The Society of Thoracic Surgeons Congenital Cardiac Surgery Database
Data Quality Report

Participant ID:

File Submission:
Date Of Report:

This Data Quality Report provides information about your most recent data file.   See the date listed above.

- Review each section to ensure that your data are accurately represented. Use the report as a guide for making any necessary changes to your database. Suggestions on how to handle issues are provided**.**

- If you have any questions, please contact your Data Submission Coordinator:

    Name:
    Phone:
    E-mail:

What to do:
If you are not absolutely satisfied with this Data Quality Report, make any data corrections and resubmit your data file as often as time allows. Once you are satisfied with the quality of your data, there are no additional steps needed to complete your harvest. Any data that has been submitted and accepted at the time of the Database Lock will be used in the current analysis <u>unless you notify your Data Submission Coordinator that you do not want your data included in the analysis</u>. The Database Lock date is the last day of each harvest.

If you DO NOT want your data included in the anaylsis**, you must** **email your Data Submission Coordinator BY THE END OF THE HARVEST****, September 29, 2017 and indicate that you want to "OPT OUT" of the current analysis period.**

If you choose to Opt Out, all data submitted during this submission window will be dropped **and you will NOT receive a report for that harvest**. In addition, you will need to resubmit all data for that period during the next submission window.
How to navigate this document:
This Data Quality Report contains links for ease of navigation when viewing it on a computer. <u>Blue underlined text</u> throughout the report represents a link to another portion of the report that contains relevant information. For instance, the entire Table of Contents on the next page is made up of links to each of the sections of the report. By following the link you will be taken directly to that section of the report. Throughout the report there are also links back to the Table of Contents (<TOC>).

'Clicking' on the links:
How you can use your mouse and/or keyboard to follow the links depends upon your computer's settings in Microsoft Word™:

    Click - One option is to use the mouse to place the cursor over the link and then click the left mouse button once to follow the link.

    Ctrl + Click - A different option is to first push and hold the 'Ctrl' key on your keyboard while simultaneously clicking the left mouse button to follow the link.

To check/change this hyperlink setting go to Tools>Options>Edit tab in Microsoft Word™.

Table of Contents

Finalizing Your Harvest

Section 1: Harvest Summary: <TOC>
This section contains a general summary of the most recent
data file submitted.

What to do:
Review record counts and dates to confirm this is what you
intended to submit. If there are any discrepancies, these
should be corrected and your data file resubmitted along with a
new Harvest Verification Form.

- **Raw Data File Characteristics:** <TOC>
  The earliest and latest surgery dates in your data file are shown below along with the total number of procedures.
  Please note that this does not necessarily represent the actual data accepted into the Database (see below).
  **Please review this section of the Data Quality Report carefully since a mismatch between the dates in the
  Raw Data File and the dates on the Harvest Verification Form could result in the unanticipated exclusion
  of cases from the STS Data Warehouse.**

Raw Data File			
	Raw Data File	Harvest Verification Form	Note
Earliest Surgery Date			
Latest Surgery Date			
Record Count			

- **Data Accepted into the Database:**
  Records are accepted into the Database if they contain a valid surgery date <u>and</u> if they are <u>within the dates you
  specified on the Harvest Verification Form</u>.

Specified Minimum Date	Specified Maximum Date	Record Count

- **Reason(s) data were not accepted:**
  See the Itemized Observations Appendix (pg. 19).

Reason	Count

- **Missing Combination Procedure Codes :** <TOC>
  This section displays a count of data version 3.0 or higher records not accepted into the database because a
  combination procedure was not coded using a combination procedure code. Several procedures listed in the
  primary procedure difficulty rankings are actually combinations of 2 or more procedures. Because the complexity
  of the combination is regarded as being different from the complexity of the component procedures when
  performed in isolation,it is important to code these procedures using the combination code rather than coding
  each component separately. For more information on the combination procedure codes please refer to the
  Summer 2013 edition of the STS Database News (http://www.sts.org/resources-publications/sts-national-
  database-news). See the Itemized Observations Appendix (pg. 19) for a list of each observation not accepted
  due to missing a combination procedure code.

ProcCode	Procedure	Count

ProcCode	Procedure	Count

- **Data Eligible for Analysis:** <TOC>
  Count of records that are eligible for analysis and inclusion in the National Reports. A record is eligible if it was accepted into the Database (see above) and it has a valid Date of Birth or a valid Age.

Record Count

  - **Reason(s) data were not eligible:**
    See the Itemized Observations Appendix (pg. 19).

Reason	Count

- **Months with no historic or current data.** <TOC>
  There are currently no observations with surgery dates in the following months in the STS Data Warehouse.

  What to do:

  Review your database and the specified dates (see Data Accepted into the Database (pg. 4) to ensure that your data file submission was complete. If discrepancies are found, correct and resubmit your data file.

Year	Month

- **Anesthesia Participation** <TOC>

Section 2: Issues with submission: <TOC>

Items in this section typically relate to systematic issues with your software and should be addressed and/or corrected by your vendor.

- **Incorrect File Name.** <TOC>
  Incorrect file names require manual intervention and delay data processing as well as reporting to your site.

Submitted Name	Correct Name

- **Core Fields Not Included:** <TOC>
  Even if you do not collect data for the core fields, they should still be included in your software and data file.

  What to do:
  Contact your vendor to ensure that all core fields are included in your software export and harvest transmissions.

Short Name	Data Version

- **Invalid Operation IDs in Related Tables:** <TOC>
  Each Risk Factors, Diagnosis, Procedures, PreopFactors, PreopMeds, IntraopPharm, ICUPharm, AAdvEvents and Complications record has an Operation ID field that the Warehouse needs to determine to which Operation it is related. Below, the Table Name specifies a table related to the Operations table and Count indicates number of records it contains with a missing or invalid Operation ID. Please note that records with an invalid or missing Operation ID are not transferred to the STS Congenital Database. See the Itemized Observations Appendix (pg 19) for a list of each record deleted due to an invalid or missing Operation ID.

  What to do:
  Contact your vendor to ensure all tables related to the Operations table contain valid Operation IDs.

Table Name	Count

- **Invalid Patient IDs in Related Tables:** <TOC>
  Each Operations NC Abnormality, NCAA, ChromAbnormalities, and Syndromes record has a Patient ID field that links it with the appropriate Demographics record. The Table Name specifies a table related to the Demographics table and Count indicates number of records it contains with a missing or invalid Patient ID. Please note that records with an invalid or missing Patient ID are not transferred to the STS Congenital Database. See the Itemized Observations Appendix (pg. 19) for a list of each record deleted due to an invalid or missing Patient ID.

  What to do:
  Contact your vendor to ensure all tables related to the Demographics table contain valid Patient IDs.

Table Name	Count

- **Operations Data Missing Related Records:** <TOC>
  Each Operations record should be associated with one or more record in the tables listed below. The table below lists the number of Operation records missing a related record in the specified table. This check is performed only on cardiac procedure records Operation Type = 1, 2, 6, 7, or 8. See the Itemized Observations Appendix (pg. 20) for a list of the Operation records missing records in one or more of these related tables.

  What to do:
  Contact your vendor to ensure each Operation record has at least one associated record in the tables listed below. Please note that the bracketed number [4] after the table name indicates that the variable is used in the risk model**. If an operation record, where OpType = 1 or 2, is missing data from this table that operation record could potentially be excluded from the risk model.**

Missing Record	Count

- **Demographics Data Missing Related Records:** <TOC>
  Each Demographics record should be associated with one or more record in the tables listed below. The table below lists the number of Demographics records missing a related record in the specified table. See the Itemized Observations Appendix (pg. 20) for a list of the Operation records missing records in one or more of these related tables.

  What to do:
  Contact your vendor to ensure each Demographics record has at least one associated record in the tables listed below. Please note that the bracketed number [4] after the table name indicates that the variable is used in the risk model. **If a demographic record is missing data from this table the associated operation record, where OpType = 1 or 2, could potentially be excluded from the risk model.**

Missing Record	Count

- **Operation Records and Associated Demographic Record Data Version:** <TOC>
  The table below identifies a count of the operation records, for the current reporting period, that were entered under data version 3.0, 3.22, or 3.3 and have a demographic record previously entered in version 2.3 or 2.5. Patients who had a cardiac operation on or after July 1, 2010 and who had a previous operation entered under data version 2.3 or 2.5 are currently excluded from the Risk Model. To ensure these operation records are included in the current Risk Model (also used for STS Public Reporting), the demographic data for these records must be updated.

  What to do:
  Review the table below and refer to the spreadsheet included in the email with your dataquality report (OpDatavrsnCheckItemized) for an itemized list to identify these records. Contact your vendor for assistance and specific instructions on how to update the demographic data for each of these records in your database.

Operation Record Data Version	Demographic Record Data Version	Min SurgDt	Max SurgDt	Count

Section 3: Summary of data accepted: <TOC>

This section summarizes the observations that were accepted into the Database. Records that were not accepted due to missing or incorrect information (see Harvest Summary) are not included in these counts. Counts by surgery year and data version are provided to assist you in assessing your data quality status and targeting your data cleanup effort.

What to do:
- Review this information to ensure that it accurately represents what you intended to submit. If there are any discrepancies that impact the quality or limit the extent of your harvested data file, these should be corrected and your data file resubmitted.
- For issues potentially related to your software, contact your vendor for assistance.

- **Operation Records per Surgery Year:** <TOC>
  This section displays the number of operation records for each year of surgery.

Year	Count

- **Case Eligibility for Inclusion in Mortality Analysis –**
  If a participant has more than 10% missing data for the following variables, they will be excluded from mortality analyses. In order for a Participant's data to be included in the mortality analysis, **no more than 10% of the operation records contained in the reporting period** can have an invalid, missing or "Unknown" value for any one (or more) of the following variables:

VARIABLE	Version 3.0 (SeqNo)	Version 3.22 (SeqNo)	Version 3.3 (SeqNo)
Date of admission	AdmitDt (720)	AdmitDt (780)	AdmitDt (780)
Date of Surgery	SurgDt (730)	SurgDt (790)	SurgDt (790)
Operation Type	OpType (930)	OpType (1002)	OpType (1056)
Primary Diagnosis	PrimDiag (870)	PrimDiag (900)	PrimDiag (900)
Primary Procedure*	PrimProc (910)	PrimProc (940)	PrimProc (940)
Database Discharge Status (Alive, Dead)**	MtDBDisStat (2900)	MtDBDisStat (4260)	MtDBDisStat (4260)
30-day Status (Alive, Dead)**	Mt30Stat (2960)	Mt30Stat (4300)	Mt30Stat (4300)

Please note that primary procedure selected in your software may not match the primary procedure ultimately assigned by the DCRI during analysis
*** 'unknown' value treated as missing*

If any one of the variables listed in the table above has a missing/unknown value, an operation record is considered 'missing' for the purposes of mortality analysis. **If more than 10% of the overall** operation records for the **report time period** (this includes historical data submitted during previous data harvests) for a given database Participant are 'missing', then that Participant's data will be excluded from the mortality analysis.

PLEASE NOTE: The STS is making a concerted effort to improve data completeness for operative mortality. The STS is now implementing additional thresholds for 'missing' or 'unknown' operative mortality fields (MtDBDisStat, Mt30Stat). Although in-hospital mortality data are recorded with high completeness and fidelity, some programs often choose "unknown" as the response for 30-day status, which may impact the accuracy of operative mortality determinations. **Therefore, in order to assure the highest level of accuracy when reporting operative mortality, additional data thresholds are now being implemented to determine eligibility for a composite score (star rating):**

1. For all cases performed from January 1, 2015 through December 31, 2015, the operative mortality fields must not have more than 10% missing. If your % Ineligible is greater than 7% your data are at risk of being ineligible for a composite score (star rating).

2. For all cases performed from January 1, 2016 through December 31, 2016, the operative mortality fields must not have more than 5% missing. If your % Ineligible is greater than 3% your data are at risk of being ineligible for a composite score (star rating).

3. For all cases performed on or after January 1, 2017, the operative mortality fields must not have more than 2% missing.

If one or more of the operative mortality fields (**MtDBDisStat, Mt30Stat**) is missing or coded as "unknown", the record will be considered incomplete. Participants who do not meet the operative mortality related data completeness thresholds for a particular harvest will NOT be eligible to receive a composite score (star rating).

Refer to the "Percent Missing for Report/Mortality Variables" to see results for the current submission. See the Itemized Observations Appendix (pg. 21) for a list of each observation ineligible for analysis.

What to do:
The table below provides a summary of your Case Eligibility for Inclusion in Mortality Analysis for the upcoming reporting period, which may include data from both your current submission and previous harvest submissions of historical data. **The N represents the total number of OpType 1 and 2 cases. You may need to clean up and resubmit historic data in order to reduce your number of ineligible cases.**

Please note these percentages indicated in the table below are not taking into account additional exclusions that will occur in anaylsis. If you are within a couple percentage points (for example: 7% for the 10% missing threshold or 3% for the 5% missing threshold) of the threshold, your data are at risk of being excluded from the mortality analysis and/or the composite score (star rating). This threshold is calculated based on '% missing' as described above. "Unknown" is considered as missing data in analysis.

Time Period	Total Number of Records	Number of Ineligible Cases	% Missing or "Unknown"

- **Database Discharge Mortalities per Surgery Year:** <TOC>
  This section displays, for each surgery year, the number of operation records that indicate a database discharge status of dead as well as the number of patients with a database discharge status of dead. In determining the record count value, patients who had multiple operations during one admission will be counted multiple times. This value should be used only to verify that your data was received correctly by the warehouse. The patient count value shows the number of individual patients who had a database discharge status of dead. See the Itemized Observations Appendix (pg. 21) for a list of each observation with a database discharge status of dead.

PLEASE NOTE that although ALL operation records are used to create this table, only cardiac procedure records where OpType = 1 and 2 are involved in the mortality calculation appearing in the report.

What to do:
The table below provides a summary of your Database Discharge Mortalities for the upcoming reporting period, which may include data from both your current submission and previous harvest submissions of historical data. Compare these counts to your database to ensure that your data for this important field are accurately represented. Review discrepancies and correct any errors in your data, then resubmit your data file.

Data Source	Year	Record Count	Patient Count

- **30-Day Mortalities per Surgery Year:** <TOC>
  This section displays, for each surgery year, the number of operation records that indicate a 30-Day status of dead as well as the number of patients who have a 30-day status of dead. In determining the record count value, patients who had multiple operations during one admission will be counted multiple times. This value should be used only to verify that your data was received correctly by the warehouse. The patient count value shows the number of individual patients who had a 30-day status of dead.

  ==PLEASE NOTE that although ALL operation records are used to create this table, only cardiac procedure records where OpType = 1 and 2 are involved in the mortality calculation appearing in the report.==

  What to do:
  The table below provides a summary of your 30-Dat Mortalities for the upcoming reporting period, which may include data from both your current submission and previous harvest submissions of historical data. Compare these counts to your database to ensure that your data for this important field are accurately represented. Review discrepancies and correct any errors in your data, then resubmit your data file.

Data Source	Year	Record Count	Patient Count

- **Observations per Data Version per surgery year:** <TOC>
  "Raw Data Version value" shows what was contained in the data version field in your data file and "Interpreted Data Version value" shows the version recognized by the STS Data Warehouse.

  What to do:
  If any non-matching interpretations are indicated below, contact your vendor to ensure that the data version field is correctly populated for each observation. Observations with a missing or invalid Data Version value will not be accepted into the Database. If there are any discrepancies that impact the quality or limit the extent of your harvested data file, they should be corrected and your data file resubmitted.

Year	Raw Data Version Value	Interpreted Data Version Value	Count

- **Observations per Operation Type per surgery year:** <TOC>
  This is a count by surgery year for the nine Operation Types (OpType values) reported in the National Report. The procedures are grouped separately to allow you to compare the totals of all procedures to your database totals. If there are any discrepancies that impact the quality or limit the extent of your harvested data file, they should be corrected and your data file resubmitted.

Year	Operation Type	Count

- **Observations per Surgeon Name(Data version 3.0 or later):** <TOC>
This list contains all of the Surgeon Name/ Surgeon NPI combinations found in your current data file submission. Note that a Surgeon name may show up on this list more than once due to misspellings or variations on a name, or due to multiple NPI values.

Ideally there should be a drop down box provided in your software to prevent the need for manual data entry in this field. Your software vendor can assist you with these issues. This list also shows the Surgeon Name affiliated with each Surgeon NPI as recorded in the STS administrative contact database.

If there is a value of **<Yes>** under the NPI Match column, this indicates that the Surgeon NPI submitted in the data record during the current data harvest is a Surgeon NPI that the STS has on file. If there is a value of **<No>** under the NPI Match column, this indicates that the Surgeon NPI submitted in the data record during the current data harvest is not a Surgeon NPI that the STS has on file.

What to do:
Verify that the Surgeon Name on the data record corresponds to the correct Surgeon NPI and associated Surgeon Name in the STS Contact database.

Count	Surgeon NPI, Harvest Data	Surgeon Name, Harvest Data	NPI Match	Surgeon Name affiliated with Surgeon NPI in the STS Contact Database

- **Observations per Anesthesiologist Name(Data version 3.0 or later):** <TOC>
  ONLY APPLICABLE IF YOU ARE AN ANESTHESIA PARTICIPANT

  This list contains all of the Primary Anesthesiologist Name/ Primary Anesthesiologist NPI combinations found in your current data file submission. Note that a Primary Anesthesiologist may show up on this list more than once due to misspellings or variations on a name, or due to multiple NPI values.

  Ideally there should be a drop down box provided in your software to prevent the need for manual data entry in this field. Your software vendor can assist you with these issues. This list also shows the Primary Anesthesiologist Name affiliated with each Anesthesiologist NPI as recorded in the STS administrative contact database.

  If there is a value of **<Yes>** under the NPI Match column, this indicates that the Primary Anesthesiologist NPI submitted in the data record during the current data harvest is an Anesthesiologist NPI that the STS has on file. If there is a value of **<No>** under the NPI Match column, this indicates that the Primary Anesthesiologist NPI submitted in the data record during the current data harvest is not an Anesthesiologist NPI that the STS has on file.
  For data version 3.0, PrimAnesNPI is Not Applicable, so the NPI columns and the STS Name cannot be reported.

  What to do:
  Verify that the Anesthesiologist Name on the data record corresponds to the correct Anesthesiologist NPI and associated Anesthesiologist Name in the STS Contact database. For version 3.0, verify only that the name in the harvest data is correct

Data Vrsn	Count	Anesthesiologist NPI, Harvest Data	Anesthesiologist Name, Harvest Data	NPI Match	Anesthesiologist Name affiliated with NPI in the STS Contact Database

- **Anesthesiologists on file with the STS:** <TOC>
  ONLY APPLICABLE IF YOU ARE AN ANESTHESIA PARTICIPANT

  This lists the Anesthesiologists on file with the STS. Review.

  What to do:
  Compare this list to your records to ensure that the STS Data Warehouse data is correct. Compare the list to the list of Anesthesiologists in the previous table, "Observations per Anesthesiologist Name" to be sure you are only submitting data for the listed anesthesiologists. Duplication of names and misspellings should be corrected and you should resubmit your data file.

Anesthesiologist Name	Role

- **Hospital Name and Hospital NPI# at STS:** <TOC>
  Please note: Beginning with the start of continuous harvesting in June 2017 for the Congenital Heart Surgery Database, if any Hospital name or Hospital NPI # submitted in the data file does not match the information on file with the STS, **the file will be rejected**.

Hospital NPI	STS Hospital Name

What to do:

a. Confirm Hospital NPI # at STS.

    (1) If **NPI # is incorrect**, please contact Elizabeth Watkins at ewatkins@sts.org to make this change
.

b. Is the STS Hospital Name correct?

    (1) **If NO**: Contact Elizabeth Watkins at ewatkins@sts.org to change the hospital name on file for your site(s).
*Please identify the reason why the hospital name is different – such as new ownership, rebranding, or typo.

Ideally there should be a drop down box provided in your software to prevent the need for manual data entry in this field. Your software vendor can assist you with these issues.

- **Hospital information in the Data Warehouse:** <TOC>
The table below lists the Hospital NPI(s) and Hospital Name(s) for all data in the current report period, which may include data from your current data file and historic data previously submitted.

Source	HospNPI	Hospital Name in Data Warehouse	Min SurgDt	Max SurgDt	Count	Match?

What to do:

a. Confirm NPI # in Data Warehouse.

b. Make sure the Hospital Name in YOUR database AND Hospital Name in the Data Warehouse matches the STS Hospital Name. If the data does not match, you must correct the hospital name in your data to EXACTLY match the STS name and **resubmit your data for that entire period**. It is the name in the data warehouse that will be used in any analysis reporting. If necessary, please contact your software vendor for assistance.

c. If all information is accurate and matches, then you should not need to change anything, but keep in mind that if you do change something in the future, your file could be automatically rejected

Beginning with the start of continuous harvesting in July 2017, it is important that the Hospital Name in YOUR DATABASE matches the Hospital Name and Hospital NPI # on file with the STS. This includes punctuation, spelling, abbreviations etc. If the two names do NOT match exactly, your file will be rejected.

- **Observations per Vendor ID:** <TOC>
This list contains the software vendor(s) associated with your records. The vendor ID is provided along with the number of records that were submitted to the Data Warehouse with that vendor ID.

Vendor ID	Count

Section 4: Edits made on your data: <TOC>

The Data Warehouse performs certain edits on harvested data based on established rules that increase the consistency and analyzability of the data. This information is provided to you so that you are aware that changes have been made and that the Data Warehouse data will be different from your site database.

What to do:
Review these edits for accuracy and, as needed, make the appropriate changes in your database. PLEASE NOTE! If edits performed by the STS Data Warehouse impact the accuracy of your data, corrections should be made in your database and the file should be resubmitted.

- **Data Consistency Edits:** <TOC>
  Consistency edits are modifications to field values to make them consistent with other field values in the data record. Consistency edits are performed on a field after comparison between the field and related fields. For example, if Mortality Discharge Status is "Alive" or missing, but Mortality Date is specified and it is between the Admit and Discharge Dates, Mortality Discharge Status is changed to "Dead". Consistency edits are only performed on procedure records where OpType = 1, 2, 6, 7 or 8. See the Itemized Observations Appendix (pg. 21) for a list of each observation affected by consistency edits.

  Bracketed numbers after the FieldName ex. [1 2 3 4] indicate:
  1 = a variable used in the STS National Report
  2 = a variable used in the mortality calculation
  3 = a variable used in the Anesthesia Report
  4 = a variable used in the Risk Model

  What to do:
  Make the same edits in your database to synchronize your database with the Data Warehouse.

Data Version	Surgery Year	Short Name	Field Name	Description	Count

- **Parent/Child Edits:** <TOC>
  Parent/child edits are modifications to field values that are required as a result of a parent/child relationship with other fields on the data record.
  - **For records with a Data Version of 2.30:** If the parent is No or missing and the child field has a value recorded, the parent field is changed to Yes. For example, if OpType (parent field) is not "CPB" but CPBTm or DHCATm (child filed) is specified, OpType is changed to "CPB" at the Data Warehouse.
  - **For records with a Data Version of 2.50, 3.0, 3.22 or 3.3:** If the parent field is "No" and the child field has a value recorded, then the child field is changed to Null at the STS Data Warehouse. For example, if Intubate (parent field) is "No" but IntubateDT (child field) contains a valid date/time, IntubateDT is changed to "Null" at the STS Data Warehouse.

  See the Itemized Observations Appendix (pg. 22) for a list of each observation affected by an edit.

  Bracketed numbers after the FieldName ex. [1 2 3 4] indicate:
  1 = a variable used in the STS National Report
  2 = a variable used in the mortality calculation
  3 = a variable used in the Anesthesia Report
  4 = a variable used in the Risk Model

  What to do:

Contact your vendor to have the Parent/Child dependency relationships reviewed and have your data corrected.

Data Version	Surgery Year	Short Name	Field Name	Description	Count

Section 5: Data Information and Completeness Issues: <TOC>

This section identifies important field-specific data quality issues that affect the completeness of your harvest and may impact analysis and reporting of your data in the National Report. The data version, surgery year, short name and field name are shown for each issue to help you target and prioritize your data review and clean-up activity.

- **The following variables used in reports, mortality calculations and/or risk models had greater than 0% missing in your data file.** <TOC>
  The percentage of missing data for the following fields warrants further review. The information provided in the 'N' column to the far right = the number of records with this item missing / the number of records for which a value is expected. **This section of the dqr reports ONLY on the time period submitted in the current file (not the entire reporting time period).**

  Missing data for those variables involved in the mortality calculation and/or risk model could result in all or some of your records being excluded from the calculation of these measures. PLEASE NOTE: In addition to the operative mortality percent mission thresholds (refer to Section 3), Participants are also at risk of being excluded from the risk model if their overall percent missing (for the reporting time period) is greater than 10% for any one or more of the risk model variables.

  Bracketed numbers after the FieldName ex. [1 2 3 4] indicate:
  1 = a variable used in the STS National Report
  2 = a variable used in the mortality calculation
  3 = a variable used in the Anesthesia Report
  4 = a variable used in the Risk Model

Data Version	Surgery Year	Short Name	Field Name	% Missing	N

- **Primary Procedure does not match Data Warehouse assigned Primary Procedure**<TOC>
  This section displays the number of operation records where the primary procedure assigned by the Participant does not match the Primary Procedure assigned by the Data Warehouse. The Primary Procedure for a given operation is determined by selecting the procedure with the highest STAT Score. There are, however, important additional rules that apply in specific circumstances (refer to Primary Procedure Determination information outlined in the Report Overview/Interpretation Guide of the most recent feedback report.

  See the Itemized Observations Appendix (pg. 23) for a list of each observation where the primary procedure does not match.

  What to do:
   Review this information in your database to ensure that your data are accurately represented. If there are any discrepancies that impact the quality or limit the extent of your harvested data file, these should be corrected and your data file resubmitted.

Data Version	Surgery Year	Count

- **Operation Records with Multiple Primary Procedures** <TOC>

This section displays the number of operation records with more than one Primary Procedure indicated. Each Operations record should be associated with one or more record in the Procedures table, but only one related procedure should be designated as the Primary Procedure.

See the Itemized Observations Appendix (pg. 23) for a list of each observation with more than one primary procedure indicated..

What to do:
Review this information in your database to ensure that your data are accurately represented. If there are any discrepancies that impact the quality or limit the extent of your harvested data file, these should be corrected and your data file resubmitted.

Data Version	Surgery Year	Count

- **Operation Records with NO Primary Procedure** <TOC>
  This section displays the number of operation records with no Primary Procedure indicated. Each Operations record should be associated with one primary Procedure record in the Procedures table.

  See the Itemized Observations Appendix (pg. 23) for a list of each observation with no primary procedure indicated.

  What to do:
  Review this information in your database to ensure that your data are accurately represented. If there are any discrepancies that impact the quality or limit the extent of your harvested data file, these should be corrected and your data file resubmitted.

Data Version	Surgery Year	Count

- **Operation Records with NO Primary Diagnosis** <TOC>
  This section displays the number of operation records with no Primary Diagnosis indicated. Each Operations record should be associated with one primary Diagnosis record in the Diagnosis table.

  See the Itemized Observations Appendix (pg. 23) for a list of each observation with no primary Diagnosis indicated.

  What to do:
  Review this information in your database to ensure that your data are accurately represented. If there are any discrepancies that impact the quality or limit the extent of your harvested data file, these should be corrected and your data file resubmitted.

Data Version	Surgery Year	Count

- **NOS (Not Otherwise Specified) Coded for Diagnosis or Procedure** <TOC>
  This section summarizes those operation records where an NOS option is coded for a diagnosis or procedure. These diagnosis and procedure records will be accepted into the database, but they will not be included in any analysis. This will have an impact on your analysis reports, especially if these records are indicated to be the primary diagnosis or procedure.

See the Itemized Observations Appendix (pg. 23) for a list of each observation with an NOS diagnosis or procedure indicated.

What to do:

Review these records in your database and, wherever possible, replace the NOS choice with one that is more descriptive that accurately reflects the diagnosis of the patient or the procedure that was performed.

Data Version	Surgery Year	NOS Type	Total Count	Count Primary	Count Not Primary

- **Values Not Interpreted.** <TOC>

  Any values unable to be interpreted are set to missing. See the Itemized Observations Appendix (pg. 23) for a list of each observation affected by the edit.

  Bracketed numbers after the FieldName ex. [1 2 3 4] indicate:
  1 = a variable used in the STS National Report
  2 = a variable used in the mortality calculation
  3 = a variable used in the Anesthesia Report
  4 = a variable used in the Risk Model

  What to do:

  Review these fields for nonstandard values. Note that you may need to consult your software vendor to correct the manner in which your data are collected or harvested. Discrepancies that impact the quality or limit the extent of your harvested data file should be corrected and your data file resubmitted.

Data Version	Surgery Year	Short Name	Field Name	Count

- **Data inconsistencies.** <TOC>

  The Data Warehouse reviews data for certain inconsistencies, such as dates out of chronological order (e.g., a Discharge Date that is earlier than the Admit Date). This check is performed on procedure records where OpType = 1, 2, 6, 7, or 8. See the Itemized Observations Appendix (pg. 24) for a list of each observation with data inconsistencies.

  ==Records with "unknown" for prematurity are reported in the table below. Please note the "missingness" rule for Premature is applied to neonates and infants ONLY. If the prematurity variable is coded as "unknown" for neonates and infants, these records will be excluded from the risk model. "Unknown" is considered as missing data in analysis==

  What to do:

  Review and correct these inconsistencies and resubmit your data file.

Data Version	Surgery Year	Inconsistency	Count

- **Discrepant dates within same admission.** <TOC>

  The Data Warehouse is now reviewing data for possible discrepancies for surgeries that appear to have occurred within the same admission. Possible issues could be due to incorrect admit date, hospital discharge date, duplicate data entry, etc. This check is performed on procedure records for the upcoming four year reporting period, which may include data from both your current submission and previous harvest submissions of historical data. All Optypes are included in this check.

  What to do:

Review and correct any discrepancies which may include data from both your current submission and previous (Historic) harvest submissions and resubmit your data file. **PLEASE NOTE: You may need to clean and resubmit historical data to correct some of the discrepancies.**

Patient ID	AdmitDt	SurgDt	Hosp DischDt	Disch Dt	Operation ID	Op Type	Data Vrsn	Source

Appendix: Itemized Observations<TOC>

This section is designed to help participants identify the specific records with data quality issues as previously described in this report. Use this list to identify problems that need to be corrected in your database. The Operation ID may be used to locate the specific record in your database. **If you are unable to locate the Operation ID field in your database, contact your vendor for assistance.**

- **Records not accepted into the Database: <Summary>** <TOC>
  The following records were not accepted into the Database due to the indicated reason. Note: Due to the potential for a high volume of records outside of the harvest window, these records will not be itemized.

Reason not Accepted into the Database	Operation ID

- **Records Missing Combination Procedure Codes :** <TOC>
  The following records were not accepted into the database due to missing a combination procedure code. Listed below are the Operation Ids and the combination procedure code that should be coded for that record.

ProcCode	Procedure	Operation ID	SurgDt

- **Records not eligible for analysis: <Summary>** <TOC>
  The following records were not eligible for analysis due to the indicated reason.

Reason not Eligible for Analysis	Operation ID

- **Invalid Operation IDs: <Summary>** <TOC>
  Each Risk Factors, Diagnosis, Procedures, and Complications record has an Operation ID field that allows the Warehouse to determine which Operation it relates to. Below are records that are missing an Operation ID or have an Operation ID that does not exist in the Operations table. Please note records with an invalid or missing Operation ID are not transferred to the STS Congenital Database. Table Name, ID Field, and ID Value identify the table and record that contains the indicated Invalid Operation ID.

Table Name	ID Field	ID Value	Invalid Operation ID

- **Invalid Patient IDs: <Summary>** <TOC>
  Each Operations and NC Abnormality record has a Patient ID field that allows the Warehouse to determine which Demographics record it relates to. Below are records that are missing a Patient ID or have a Patient ID that does not exist in the Demographics table. Please note that records with an invalid or missing Patient ID are not transferred to the STS Congenital Database. Table Name, ID Field, and ID Value identify the table and record that contains the indicated Invalid Patient ID.

Table Name	ID Field	ID Value	Invalid Patient ID

- **Operation Records Missing Related Records: <Summary>** <TOC>

  Each Operations record should be associated with one or more record in the tables listed below. The table below lists the Operation ID of Operation records missing a related record in the specified table. Please note that this check is performed only on cardiac procedure records (Operation Type = 1, 2, 6, 7 or 8).

  What to do:

  Contact your vendor to ensure that each Operation record has at least one associated record in the tables indicated below. Please note that the bracketed number [4] after the table name indicates that the variable is used in the risk model. **If an operation record with OpType = 1 or 2 is missing data from this table, that operation record could potentially be excluded from the risk model.**

Operation ID	Missing Record	OpType

- **Demographic Records Missing Related Records: <Summary>** <TOC>

  Each Demographics record should be associated with one or more record in the table listed below. The table below lists the Patient ID of Demographics records missing a related record in the specified table. Only Demographics records that have an associated Operations record are checked for this condition).

  What to do:

  Contact your vendor to ensure that each Demographics record has at least one associated record in the table listed below. Please note that the bracketed number [4] after the table name indicates that the variable is used in the risk model. **If a demographic record is missing data from this table the associated operation record, where OpType = 1 or 2, could potentially be excluded from the risk model.**

Patient ID	Missing Record

- **Ineligible for Mortality Analysis : <Summary>** <TOC>

  The STS is now implementing the following threshold for 'missing' or 'unknown' mortality fields (MtDBDisStat, Mt30Stat).

  1. For all cases performed from January 1, 2015 through December 31, 2015, the operative mortality fields must not have more than 10% missing. If your % Ineligible is greater than 7% your data are at risk of being ineligible for a composite score (star rating).

  2. For all cases performed from January 1, 2016 through December 31, 2016, the operative mortality fields must not have more than 5% missing. If your % Ineligible is greater than 3% your data are at risk of being ineligible for a composite score (star rating).

  3. For all cases performed on or after January 1, 2017, the operative mortality fields must not have more than 2% missing.

  If one or more of the following fields is missing or coded as "unknown", the record will be considered incomplete. Going forward, participants who do not meet the mortality-related data completeness thresholds for a particular harvest will not be eligible to receive a composite score (star rating). Please refer to **<Summary>** (Section 3. Item 2) for additional information.

VARIABLE	Version 3.0 (SeqNo)	Version 3.22 (SeqNo)	Version 3.3 (SeqNo)
Date of admission	AdmitDt (720)	AdmitDt (780)	AdmitDt (780)
Date of Surgery	SurgDt (730)	SurgDt (790)	SurgDt (790)

Operation Type	OpType (930)	OpType (1002)	OpType (1056)
Primary Diagnosis	PrimDiag (870)	PrimDiag (900)	PrimDiag (900)
Primary Procedure*	PrimProc (910)	PrimProc (940)	PrimProc (940)
Database Discharge Status (Alive, Dead)**	MtDBDisStat (2900)	MtDBDisStat (4260)	MtDBDisStat (4260)
30-day Status (Alive, Dead)**	Mt30Stat (2960)	Mt30Stat (4300)	Mt30Stat (4300)

Please note that primary procedure selected in your software may not match the primary procedure ultimately assigned by the DCRI during analysis
** *'unknown' value treated as missing*

The table below lists the records missing key data elements which affect your Eligibility for Inclusion in Mortality Analysis for the upcoming reporting period, which may include data from both your current submission and previous submissions of historical data. You may need to clean and resubmit historical data to reduce your Total % Ineligible.

PLEASE NOTE that this table contains only cardiac procedure records where OpType = 1 and 2.

Data Source	Surgery Year	Data Vrsn	Operation ID	Patient ID

- **Database Discharge Mortalities: <Summary> <TOC>**
  The following records represent the database discharge mortalities in the data submitted as determined by the Data Warehouse. If there are any discrepancies between this list and the data in your database, determine the cause, make any corrections and, if necessary, resubmit your data file.

  PLEASE NOTE that although ALL operation records are used to create this table, only cardiac procedure records where OpType = 1 and 2 are involved in the mortality calculation appearing in the report.

Source	Surgery Year	Operation ID	Patient ID	OpType

- **30-Day Mortalities per Surgery Year: <TOC>**
  The following records represent the 30-day mortalities in the data submitted as determined by the Data Warehouse. If there are any discrepancies between this list and the data in your database, determine the cause, make any corrections and, if necessary, resubmit your data file.

  PLEASE NOTE that although ALL operation records are used to create this table, only cardiac procedure records where OpType = 1 and 2 are involved in the mortality calculation appearing in the report.

Source	Surgery Year	Operation ID	Patient ID	OpType

- **Data Consistency Edits: The following field values were modified to make them consistent with other field values on the data record. <Summary> <TOC>**
  Consistency edits are performed on a field after comparison between the field and related fields. The table indicates each observation with a consistency edit, where the Submitted Value was changed per the edit description.

Bracketed numbers after the FieldName ex. [1 2 3 4] indicate:
1 = a variable used in the STS National Report
2 = a variable used in the mortality calculation
3 = a variable used in the Anesthesia Report
4 = a variable used in the Risk Model

What to do:
If these consistency edits were incorrectly made at the STS Data Warehouse due to data entry errors in other fields, changes need to be made to the affected records in your database and your data file resubmitted. If the edits were correctly made, make the same edits in your database to synchronize your database with the STS Data Warehouse.

Data Version	Surgery Year	Short Name	Field Name	Description	Operation ID	Patient ID

- **Itemized Parent/Child Edits – The following field values were modified as a result of a parent/child relationship with other fields on the data record. <Summary> <TOC>**
    - **For data version 2.30 data records**, parent/child edits are performed on a parent field if a related child field has a value indicating that the parent should be Yes.
    - **For data version 2.50, 3.0, 3.22 or 3.3 data recorords**, parent/child edits are performed on a child field if the related parent field indicates that the child should be blank.
      A full listing of the parent/child relationships can be found on the STS Web site at www.sts.org. This table indicates each observation with a parent/child edit.

Bracketed numbers after the FieldName ex. [1 2 3 4] indicate:
1 = a variable used in the STS National Report
2 = a variable used in the mortality calculation
3 = a variable used in the Anesthesia Report
4 = a variable used in the Risk Model

What to do:
If these parent/child edits were incorrectly made at the Data Warehouse due to data entry errors in other fields, changes need to be made to the affected records in your database and your data file resubmitted. If these edits were correctly made, make the same edits in your database to synchronize your database with the STS Data Warehouse.

Data Version	Surgery Year	Short Name	Field Name	Description	Operation ID	Patient ID

- **Primary Procedure does not match Data Warehouse assigned Primary Procedure<TOC>**
  This section displays the operation records where the primary procedure assigned by the Participant does not match the Primary Procedure assigned by the Data Warehouse. The Primary Procedure for a given operation is determined by selecting the procedure with the highest STAT Score. There are, however, important additional rules that apply in specific circumstances (refer to Primary Procedure Determination information outlined in the Report Overview/Interpretation Guide of the most recent feedback report).

What to do:
Please review the operations listed below and ensure the correct primary procedure is assigned in your database.

Data Source	Surgery Year	Operation ID	Patient ID	Participant Primary	STS Primary

- **Multiple Primary Procedures Indicated: <Summary> <TOC>**
  Each Operations record should be associated with one or more record in the Procedures table, but only one related procedure should be designated as the Primary Procedure. The table below lists the Operation ID of Operation records with more than one related Primary Procedure in the Procedures table.

  What to do:
  Please review the operations listed below and ensure that only one of the procedures performed is flagged as the primary procedure.

Operation ID	Count of Primary Procedures

- **NO Primary Procedure Indicated: <Summary> <TOC>**
  Each Operations record should be associated with one Primary Procedure in the Procedures table. The table below lists the Operation ID of Operation records with NO Primary Procedure in the Procedures table.

  What to do:
  Please review the operations listed below and ensure that a primary procedure is indicated.

Operation ID

- **NO Primary Diagnosis Indicated: <Summary> <TOC>**
  Each Operations record should be associated with one Primary Diagnosis in the Diagnosis table. The table below lists the Operation ID of Operation records with NO Primary Diagnosis in the Diagnosis table.

  What to do:
  Please review the operations listed below and ensure that a primary Diagnosis is indicated.

Operation ID

- **NOS (Not Otherwise Specified) Coded for Diagnosis or Procedure: <Summary> <TOC>**
  This section itemizes those operation records where an NOS option is coded for a diagnosis or procedure. These diagnosis and procedure records will be accepted into the database, but they will not be included in any analysis. This will have an impact on your analysis reports, especially if these records are indicated to be the primary diagnosis or procedure.

  What to do:
  Review these records in your database and, wherever possible, replace the NOS choice with one that is more descriptive that accurately reflects the diagnosis of the patient or the procedure that was performed.

Data Version	Surgery Year	NOS Type	Operation ID	NOS Code	Is Primary?

- **Values not interpreted. <Summary> <TOC>**
  Any values unable to be interpreted are set to missing.

  What to do:

Review these fields for nonstandard values. Note that you may need to consult your software vendor to correct the manner in which your data are collected or harvested. Discrepancies that impact the quality or limit the extent of your harvested data file should be corrected and your data file resubmitted.

Data Version	Surgery Year	Short Name	Operation ID	Patient ID	Submitted Value

- **Data Inconsistencies: <Summary>** <TOC>
  The following records contain the indicated inconsistencies, such as dates out of chronological order (e.g., a Discharge Date that is earlier than the Admit Date).

  Records with "unknown" for prematurity are reported in the table below. Please note that in analysis the "missingness" rule for Premature is applied to neonates and infants ONLY. If the prematurity variable is coded as "unknown" for neonates and infants, these records will be excluded from the risk model. "Unknown" is considered as missing data in analysis

  What to do:
  Review and correct these inconsistencies and resubmit your data file.

Inconsistency	Data Version	Surgery Year	Operation ID	Patient ID

- **Duplicate Risk Factors, Diagnosis, Procedures or Complications:** <TOC>
  Each Operations record may be associated with one or more records in the Risk Factors, Diagnosis, Procedures or Complications tables. However, each risk factor, diagnosis, procedure or complication value should only occur once for each Operation record. The table below lists the Operation ID of records with duplicate values in one of these tables. The duplicate records will be deleted from the database by the data warehouse (if one of the duplicate records is marked as the primary diagnosis or procedure, that record will be kept).

  What to do:
  Review these records in your database and ensure that each risk factor, diagnosis, procedure or complication value is selected only once. (**NOTE**: If your software package allows you to select options that are more detailed than the STS defined values, more than one of the site options might be converted to the same STS option during data extract).

Operation ID	Table	Count of Duplicates	Duplicate Value

Finalizing Your Harvest

Once you are satisfied with the quality of your data, there are no additional steps needed to complete your harvest. Any data that has been submitted and accepted at the time of the Database Lock will be used in the current analysis unless you notify your Data Submission Coordinator that you do not want your data included in the analysis. The Database Lock date is the last day of each harvest.

If you DO NOT want your data included in the anaylsis, you must email your Data Submission Coordinator BY THE END OF THE HARVEST, September 29, 2017 and indicate that you want to "OPT OUT" of the current analysis period.

If you choose to Opt Out, all data submitted during this submission window will be dropped **and you will NOT receive a report for that harvest**. In addition, you will need to resubmit all data for that period during the next submission window.