT SCORED (anti-arrhythmia agent)	
PROPANOLOL (same as Inderal)	NOT SCORED (anti-arrhythmia agent)	
PROPOFOL	SEDATIVE	Score as Sedative on Patient Chart Screen
PROPYLTHIOURACIL (PROPYL-THYRACIL)	NOT SCORED	
PROSTAGLANDINS (PGE) IV (PROSTIN)	NOT SCORED	
PROVENTIL	BRONCHODILATOR	NOT SCORED (bronchodilator)
PULMICORT	STEROID	Score as Post-Natal Steroid on Medications Screen
PULMOZYME AEROSOL	NOT SCORED	
PYRID OXIME	NOT SCORED	
PYRIMETHAMINE (oral)	NOT SCORED	
RACEMIC EPINEPHRINE (same as vaponefrin)	BRONCHODILATOR	NOT SCORED (bronchodilator)
RANITIDINE (same as Zantac)	NOT SCORED	
RECOMBIVAX	NOT SCORED (hepatitis vaccine)	
REGITINE (same as Phentolamine)	NOT SCORED	
REGLAN	NOT SCORED	
RETROVIR (same as Zidovudine and AZT)	HIV medication	Score as Antibiotic on Patient Chart Screen and NTISS Screen
RIFAMPIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
RIVOTRIL	NOT SCORED (anticonvulsant)	
ROCURONIUM BROMIDE (same as Zemuron)	PARALYTIC	Score as Musc. Relaxant on Patient Chart Screen
SALBUTAMOL	BRONCHODILATOR	NOT SCORED (bronchodilator)
SANDOSTATIN	NOT SCORED	
SEPTRA (same as Bactrim or Co-Trimoxazole)	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
SEROFLURANE (anaesthetic)	NOT SCORED	

SILDENAFIL (same as Viagra)	NOT SCORED	
SIMETHICONE	NOT SCORED (anti-flatulent agent)	
SOLUCORTEF	STEROID	Score as Post-Natal Steroid on Medications Screen
SOLUMEDROL	STEROID	Score as Post-Natal Steroid on Medications Screen
SOLU-MEDROL	STEROID	Score as Post-Natal Steroid on Medications Screen
SPIRONOLACTONE	DIURETIC	Score as Diuretic on NTISS screen only
STREPTOMYCIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
SUCCYNYLCHOLINE (SUX)	PARALYTIC	Score as Musc. Relaxant on Patient Chart Screen
SUFENTA	NARCOTIC	Score as either Infusion or Bolus on NTISS Screen If Infusion, also Score as Narcotic on Patient Chart Screen
SULFADIAZINE	NOT SCORED (topical)	
SURVANTA	SURFACTANT	Score as Surfactant on Medications Screen
TAZOCIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
TEMPRA (same as acetaminophen)	ANALGESIC	NOT SCORED
THEOPHYLLINE	RESPIRATORY STIMULANT	Score as Caffeine on Patient Chart Screen and NTISS Screen
TOBRADEX EYE OINTMENT	NOT SCORED	
TOBRAMYCIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
TOLAZOLINE (same as Priscoline)	NOT SCORED	
TRIMETHOPRIM	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
TRI-VI-SOL	NOT SCORED	
TYLENOL (Acetaminophen)	ANALGESIC	NOT SCORED
UROKINASE	NOT SCORED	
URSODIOL	NOT SCORED	
VALIUM (same as Diazepam)	SEDATIVE, ANTICONVULSANT	Score as Sedative on Patient Chart Screen if used as sedative and not as anticonvulsant, If uncertain as to reason score as sedative
VALPROIC ACID	NOT SCORED (anticonvulsant)	
VANCOMYCIN	ANTIBIOTIC	Score as Antibiotic on Patient Chart Screen and NTISS Screen
VAPONEFRIN (same as Racemic Epinephrine)	BRONCHODILATOR	NOT SCORED (bronchodilator)
VECURONIUM (VEC)	PARALYTIC	Score as Musc. Relaxant on Patient Chart Screen
VENTOLIN (inhalation)	BRONCHODILATOR	NOT SCORED (bronchodilator)
VIGABATRIN	NOT SCORED (anticonvulsant)	
VIGILON	NOT SCORED	
VITAMIN A	EPITHELIAL GROWTH PROMOTER	If Prophylactic, Score on Diagnosis / Procedures Screen
VITAMIN D	NOT SCORED	
VITAMIN K	NOT SCORED	
VZIG (Varicella Zoster Immuno-globulin)	NOT SCORED	
XYLOCAINE	LOCAL ANAESTHETIC	NOT SCORED

ZANTAC (same as Ranitidine)	NOT SCORED	
ZEMURON (same as Rocuronium Bromide)	PARALYTIC	Score as Musc. Relaxant on Patient Chart Screen
ZIDOVUDINE (same as Retrovir and AZT)	HIV medication	Score as Antibiotic on Patient Chart Screen and NTISS Screen
ZINC GLUCONATE	NOT SCORED	
ZOFRON (same as Ondansetrone)	NOT SCORED	

APPENDIX II

CLASSIFICATION OF OPERATIONS

Score all operations/procedures performed in the operating room and/or requiring anaesthesia.

LAPAROTOMY	THORACOTOMY
Abdominal omphalocele, repair of Aneurysm in right internal iliac artery, removal of Bladder rupture, closure of Bowel, re-section of correction of atresia Colostomy revision of prolapsing colostomy Corkscrew duodenum, release of Dermoid Cyst, removal of (laparo- or thora- depending on site) Diaphragmatic hernia repair (from under the diaphragm) Duodenojejunostomy Fundoplication Enterotomy (for removal of meconium) Epispadias repair Gastroschisis defect, closure of Ileostomy closure/reversal of ileostomy resection ileum & formation ileostomy/mucus-fistula closure of ileostomy & mucus fistula NEC Nephrectomy Omphalocele, closure or re-section of Omphalomesenteric duct fistula, repair of Orchidectomy Pyloromyotomy (for pyloric stenosis) Pyloroplasty Urinary ascites w/ bladder rupture, repair Vesicostomy, closure/revision of Volvulus correction	ASD closure BTS for tricuspid atresia Coarctation repair Cystic adenomatoid malformation, correction of Cystic hygroma Diaphragmatic hernia repair (from above the diaphragm) Esophageal atresia (laparo- or thoro- as per location) Lobectomy Lung biopsy (open chest) Pacemaker, insertion of (permanent) Pneumonectomy Pulmonary artery banding Pulmonary artery plasty (Blalock-Tassug shunt placed) Tracheoesophageal fistula (TEF), repair Vascular ring operation

OTHER	**OTHER**
Amputation, below the knee Angiogram Anoplasty Ballon dilations of the esophagus (also of pulm. valve) Ballon Septostomy Bone marrow biopsy Bronchoscopy Catheters, surgically placed arterial (cardiac) catheterization CVL placement (in OR or w/anaesthesia) Elecath pacing catheter placement IVC catheter peritoneal drainage catheter Choanal atresia repair Circumcision Craniotomy to drain subdural hematoma closure/re-section of Cryo/Laser treatment (for ROP) Cytoscopy Embolization Esophagoscopy Examination under anaesthesia (i.e.) Eye surgery to re-attach cornea (with or without banding) Gastroscopy Gastrostomy G-tube insertion under general anaesthesia G-tube replacement (with general anaesthesia) Hepatic cyst drainage (in radiology under U/S guidance) Hernia repair Herniorrhaphy HICKMAN™ catheter line, placement of (if to superior vena cava) Iridectomy Laryngoscopy Laryngo-bronchoscopy Lensectomy Lung biopsy (if by puncture) Myeloschisis, closure of Myringotomy tubes	Nephrostomy (tube placement) Nerve biopsy (under general anaesthesia) Occipital encephalocele, re-section of Orchiopexy Osteomyletis, drainage of left tibial Pacemaker insertion of (if put in intracardiac) PDA ligation/closure (even if a thoracotomy is required) PDA closed during cardiac catherization with a coil Penrose drain insertion for spontaneous intestinal perforation for NEC (with or without general anaesthesia) Posterior laryngeal cleft, repair of through a laryngeal fissure approach Rectal biopsy Right femoral artery, resection of w/ proximal thrombectomy & w/ a 4-compartment fasciotomy of lower leg Right forearm fasciotomy, both dorsal & volar compartments Right groin wound, debridement & repair of ROP therapy Scalp wound debridement (with formation of multiple flaps & skin grafts Septum pellucidum fenestration for hydrocephalus Silo placement for gastroschisis Skin grafting Stint Placement (even if only lidocaine applied) Subperiosteal release for mouth Tethered cord, release of with operating microscope Tongue adhesion to palate, release of Tongue lip adhesion Tracheostomy (on Diagnosis/Procedures screen only) cricoid split Tracheotomy Ventricular taps, multiple frontal ventricular drain insertion (if w/ general anaesthesia) Vitrectomy

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NO SCORE	**NO SCORE**
Ballon catheter in lung (with fentanyl & pavulon but not anaesthesia) Chest tube placement Cutdown venous access CVL removal (or any line, unless sent to OR specifically for removal) Extra digit removal 10 French thoracotomy tube placement G-Tube replacement (without anaesthesia) Lumbar puncture Pacemaker insertion via esophageal lead	Peripheral arterial line (PAL) placement Skin biopsy Thora/paracentesis Tooth extraction under local anaesthetic Tracheostomy (only counts on Diagnosis/Procedures screen) UAL or UVL placement Ventricular drain insertion (with fentanyl but not general anaesthesia) Ventriculopuncture (through a previously implanted catheter)

APPENDIX III **CLASSIFICATION OF OTHER DIAGNOSIS LIST**

Name	Number	Description
Anemia of prematurity	P61.2	Anaemia due to no identified cause or other causes in preterm infant
Apnea of prematurity	P28.4	Apnoea due to no other reason in a preterm infant
Arrhythmia	P29.1	Cardiac rhythm disturbances
Aspiration of amniotic fluid and mucus	P24.1	Amniotic fluid aspiration
Aspiration of meconium	P24.0	Meconium aspiration syndrome
Aspiration of milk and regurgitated food	P24.3	Milk aspiration
Birth injury, intracranial hemorrhage	P10.1	Intracranial hemorrhage due to birth injury
Birth injury, subarachnoid hemorrhage	P10.3	Subarachnoid haemorrhage due to birth injury
Birth injury, subdural hemorrhage	P10.0	Subdural haemorrhage due to birth injury
Birth injury, unspecified and other	P15.9	Trauma during birth
Cardiomyopathy	I42	Cardiomyopathy
Coagulopathy but not DIC	P61.6	Coagulation abnormalities not meeting diagnosis of DIC, Transient coagulation disorder
Coagulopathy due to Disseminated intravascular coagulation	P60	DIC
Congenital cytomegalovirus infection	P35.1	Congenital CMV infection
Congenital herpes viral [herpes simplex] infection	P35.2	Congenital herpes viral [herpes simplex] infection
Congenital rubella syndrome	P35.0	Congenital rubella infection
Congenital toxoplasmosis	P37.1	Congenital toxoplasmosis
Dehydration	P74.1	Dehydration
Fetal blood loss, other	P50.8	Other foetal blood loss
Fever	P81.9	Pyrexia
Gastroesophageal reflux disease	K21	GERD
Hemolytic disease due to ABO incompatibility	P55.1	ABO incompatibility
Hemolytic disease due to Rh incompatibility	P55.0	Blood group Rh incompatibility
Hemolytic diseases of fetus and newborn, other	P55.8	Other haemolytic diseases of foetus and newborn
Hemorrhage into co-twin	P50.3	Feto-fetal hemorrhage
Hemorrhage into maternal circulation	P50.4	Feto-maternal hemorrhage
Hemorrhagic disease due to cause other than Vitamin K Deficiency	P54	Neonatal hemorrhage

Hemorrhagic disease due to Vitamin K deficiency	P53	HDNB
Hydrocele	P83.5	Scrotal swelling
Hydrops fetalis due to isoimmunization	P56.0	Hydrops fetalis due to isoimmunization
Hydrops fetalis due to other and unspecified haemolytic disease	P56.9	Hydrops fetalis due to other and unspecified haemolytic disease
Hyperglycemia	R73.9	Hyperglycemia
Hyperkalemia	P74.31	Hyperkalaemia
Hypernatremia	P74.21	Hypernatraemia
Hypertension	P29.2	High blood pressure
Hypertonia	P94.1	Increasead tone
Hypoglycaemia	P70.4	Neonatal hypoglycaemia
Hypokalemia	P74.30	Hypokalaemia
Hyponatremia	P74.20	Hyponatraemia
Hypotension	R03.1	Low blood pressure, refractory hypotension
Hypothermia	P81	Hypothermia not as part of therapy
Hypotonia	P94.2	Congenital hypotonia
Inguinal hernia	K40.9	Hernia, inguinal
Intestinal obstruction	P76.9	Bowel obstruction , unspecified includes atresia
Meconium ileus	P75	Meconium ileus, meconium plug
Neonatal abstinence syndrome (NAS) due to maternal use of addictive substances	P96.1	Withdrawal symptoms from maternal use of drugs in newborn
Neonatal abstinence syndrome (NAS) due to neonatal use of addictive substances	P96.2	Withdrawal symptoms from therapeutic use of drugs in newborn
Osteopenia of prematurity	M85.9	Metabolic bone disease of prematurity
Persistent fetal circulation	P29.3	PFC
Persistent pulmonary hypertension (PPHN)	P99.9	Persistent pulmonary hypertension or PPHT
Pneumomediastinum	P25.2	Pneumomediastinum
Pneumopericardium	P25.3	Pneumopericardium
Portal vein thrombosis	I81	Portal vein thrombosis
Pulmonary edema	J81	Pulmonary edema
Pulmonary haemorrhage	P26.8	Pulmonary haemorrhage
Renal failure	P96.0	Renal failure

Respiratory distress, unspecified (not RDS)	P22.9	Respiratory distress (excluding RDS)
Transient myocardial ischemia	P29.4	Transient myocardial ischemia
Transient tachypnea of newborn	P22.1	TTN
Umbilical hernia	K42.9	Hernia, Umbilical but not omphalocele
Urinary tract infection	P39.3	UTI
Vocal cord palsy	J38.0	Paralysis of vocal cords and larynx
Wilson-Mikity syndrome	P27.0	Wilson-Mikity syndrome
Other	O00.0	Optional: "Other" may be chosen to enter any diagnoses that are not listed in the scroll down menu. A free text field (maximum characters=100) for "Other Diagnosis Description" will display.

APPENDIX IV **CLASSIFICATION OF CONGENITAL ANOMALIES**

System	Name	ICD10	Comments
Cardiac Chambers And Circulation	Atrial Septal Defect	Q21.1	
Cardiac Chambers And Circulation	Atrioventricular Septal Defect	Q21.2	
Cardiac Chambers And Circulation	Coarctation Of The Aorta	Q25.1	
Cardiac Chambers And Circulation	Congenital Absence And Hypoplasia Of The Umbilical Artery (Single Umbilical Artery)	Q27.0	
Cardiac Chambers And Circulation	Congenital Heart Block	Q24.6	
Cardiac Chambers And Circulation	Double Outlet Right Ventricle	Q20.1	
Cardiac Chambers And Circulation	Hypoplastic Left Heart Syndrome	Q23.4	
Cardiac Chambers And Circulation	Other Congenital Malformations Of The Circulatory System	Q28	
Cardiac Chambers And Circulation	Other Congenital Malformations Of The Heart	Q24	This includes dextrocardia, cor triatrium, pulmonary infundibular stenosis, subaortic stenosis
Cardiac Chambers And Circulation	Pulmonary Valve Stenosis	Q22.1	
Cardiac Chambers And Circulation	Tetralogy Of Fallot	Q21.3	
Cardiac Chambers And Circulation	Total Anomalous Pulmonary Venous Connection	Q26.2	
Cardiac Chambers And Circulation	Transposition Of The Great Vessels (Tgv)	Q20.3	
Cardiac Chambers And Circulation	Ventricular Septal Defect	Q21	
Chromosomal Abnormalities	Balanced Rearrangements And Structural Markers Not Elsewhere Classified	Q95	
Chromosomal Abnormalities	Down's Syndrome	Q90	
Chromosomal Abnormalities	Edwards' Syndrome Or Trisomy 18	Q91.3	
Chromosomal Abnormalities	Monosomies And Deletions From The Autosomes Not Elsewhereclassified	Q93	
Chromosomal Abnormalities	Other Sex Chromosome Abnormalities, Female Phenotype Not Elsewhere Classified	Q97	
Chromosomal Abnormalities	Other Trisomies And Parial Trisomies Of The Autosomes Not Elsewhere Classified	Q92	
Chromosomal Abnormalities	Patau Syndrome Or Trisomy 13	Q91.7	
Chromosomal Abnormalities	Turner'S Syndrome	Q96	
Digestive	Atresia Of Oesophagus With Tracheo-Oesophageal Fistula	Q39.1	
Digestive	Atresia Of Oesophagus Without Fistula	Q39.0	
Digestive	Atresis Of The Bile Ducts	Q44.2	

Digestive	Congenital Absence, Atresia And Stenosis Of The Anus (Imperforate Anus)	Q42.3	
Digestive	Congenital Absence, Atresia And Stenosis Of The Duodenum	Q41.0	
Digestive	Congenital Absence, Atresia And Stenosis Of The Jejunum	Q41.1	
Digestive	Congenital Absence, Atresia And Stenosis Of The Small Intestine	Q41	
Digestive	Congenital Hypertrophic Pyloric Stenosis	Q40.0	
Digestive	Congenital Malformations Of The Esophagus	Q39	
Digestive	Congenital Malformations Of The Gallbladder, Bile Ducts And Liver	Q44	
Digestive	Congenital Malformations Of The Tongue, Mouth, Pharynx	Q38	
Digestive	Other Congenital Malformations Of The Digestive System	Q45	
Digestive	Other Congenital Malformations Of The Intestine	Q43	This includes meckel's diverticulum, Hirschprung's disease, ECTOPIC ANUS, COLACAL ANOMALY
Ear	Congenital Malformations Of The Ear Causing Impairment Of Hearing	Q16	This includes anomalies of auditory canal, eustachian tube, ossicles
Ear	Other Congenital Malformations Of The Ear	Q17	This includes small ear, large ear, misplaced ear, accessory auricle
Eye	Anophthalomos, Microphthalmos And Macrophthalmos	Q11	
Eye	Congenital Lens Malformations	Q12	This included congenital cataract, lens abnormalities
Eye	Congenital Malformations Of Eyelid,Lacrimal Apparatus And Orbit	Q10	
Eye	Congenital Malformations Of The Anterior Segment Of The Eye	Q13	This includes abnormalities of iris, cornea
Eye	Congenital Malformations Of The Posterior Segment Of The Eye	Q14	This includes abnormalities of vitreous, retina, optic disc, chroid
Eye	Other Congenital Malformations Of The Eye	Q15	
Face And Neck	Congenital Anomalies Of Neck Region	Q18	This includes sinus, cycst, fistula, webbing of neck region
Genital	Congenital Malformations Of Ovaries, Fallopian Tubes And Broad Ligiaments	Q50	
Genital	Congenital Malformations Of The Uterus And Cervix	Q51	
Genital	Hypospadias	Q54.0	
Genital	Indeterminate Sex And Pseudohermaphroditism	Q56	
Genital	Other Congenital Malformations Of The	Q52	

	Female Genitals		
Genital	Other Congenital Malformations Of The Male Organs	Q55	
Genital	Undescended Testicle, Bilateral	Q53.2	
Genital	Undescended Testicle, Unilateral	Q53.1	
Musculoskeletal	Congenital Deformities Of The Feet	Q66	This includes talipes, varus and valgus deformities
Musculoskeletal	Congenital Deformities Of The Hip	Q65	
Musculoskeletal	Congenital Diaphragmatic Hernia	Q79.0	
Musculoskeletal	Congenital Malformations Of The Musculoskeletal System, Not Elsewhere Classified	Q79	
Musculoskeletal	Congenital Malformations Of The Spine And Bony Thorax	Q76	
Musculoskeletal	Congenital Musculoskeletal Deformities Of Arm, Leg, Long Bones	Q68	
Musculoskeletal	Congenital Musculoskeletal Deformities Of Head, Face, Spine And Chest	Q67	
Musculoskeletal	Craniosynostosis	Q75.0	
Musculoskeletal	Exomphalos	Q79.2	
Musculoskeletal	Gastroschisis	Q79.3	
Musculoskeletal	Other Congenital Malformations Of Limbs (Shoulder Girdle, Knee, Arthrogryposis)	Q74	
Musculoskeletal	Other Congenital Malformations Of The Skull And Face Bones	Q75	
Musculoskeletal	Polydactyly	Q69	
Musculoskeletal	Reduction Defects Of The Lower Limb	Q72	
Musculoskeletal	Reduction Defects Of The Upper Limb	Q71	
Musculoskeletal	Reduction Defects Of Unspecified Limb	Q73	
Musculoskeletal	Syndactyly	Q70	
Nervous	Anencephaly	Q00	
Nervous	Congenital Hydrocephalus	Q03	
Nervous	Encephalocele	Q01	
Nervous	Microcephaly	Q02	
Nervous	Other Congenital Malformations Of The Brain	Q04	This includes malformation of corpus callosum, holoprosencephaly, reduction anomaly of brain, cerebellar anomaly
Nervous	Other Congenital Malformations Of The Nervous System	Q07	This includes any other malformations of central nervous sytem not mentioned above
Nervous	Spina Bifida	Q05	
Nervous	Spinal Cord Anomaly Other Than Spina Bifida	Q06	
Other Congenital Malformations	Congenital Ichthyosis	Q80	

Other Congenital Malformations	Congenital Malformations Of The Breast	Q83	
Other Congenital Malformations	Congenital Malformations Syndromes Due To Known Exogenous Causes Not Elsewhere Classified	Q86	This includes fetal alcohol syndrome, fetal hydantoin
Other Congenital Malformations	Epidermolysis Bullosa	Q81	
Other Congenital Malformations	Fetal Alcohol Syndrome (Dysmorphic)	Q86.0	
Other Congenital Malformations	Neurocutaneous Syndromes	Q85	This includes neurofibromatosis, tuberous sclerosis)
Other Congenital Malformations	Other Congenital Malformations Of Skin Appendages Such As Nail, Hair	Q84	This includes hair and nail abnormalities
Other Congenital Malformations	Other Congenital Malformations Of The Skin	Q82	This includes incontinentia pigmenti, mastocytosis, xeroderma, heriditary lymphoedema)
Other Congenital Malformations	Other Congenital Malformations, Not Elsewhere Classified	Q89	This includes malformations of spleen, adrenal, endocrine glands, conjoint twins
Other Congenital Malformations	Other Specified Congenital Malformation Syndromes Affecting Multiple Systems	Q87	
Other Congenital Malformations	Situs Inversus	Q89.3	
Respiratory	Cleft Lip	Q36	
Respiratory	Cleft Palate	Q35	
Respiratory	Cleft Palate With Lip	Q37	
Respiratory	Congenital Cystic Lung	Q33.0	
Respiratory	Congenital Malformations Of The Larynx	Q31	
Respiratory	Congenital Malformations Of The Lung	Q33	This includes agenesis, ectopic, hypoplastic and dysplastic lung
Respiratory	Congenital Malformations Of The Nose	Q30	
Respiratory	Congenital Malformations Of The Trachea And Bronchus	Q32	
Respiratory	Sequestration of The Lung	Q33.2	
Urinary	Congenital Hydronephrosis	Q62.0	
Urinary	Congenital Posterior Urethral Valves	Q64.2	
Urinary	Congenital Renal Cystic Diseases	Q61	
Urinary	Other Congenital Malformations Of The Urinary System	Q64	This includes epispadias, exstrophy of bladder, stricture of meatus
Urinary	Renal Agenesis And Other Defects Of The Kidney	Q60	This includes renal agenesis, hypoplasia, Potter's syndrome

APPENDIX V

DEFINITIONS OF DIAGNOSIS OF INFECTION

When confirming a diagnosis for a given infection episode, look first for a positive culture, then for the administration of appropriate antibiotic therapy and finally look for the clinical signs listed below to infer the appropriate diagnosis type for a particular infection.

CENTRAL NERVOUS SYSTEM INFECTION: Includes meningitis, ventriculitis, spinal abscess without meningitis and brain abscess (ie. epidural abscess).

Meningitis or ventriculitis must meet the following criterion:

a) A pathogen must be isolated from or detected in CSF.

EYE, EAR, NOSE, THROAT AND MOUTH INFECTION: Eye infection includes conjunctivitis and other eye infections. Ear infections include otitis externa, otitis media, otitis interna, and mastoiditis. Nose, throat and mouth infections include oral cavity infections, upper respiratory infections, and sinusitis. ***Record only infections where pathogens were isolated/detected (including viruses) from cultures.***

Conjunctivitis must meet either of the following criteria:

1. Pathogen isolated from culture of purulent exudate obtained from conjunctiva or contiguous tissues, such as eyelid, cornea, meibomian glands, or lacrimal glands.
2. Pain or redness of conjunctiva or around eye ***and*** any of the following:
   a) White blood cells and organisms seen on Gram stain of exudate
   b) Purulent exudate
   c) Positive antigen test on exudate or conjunctival scraping
   d) Multinucleated giant cells seen on microscopic examination of conjunctival exudate or scrapings
   e) Positive viral culture on conjunctival exudate
   f) Diagnostic single antibody titer (IgM) or fourfold increase in paired serum samples (IgG) for pathogen

-Conjunctivitis organisms include: Neisseria gonorrhoeae, Neisseria meningitidis, Chlamydia trachomatis, Staphylococcus aureus, Moraxella catarrhalis, Haemophilus influenzae, Haemophilus species, Streptococcus pneumoniae, Peptostreptococcus, Peptococcus, Streptococcus pyogenes, Pseudomonas aeruginosa, Adenovirus, Herpes simplex, Enterococcus, Other Gram negative enteric bacteria (E. Coli, etc.)

Upper respiratory tract infection (pharyngitis, laryngitis, epiglottis and viral infections (including parainfluenza, influenza, adenovirus, and respiratory syncytial virus(RSV) must meet the following criterion:

1. Patient is less than or equal to 12 months of age and has two of the following: fever (>38^{o}C), hypothermia (<37^{o}C), apnea, bradycardia, nasal discharge, or purulent exudate in throat, ***and*** any of the following:
   a) Organism isolated from culture of specific site
   b) Organism isolated from blood culture
   c) Positive antigen test on blood or respiratory secretions
   d) Diagnostic single antibody titer (IgM) or fourfold increase in paired serum samples (IgG) for pathogen
   e) Physician's diagnosis

Lower respiratory tract (pneumonia) must meet the following criterion:

1. Patient is less than or equal to 12 months of age and has chest x-ray changes consistent with 'pneumonia', 'consolidation' or 'infiltrates' ***and*** worsening respiratory signs (increased respiratory distress or oxygen or ventilation requirements in the previous 24 hours (ie. temp. instability, apnea, bradycardia, etc.)

GASTROINTESTINAL SYSTEM INFECTION: Includes gastroenteritis, hepatitis, necrotizing enterocolitis, gastrointestinal tract infections, and intraabdominal infections not specified elsewhere.

Gastroenteritis must meet either of the following criteria:

1. Acute onset of diarrhea (liquid stools–2 or more in 12 hours) with or without vomiting or fever (>38°C) and no likely noninfectious cause (e.g. diagnostic tests, therapeutic regimen, acute exacerbation of a chronic condition, psychological stress)
2. A positive enteric pathogen isolated on culture ***and*** two of the following with no other recognized cause: nausea, vomiting, abdominal pain, or liquid stools.

Infant necrotizing enterocolitis (NEC) must meet the following criterion:

1. According to Bell's criteria, stage 2 or higher. If there is ***definite pneumatosis (air in the bowel wall) or portal/hepatic air (air in the liver)*** diagnosed by x-ray, or if there is a surgical or autopsy diagnosis of NEC. If surgical autopsy diagnosis conflicts with x-ray diagnosis, the surgical/autopsy diagnosis takes priority. ***X-rays showing free air WITHOUT pneumatosis do NOT count as NEC diagnosis.*** Vomiting, abdominal distension and bloody stools without pneumatosis may lead to a suspected diagnosis and treatment, but is ***not*** counted as NEC diagnosis.

PRIMARY BLOODSTREAM INFECTION: Includes laboratory-confirmed bloodstream infection and clinical sepsis.

Laboratory-confirmed bloodstream infection must meet one of the following criteria:

1. Recognized pathogen isolated from a blood culture ***where*** pathogen is not related to infection at another site.[1]
2. One of the following: fever (>38°C), chills, or hypotension ***and*** any of the following:
    a) Common skin contaminant[2] isolated from 2 blood cultures drawn on separate occasions and where the organism is not related to infection at another site[1]
    b) Common skin contaminant isolated from patient's blood culture with intravascular access device and physician institutes appropriate antimicrobial therapy
    c) Positive antigen test on blood[3] and organism is not related to infection at another site

3. Patient is less than or equal to 12 months of age and has one of the following: fever (>38°C), hypothermia (<37°C), apnea, or bradycardia ***and*** any of the following:
    a) Common skin contaminant[2] isolated from 2 blood cultures drawn on separate occasions and where the organism is not related to infection at another site[1]
    b) Common skin contaminant isolated from patient's blood culture with intravascular access device and physician institutes appropriate antimicrobial therapy
    c) Positive antigen test on blood[3] and organism is not related to infection at another site

Clinical sepsis must meet either of the following criterion:

1. Patient is less than or equal to 12 months of age and has one of the following clinical signs or symptoms with no other recognized cause: fever (>38°C), hypothermia (<37°C), apnea, or bradycardia ***and all*** of the following:
    a) Blood culture not done or no organism or antigen detected in blood
    b) No apparent infection at another site
    c) Physician institutes appropriate antimicrobial therapy for sepsis

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[1] When an organism isolated from a blood culture is compatible with a related nosocomial infection at another site, the bloodstream infection is classified as a secondary bloodstream infection. Exceptions to this are intravascular device-associated bloodstream infections, all of which are classified as primary even if localized signs of infection are present at the access site.

[2] Organisms that are normal skin flora (eg. *diphtheroids, Bacillus sp., Propionibacterium sp., coagulase-negative staphylococci, or micrococci*).

[3] Detection of bacterial, fungal, or viral antigen (eg. *Candida sp.,herpes simplex, varicella zoster, Haemophilus influenzae, streptococcus pneumoniae, Neisseria meningitidis, group B strptococci*) by rapid diagnostic test (eg. counterimmunoelectrophoresis, coagulation, or latex agglutination)

RESPIRATORY SYNCYTIAL VIRUS (RSV): A viral infection of the nose and throat and a major cause of bronchiolitis and pneumonia in young children.

SKIN AND SOFT TISSUE INFECTION: Includes skin infection (other than an incisional wound infection), soft tissue infection, decubitus ulcer infection, burn infection, breast abscess or mastitis, omphalitis, infant pustulosis, and newborn circumcision infection.

Skin infection must meet either of the following criteria:

1. Purulent drainage, pustules, vesicles, or boils.
2. Two of the following at affected site: localized pain or tenderness, swelling, redness, or heat ***and*** any of the following:
    a) Organism isolated from culture of aspirate or drainage from affected site; if organism is normal skin flora, must be a pure culture of a single organism
    b) Organism isolated from a blood culture

Soft tissue infection (necrotizing fasciitis, infectious gangrene, necrotizing cellulitis, infectious myositis, lymphadenitis, or lymphangitis) must meet one of the following criteria:

1. Organism isolated from culture of tissue or drainage from affected site.
2. Purulent drainage from affected site.
3. Abscess or other evidence of infection seen during surgery or by histopathologic examination.
4. Two of the following at affected site: localized pain or tenderness, redness, swelling, or heat ***and*** organism isolated from blood culture.

Pustulosis in infant ($\leq$ 12 months of age) must meet either of the following criteria:

1. Infant has pustules and physician's diagnosis.
2. Physician institutes appropriate antimicrobial therapy.

URINARY TRACT INFECTION: Includes symptomatic urinary tract infection, asymptomatic bacteriua, as well as other infections of the urinary tract.

Symptomatic urinary tract infection must meet either of the following criteria:

1. Patient is less than or equal to 12 months of age and has one of the following: fever (>38^{o}C), hypothermia (<37^{o}C), apnea, bradycardia, dysuria, lethargy, or vomiting ***and*** a urine culture of $\geq 10^2$ colonies/ml of urine with no more than 2 species of organisms in a catheter specimen or bladder tap.

APPENDIX VI

POSITIVE CULTURES - ORGANISM LIST

orgcode	orgtype	org#
ABA	Acinetobacter Bauannii	2.2
ACINE	Acinetobacter species (not specified)	2.2
ACVA	Acinetobacter calcoaceticus Var Anitratus	2.2
ADS	Adenovirus	7
ALW	Acinetobacter Lwoffii	2.2
ANR0	Anaerobic Gram Negative Rod(s)	2
ASP	Actinomyces Acremonium Species	3.2
AST	Alpha Strep	1.4
AUR	Staph Aureus Coga +	1.1
BHSB	Beta-Hemolytic Staph B	1
BSB	Beta Streptococcus Group B	1.2
BSP	Bifidobacterium Species	3.2
CAL	Candida Albicans	4.1
CAND	Candida Glabrata	4.2
CANDIDA	Candida Parapsilosis	4.2
CDI	Citrobacter Diversus	2.2
CFR	Citrobacter Freundii	2.2
CFU	Candida Fugis	4.2
CGUI	Candida Guilliermondii	4.2
CJE	Campylobacter Jejuni	3.1
CLU	Cand	4.2
CMV	Cytomegalovirus	5.1
CONS	Staph Coagulase Negative	1.3
COS	Corynebacterium Species	3
CPA	Candida Species ***(unspecified)***	4.2
CSP	Candida Lusitaniae	4.2
CTR	Candida Tropicalis	4.2
CTRA	Chylamydia Trachomatis	3
DPTH	Diptheriods	3.2
EAE	Eubacterium Aerofaciens	2.2
EAG	Enterobacter Agglomerans	2.2
EAV	Enterococcus Avium	1.6
ECL	Enterobacter Cloacae	2.2
ECOLI	Escherichia Coli	2.1
EFA	Enterococcus Faecalis, Beta-Lactamase Negative	1.6
EGE	Enterococcus Gallinarum	1.6
ENC	Enterococcus Species	1.6
ENT	Enterovirus	5.4
ENTERIC	Enteric Strep	1.4
ESA	Enterobacter Sakazakii	2.2
GBS	Group B Strep	1.2
HIP	Haemphuilus Influenza, Beta-Lactamase Positive	2.3
HSV2	Herpes Simplex Virus Type 2	5.3
IBV	Influenza B Virus	5.3

orgcode	orgtype	org#
INF	Influenza	5
KLEBS	Klebsiella	2.2
KOX	Klebsiella Oxytoca	2.2
KPN	Klebsiella Pneumoniae	2.2
LLA	Lactococcus Lactis	3.2
LSP	Lactobacillus Species	3.2
LTM	Listeriosis monocytogenes	1.7
MFU	Malassezia Furfur	4.3
MSP	Moraxella Species	2.2
MYP	Mycoplasma	1.7
NBA	Gram Negative Bacteria	2
NRO	Gram Negative Rod(s) (includes coliform)	2
NSP	Neisseria Species	3.2
PAE	Pseudomonas Aeruginosa	2.2
PAL	Pseudomonas Alcaligenes	2.2
PAS	Pasteurella Aerogenes	2.2
PBA	Gram Positive Bacteria	3
PC0	Gram positive Coccus (Cocci)	1
PFL	Pseudomonas Fluorescens Group	2.2
PINF	Parainfluenza	6
PR0	Gram Positive Rods	3
PSP	Proteus Species	2.2
RRU	Rhodotorula Rubra	4.3
RSV	Respiratory Syncytial Virus	5.2
SAG	Salmonella Agona	2.2
SAN	Strep Anginosus	1.4
SAU	Staph Aureus Coag +	1.1
SBOV	Strep Bovis	1.6
SCN	Staph Coagulase Negative	1.3
SCU	Staph Capitus Ureolyticus	1.3
SEP	Staph Epidermis	1.3
SHM	Staph Hemolyticus	1.3
SHO	Staph Hominis	1.3
SLU	Staph Lugdunensis	1.3
SMA	Serratia Marcescens	2.2
SMI	Strep Milleri	1.4
SPN	Strep Pneumoniae	1.5
SSM	Strep Anginosus	1.4
SSP	Staph Species	1.3
STY	Salmonella Typhimurium	2.2
SVIR	Strep Veridans Group	1.4
SWA	Staph Warneri	1.3
URP	Ureaplasma	1.7
Y	Yeast	4
OTHER	Other organism	8

APPENDIX VII

CANADIAN NEONATAL NETWORK SITES AND CONTACT INFORMATION

HOSPITAL	SITE INVESTIGATOR
BC Children's Hospital	Dr. Anne Synnes
Children's Hospital of Eastern Ontario	Dr. Nicole Rouvinez-Bouali
Centre Hospitalier Universitaire de Quebec	Dr. Bruno Piedboeuf
Centre Hospitalier Universitaire de Sherbrooke	Dr. Valerie Bertelle
Dr. Everett Chalmers Hospital	Dr. Barbara Bulleid
Foothills Medical Centre	Dr. Wendy Yee
Victoria General Hospital	Dr. Adele Harrison
Hamilton Health Sciences Centre	Dr. Sandesh Shivananda
Hospital for Sick Children	Dr. Andrew James
Health Sciences Centre	Dr. Molly Seshia
Hôpital Sainte-Justine	Dr. Francine Lefebvre / Keith Barrington
IWK Health Centre	Dr. Doug McMillan
Janeway Children's Health and Rehabilitation Centre	Dr. Wayne Andrews
Jewish General Hospital	Dr. Lajos Kovacs
Kingston General Hospital	Dr. Kimberly Dow
Montreal Children's Hospital	Dr. Patricia Riley
Mount Sinai Hospital	Dr. Prakeshkumar Shah
Royal Alexandra Hospital / Stollery Children's Hospital	Dr. Abe Peliowski / Khalid Aziz
Royal Columbian Hospital	Dr. Zenon Cieslak
Regina General Hospital	Dr. Zarin Kalapesi
Royal University Hospital	Dr. Koravangattu Sankaran
Royal Victoria Hospital	Dr. Daniel Faucher
St. Boniface General Hospital	Dr. Gerarda Cronin
Moncton Hospital	Dr. Roderick Canning
St. Joseph Health Centre	Dr. Orlando Da Silva
Saint John Regional Hospital	Dr. Cecil Ojah
Sunnybrook Health Sciences Centre	Dr. Michael Dunn
Surrey Memorial Hospital	Dr. Todd Sorokan
Cape Breton Regional Hospital	Dr. Andrzej Kajetanowicz
Windsor Regional Hospital	Drs. Chuks Nwaesei and Mohammed Abie

For a detailed listing of abstractors and their up-to-date contact information, please go to the CNN website at www.canadianneonatalnetwork.org