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CANCER AND BIRTH DEFECTS SURVEILLANCE SYSTEM FOR COMMUNITIES AROUND THE SAVANNAH RIVER SITE PHASE II - BIRTH DEFECTS

TECHNICAL PROGRESS REPORT - YEAR 01

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SRRHIS BIRTH DEFECTS REGISTRY TECHNICAL PROGRESS REPORT YEAR 01

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DISCLAIMER

Savannah River Region Health Information System
Birth Defects Registry

Technical Progress Report for Year 01

I. Summary

The Savannah River Region Health Information System Birth Defects Registry (SRRHIS-BDR) began on September 30, 1994, when the U.S. Department of Energy grant was awarded. As with the SRRHIS Cancer Registry, surveillance of the 12 Georgia counties was subcontracted to Emory University School of Public Health. Collaborative efforts between the Medical University of South Carolina (MUSC) and Emory University staffs have been characterized by warm relationships and commitment to developing a state of the art registry.

It has been quite an active and productive year. As a result of early planning efforts, we were able to actually activate the data collection. As of the end of September 1995, partial data from the 1994 birth cohort and up-to-date data for the 1995 birth cohort had been collected on the South Carolina side. The Georgia Staff started later and have not yet caught up to the 1994 level. South Carolina was able to start earlier because they were fortunate to quickly recruit an abstractor. Also, by the end of the first year, an innovative automated data entry system for laptop computers was developed by the computer staff to facilitate and improve data collection.

By early spring of 1995, a majority of the hospitals in the South Carolina catchment area had volunteered full cooperation with the Registry. The three prominent clinical geneticists in South Carolina, Dr. Roger Stevenson at the Greenwood Clinic, Dr. Shashidar Pai at MUSC, and Dr. Robert Best at the Richland Memorial Hospital, were contacted and asked to serve as consultants to the Registry. The Center for Disease Control representative to the South Carolina Bureau of Maternal and Child Health, Dr. William Sappenfield, and the head of the South Carolina Office of Vital Statistics, Mr. Murray Hudson, have been informed of and have endorsed the Registry.

Steps were also taken in year 01 to make the SRRHIS residents aware of the Birth Defect Registry being started. A large number of community contacts were made in anticipation of the visits that would have to be made with the individual hospitals to seek their voluntary collaboration. As with the Cancer Registry, it was imperative that all the SRRHIS-area hospitals participate in the Registry. The experience with the Cancer Registry had been one of tentative acceptance at first, followed by more or less warm acceptance after several years of working and sharing information with

them. This experience made it much easier to anticipate questions and to ease concerns about confidentiality of patient records.

In the next year, more effort will be directed toward community awareness of the registry and toward developing methods for information dissemination. Participation by the Vital Statistics Office of the South Carolina Department of Health and Environmental Control (DHEC) will be solicited for matching with the birth and death certificates to identify any missed cases. Cooperation by DHEC will also be helpful in allaying possible apprehension by some remaining hospital administrations regarding the protection of patient and hospital confidentiality.

Further, in year 02, a great deal of attention will be given to designing the quality control system. This will assure overall quality control, and assist with maintaining standardization between the Georgia and South Carolina components. The following report details the specific activities completed by the South Carolina SRRHIS-BDR staff. The report is divided into three sections: planning, implementation, and information dissemination activities. The progress report on the activities by the Georgia staff is provided in Appendix A.

II. Planning

Planning of the SRRHIS-BDR began in 1992. From the onset, the SRRHIS-BDR was designed to be compatible with the Metropolitan Atlanta Congenital Defects Program (MACDP), of the Centers for Disease Control and Prevention (CDC). This was done for two reasons. First, MACDP is a well-established and respected active surveillance system which has been collecting birth defects data for 25 years. Second, for the SRRHIS-BDR program to be useful, it is imperative that it be comparable to data from established registries, especially with MACDP since most other registries have been modeled after it as well. Therefore, in every aspect of the surveillance, SRRHIS staff consulted and continues to consult with the MACDP staff, headed by Mr. Larry Edmonds.

Once the BDR staff from Emory University was identified, monthly meetings and teleconferences were convened among the three groups (MUSC, Emory and CDC) to discuss the data collection methods, database maintenance system, operation and administrative issues. Throughout the planning meetings, emphasis has been on the standardization of methods used by MUSC and Emory. Feasibility of collecting data retrospectively as well as collecting prenatal diagnosis data has been discussed at length. Quality control methods are being planned. They include a process wherein the

South Carolina abstractor will reabstract cases from Georgia hospitals and vice versa. If feasible, a CDC abstractor will be invited to reabstract in both South Carolina and Georgia. The results of reabstractions will be compared, and a thorough discussion of identified differences will assist in assuring a high level of standardization.

III. Implementation

Dr. John Dunbar, Principal Investigator, and Dr. Yuko Palesch, Project Coordinator, visited all the hospitals in the South Carolina SRRHIS catchment area, as well as selected peripheral area hospitals (i.e., Self Memorial Hospital in Greenwood and Richland Memorial Hospital in Columbia) because many high risk deliveries from the SRRHIS counties are referred to them. With the exception of two hospitals in the Tricounty area (Roper and East Cooper Hospitals), all hospitals have signed a letter of agreement, allowing the SRRHIS-BDR to abstract pertinent information from their medical charts and log books. All SRRHIS area hospitals have provided full cooperation. Discussions with two Charleston area hospitals are continuing.

An abstractor, Julita Schwarz, was hired in early March 1995. Fortunately, her background in medicine, specifically in pediatrics, has complemented her training. She and the Georgia abstractors received hands-on training by the CDC staff in April in Atlanta. Dr. Schwarz also had an informal training earlier in March at CDC so that she could start the data collection almost immediately. Upon completion of training, Dr. Schwarz developed the abstractor's manual by adapting the MACDP Operation Manual to SRRHIS. (See Appendix B.)

Dr. Schwarz initiated data collection using the case abstraction forms which the MACDP staff uses. She has visited the hospitals in all the ten counties in SRRHIS at least once. She has also begun abstracting records at MUSC hospital and Trident Regional Medical Center in the Tricounty area. She has screened newborns through September 1995 at these hospitals. She also began screening the 1994 births in August 1995. A summary of cases and pending cases found to date is provided in Appendix C.

In March 1995, a programmer, Mr. Wenle Zhao, began developing an automated data collection system using FoxPro software. In July, we presented the system to the Emory and CDC staff. It was well-received, and they provided good comments to improve the system. Currently, Mr. Zhao and a part-time programmer, Mr. Richard Daehler-Wilking, are refining the system and updating the user's manual. The system will be downloaded onto

a laptop computer which Dr. Schwarz will use instead of the paper form. It contains some internal validation of data entered and is programmed such that confidentiality is almost perfectly ensured. The hard copy format of reporting of data is duplicated in the computer data entry system. A hard copy of the data collection forms and the User's Guide for the systems are attached in Appendix D.

IV. Information Dissemination

Community activities have been extensive throughout the year. The SRRHIS-BDR, as well as the Cancer Registry, has been discussed on radio and television interviews and has received attention in the local print media. The Hilton Head and the Augusta newspapers printed editorials supporting the restoration of 1996 funds to the State Grant program, which was deleted by the U.S. House of Representatives from the DOE-ESH budget in the summer of 1995. This editorial activity is an expression of the respect felt widely for SRRHIS by the Savannah area citizens. In turn, the program is widely known because Dr. Dunbar and his staff have spent so much effort in educating the residents about the information system being developed for them. Many civic clubs, newspapers, and radio/TV interviewers are awaiting the coming of the three years' worth of Cancer Registry data expected to be published by SRRHIS early in 1996. Tabulations of birth defects incidence rates will come later, but the public continues to be reminded that the birth defects surveillance activity has been added. Judging from audience responses, the SRRHIS-BDR is also becoming well-known and respected.

Dr. Palesch presented the SRRHIS-BDR at a conference in Munich, Germany, in late November 1994. The trip was paid by the German organizers and not by the DOE grant. The purpose of the conference was to discuss the incidence of birth defects in Bavaria region following the Chernobyl nuclear accident, and to evaluate the need and usefulness for a birth defects registry in the future. For the latter, the conference organizers were interested in active methods of surveillance in other countries, namely in the U.S. and Hungary. The differences between an active and passive surveillance systems prompted some discussion by the audience.

As a means to promote active surveillance system, a technical report of birth defects incidence in South Carolina was published. (See Appendix E.) The report utilized data from the birth certificate files from the Office of Vital Statistics of DHEC. For comparison, incidence data from the MACDP and the North Carolina Birth Defects Surveillance were included. It is emphasized that the passive system of birth defects surveillance results in a serious underestimation of true incidence, a defect which the active registry will correct.

CANCER AND BIRTH DEFECTS SURVEILLANCE SYSTEM FOR COMMUNITIES
AROUND THE SAVANNAH RIVER SITE
PHASE II - BIRTH DEFECTS

Technical Progress Report Year 01

APPENDICES

APPENDIX A

Savannah River Region Health Information System Birth Defects Registry
Georgia Section - Emory University

ANNUAL PROGRESS REPORT - YEAR ONE

October 1995

Savannah River Region Health Information System
Birth Defects Registry
Georgia Section - Emory University

ANNUAL PROGRESS REPORT - YEAR ONE

During the first year of the Savannah River Region Health Information System (SRRHIS) planning and implementation of a population-based birth defects registry in 12 Georgia counties was initiated. The goal of the project was to develop a quality birth defects registry modelled after the Metropolitan Atlanta Congenital Defects Project (MACDP) conducted by the Centers for Disease Control and Prevention (CDC) in the 5 central counties of metropolitan Atlanta since Oct. 1967. Although many of the requisite activities are still under development, the initial steps have begun. The following report summarizes the accomplishments of the SRRHIS birth defects registry in Georgia during the first year of operation. This report is divided into two phases: planning and operation.

I. Planning:

Initial planning for this project began in October, 1994. The planning activities have proceeded in three primary directions: (1) internal, organizational planning necessary to implementing this project, (2) developing collaborative relationships and a joint protocol with MUSC, and (3) developing collaborative relationships with the public health community in Georgia necessary to implement a birth defects registry in the Savannah River area. The following plans and documents were developed in each of these areas as follows:

(1) Internal Organizational Planning:

- Early in FY94-95, the internal organizational structure of the project was finalized. Dr. Liff was to act as principal investigator. As such he oversees the general operation of the project as it relates to the larger SRRHIS project. Additionally, as the same staff are used for data management of the cancer and birth defects registries, Dr. Liff supervises this component of the project. Dr. Drews-Botsch provides the direct scientific supervision of the project, the technical aspects of the registry, and coordinates contact with agencies external to Emory University (i.e., MUSC, the Department of Human Resources of Georgia, the Medical College of Georgia, and the hospitals within the study area). Dr. Salbert, of the Medical College of Georgia, provides specific technical expertise with diagnoses and assists Dr. Drews in collaborating with the local hospitals. Ms. Click provides day-to-day supervision of the implementation of the study including coordinating quality control.

- Vital statistics data were reviewed to identify the number of deliveries, deaths, and pediatric admissions to residents of the SRRHIS service area (both Georgia and South Carolina residents) at all Georgia facilities. Based on this list, hospitals with at least 2 deliveries per month were identified and contacted about participating in this project. Additionally, discussions were held with staff from MACDP about their assisting us with abstracting data on SRRHIS residents who are hospitalized in the metropolitan Atlanta area.

- A number of meetings and training sessions were held with MACDP staff at CDC to develop: a case definition, screening definitions, data collection protocols, and quality control procedures.

- A draft field quality control document was developed, and initial training and quality

control procedures were implemented.

(2) Developing collaborative relationships and a joint protocol with MUSC:

- Regular meetings and phone conversations have been held with MUSC to develop a standard protocol for data collection at the two sites.
- Following discussions with CDC, we have developed a standard protocol, case definition, screening procedures, and data collection procedures.
- MUSC is developing a computerized version of the data abstraction form for use by both the Georgia and the South Carolina sites. Following review of this form by Georgia investigators and study staff, this computerized abstraction form will be used by both the Georgia and South Carolina SRRHIS registries.
- We have developed a plan to conduct joint training of staff and quality control of staff to ensure that all data collection staff in the two arms of the registry are collecting data in a similar manner.

(3) Developing collaborative relationships with the public health community in Georgia:

- We held initial planning meetings with staff from the Epidemiology Section and the Child Health Section at the Department of Human Resources for the state of Georgia. Both groups were extremely supportive of our efforts and were interested in assisting us in developing this project. Additionally, we contacted and elicited support from all of the Health Officers for the areas served by this registry.
- We contacted the Vital Records Division for the state of Georgia and were able to negotiate access to state vital records to assist in case finding.
- A letter of support from the Georgia Department of Human Resources was obtained which authorizes Emory University to collect data for the SRRHIS birth defects registry under legislative authority. This permits the mandatory reporting statues of Georgia to be invoked for SRRHIS, and relieves the hospitals of liability for providing information to us without getting individual patient consent.
- We developed a collaborative relationship, and subcontract, with Dr. Bonnie Salbert in the Department of Pediatrics at the Medical College of Georgia. Dr. Salbert has been instrumental in assisting us with identifying key clinical personnel in the study area and assisting us with the clinical aspects of the registry. Additionally, Dr. Salbert has been assisting us in contacting hospitals in the study area and eliciting their support.

II. Operations:

Operationally, the SRRHIS birth defects registry has received permission to collect data on residents of the described area from the majority of delivery hospitals and has begun collecting data on children born in 1995. This step was initiated as a result of the following actions:

- Field staff were hired in the Savannah and the Augusta areas. Both, Ms Vickie Cooke (Augusta) and Ms. Theresa Myers (Savannah) are Accredited Records Technicians who have worked for a number of years with hospitals in the two areas.

- As noted above, training sessions were held at CDC for all the staff (including investigators) in screening and data abstraction procedures. Subsequently a number of training exercises (such as dual coding of charts with defects) and review of staff work and procedures by the project coordinator to ensure that the two abstractors were collecting similar data.

- All of the hospitals in the area have been contacted about the project. Permission to conduct the project has been granted by six of the hospitals, and is pending IRB review in two others.

- Data collection has been completed on children born in the first half of 1995 at the 6 hospitals to which we have been permitted access. To date, 117 medical records have been reviewed, and 28 residents with birth defects have been identified.

APPENDIX B

Savannah River Region Health Information System

Birth Defects Abstractor's Manual

SAVANNAH RIVER REGION
HEALTH INFORMATION SYSTEM
(SRRHIS)

Birth Defects

ABSTRACTOR'S MANUAL

SRRHIS BIRTH DEFECTS REGISTRY ABSTRACTOR'S MANUAL
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I. Introduction

The Abstractor's Manual serves as a guideline for reporting birth defects cases in the Savannah River Region Health Information System (SRRHIS) Defined Geographic Area. The intent of the manual is to set standards for case finding mechanisms and define terminology. The Abstractor's Manual also sets acceptable standards for the individual abstractor.

II. Abstractor's Role

Although the primary emphasis of the birth defects abstractor's position is data collection, preliminary steps must take place to insure access to the hospital departments and medical records.

A positive, professional working relationship with appropriate hospital staff (i.e. Nurse Manager of Labor and Delivery, Nurse Manager of Neonatal/Pediatric Intensive Care Unit, Nursery), must be established and maintained. Displaying proper conduct, discretion, personal appearance and respect for the assigned work area and staff will ensure the high standards of the University and SRRHIS.

A. Responsibilities at the Home Office.

Scheduling visits to the reporting facilities is a primary responsibility of the field birth defects abstractor. However, scheduling must also include one day a week at the SRRHIS home office. An office day is essential to maintain the flow of data transfer to the work station and fulfill routine office procedure requirements. Requirements include completing and signing travel forms, responding to requests and messages, and informing administrative staff of a prearranged field work schedule. The field birth defects abstractor should never return to the field without providing a schedule to the Project Administrator and completing the appropriate travel forms. In addition, attending monthly team meetings is mandatory. Only the Project Administrator may excuse the abstractor from this meeting. The abstractor should always be prepared to report on activities and progress at the meeting.

As the majority of the "field" birth defect abstractor's time is spent in the field, a day at the home office is an important means of communication and organization.

B. Preparing for a Field Visit

Phone communication with the reporting facility's designated contact person to schedule a mutually agreeable date and time for a visit is the first step in preparing for a field case finding/abstracting visit. A pleasant accommodating attitude is essential for the success of the program.

Plan appropriately for travel time and overnight accommodations if a stay is required. Make sure the laptop computer and all accessory equipment is in proper working condition.

Arrive at the scheduled facility on time. Dress appropriately and always display SRRHIS identification on your person. Proper introductions should always take place. Accept the work area assigned to you courteously; adjust yourself to the space provided.

Be organized. Have all manuals, documents, forms, and supplies necessary for proper screening/abstracting available. If the visit is a return abstracting session, a printout of all cases in the facility's existing database should be available to avoid case duplication. Complete the SRRHIS Field Work Report for Birth Defects (Appendix B) for each visit, taking care to balance the number of cases screened in Log Books (# Patients Reviewed in Logs Labor/Del , Nursery),cases screened (# Med. Records Screened) with the number of cases abstracted (# Cases Abstracted) and the number of cases recorded as Non reportable List .

Always be prepared to explain the SRRHIS program and give a concise demonstration of the abstracting process on the laptop computer. If a situation or question arises that would be more appropriately handled by the Project Administrator or the Project Leader, refer the situation/question to the proper staff member.

Remember, the reporting facility's perception of SRRHIS is directly influenced by the abstractor's demeanor in the field.

III. Confidentiality

As a "field" birth defects abstractor, the abstractor will be working on a daily basis in facilities which are cooperating with SRRHIS voluntarily. The commitment to confidentiality must be demonstrated at all times in all participating facilities. Screening lists for case finding purposes,

database verification lists, and non reportable lists should be secured in locked areas while traveling, or away from the work area. Exposed documents could lead to a breech in confidentiality. The laptop computer must never be left open when unattended.

At times, the abstractor may also become aware of certain administrative decisions or interpersonal relationships at a reporting facility. To discuss these decisions or relationships with staff at another reporting facility is inappropriate, unacceptable, and unprofessional. Be extremely careful not to engage in conversation concerning specific patients, treatment modalities, or caseload at any individual reporting facility. Continually assure and demonstrate to all participating facilities SRRHIS's commitment to confidentiality.

IV. Determining Reportablility

A. Reference Date

The date the a registry begins its data collection is known as its reference date.The SRRHIS reference date is January 1 ,1990. Thus cases diagnosed as of thus date forward, that meet the following criteria for reportability will be included in the SRRHIS BDR date base.

B. Reporting Area

As the SRRHIS is a population-based registry, only those children whose mother's place of residence at the time of birth is one of the 25 SRRHIS counties (Appendix C) at the time of diagnosis would be reported to the SRRHIS.

C. Case Definition

1. The mother's residence at the time of birth must be in the twenty five county SRRHIS area as determined by her hospital records or, if in question, by vital records.

2. The child must have a structural or genetic birth defect or other specific birth outcome that can adversely affect his or her health and development. (List of potential birth defects see Appendix D.)

3. The defect must be diagnosed or its signs and symptoms must be recognized within the first year of life.

4. A case must be abstracted by the child's sixth birthday.

5. The infant (fetus) must have a gestational age of at least 20 weeks or birth weight of at least 500 grams. Stillborn infants are included if they have a reportable birth defect.

6. The date of birth is on or after January 1, 1990.

V. Criteria for Exclusion from SRRHIS Birth Defects Registry

Diagnoses considered as normal variants or minor anomalies, and therefore, excluded from the SRRHIS Birth Defects Registry case file are listed in Appendix F. Diagnoses that may be normal variants or subjects to variable diagnoses are included in SRRHIS file only if associated with another reportable defect.

VI. Case finding

A. Sources of data

Sources of data at hospitals include labor and delivery logs, nursery logs, newborn intensive care logs, pediatric logs, pathology/autopsy logs, cytogenetic laboratory logs. Not all sources are available at each hospital. The medical record number of potential cases are identified through a reviewing of the various logs. This process is called case finding. At each source a Case Finding Control Form is maintained (Appendix O) that indicates which logs were reviewed, the dates the logs were received, and the time period involved.

Next, the Medical Record of possible cases are requested (see Appendix E for condition warranting chart review) and reviewed (both mother's medical record and child's medical record) to determine which of the potential cases actually meet the case definition. For stillbirth, the mother's chart is requested and reviewed. An abstract of the medical record then is completed for each reportable case. Unfortunately, pediatric hospitals do not always record the hospital of birth in their data bases. Because new case records from these hospitals may lack information about an infant's delivery, they will require an additional tracking process. If after reviewing of the medical record, a case is determined to be ineligible for inclusion in the Birth Defects Registry, the medical record number is crossed off the list and is shown as non-reportable.

In addition to the hospital sources, Certificates of Birth, Death, and Fetal Death that indicate a birth defect are reviewed and matched against cases listed in the registry.

Medical records then are requested from the reporting hospitals on those children not previously identified from other sources and, if the conditions reported meet the case definition, the information is abstracted for the registry.

If the nature of a birth defect diagnosed in the first year of life is more precisely diagnosed in the child's second or third year of life, and this information is contained in the chart at the time of our review, then the more precise diagnosis is used. The abstracts of cases identified from multiple sources are compared, merged, and added to the registry. Inconsistencies, differences and/or conflicting data are resolved before being entered into the registry.

B. Method of Case finding

1. Pull the appropriate SRRHIS Birth Defects Reporting Source folder for the facility you wish to visit.

2. Review the Reporting Source Summary Sheet for contact person(s) and location(s).

3. Visit each internal source at the location indicated (Nursery, Labor and Delivery, Intensive Care Unit, Department of Pathology...)

4. Review each internal source's appropriate log. Most logs will contain the child's name, medical record number, date of birth, and a space for comments and/or problems.

- Review the comments/problems space for any diagnosis that is not on the excludable list (Appendix F) and the date of birth to make sure it is on or after January 1, 1990. Enter the available information on the Case finding Log Sheet.

- In Labor and Delivery and Nursery review a space for infant birth weight, Apgar score and gestational age. Record on Case finding Log Sheet all cases with:

a. Birth weight less than 2500 grams but above 500 grams,
b. Gestational age less than 35 weeks, but above 20 weeks,
c. Apgar score less than 7 in one minute or in five minutes.

Always enter the Medical Record Number or Date of Birth for each case recorded on the Case Finding Control Form.

VII.Diagnosis

All diagnoses on the reportable list (Appendix D) are to be abstracted. "Ruled out" diagnoses are abstracted if the diagnosis which was ruled out is a reportable condition and was established at a different source. The purpose of this procedure is to be able to remove the earlier diagnosis from the SRRHIS Birth Defects case file when multiple reports on a child are linked during case matching procedures.

The full medical chart is reviewed to determine if the child has one or more reportable or include able diagnosis. Reportable diagnoses are then abstracted into SRRHIS Birth Defects Case Report Form (Appendix P) for live birth and stillbirth.

For any condition abstracted, the chart is searched for the most appropriate sub-specialist, the highest level of confirmation, and the most precise description made.

For children seen at more than one hospital, make an abstract for each child at each hospital. After coding the abstracts should be matched to determine which diagnosis is the final. All conflict diagnoses should be resolved.

VIII. Variable Collected

Data collected on every SRRHIS case will include identification, demographic, and diagnostic information. When the data are not available, the abstractor will have to use state vital statistics to provide additional information.

A. General Instructions:

1. Record all information carefully so you can avoid errors.
2. Use acceptable abbreviations (listed in appendix K).
3. Make sure coded characters are lined up with the proper space. Do not write other text over spaces where codes are to be placed.
4. Always enter dates using six digits in month-day-year sequence. Insert a zero before any single digit number.
5. For infants who are adopted, refer to the adoption procedure (Appendix M) when completing case form. Although those infants must be included as cases, their anonymity must be carefully protected.

B. Case Recording Specific Instructions for Each Data Field

1. Abstractor should record their first, middle, and last initials.
2. Abstractor should record the date the information was abstracted.

3. Hospital of record:

The 6 digit code for the hospital from which the information on this form was abstracted should be entered by the abstractor. For listing of hospital codes, see Appendix L.

4. Patient name:

Enter the child's full name (last, first, middle) from the hospital record.

- If no name is specified, then enter "baby boy" or "baby girl."
- If sex is unspecified or ambiguous, then enter only the last name.
- For multiple birth infants who have not been given a first name yet, after entering the appropriate sex, designate the first born as "1," the second born as "2" and so on.
- If child is to be adopted for last name enter "adopted."

5. Mother's name:

Enter the mother's full name (last, first, maiden). Enclose the mother's maiden name in parentheses. If last name is unknown, code "UNK." If baby was adopted, then enter "ADOPTED."

6. Mother's birth date:

Enter the mother's birth date.If unknown, code "99-99-99."

7. Mother's Social Security number:

Enter the mother's Social Security number. If unknown, code "999-99-9999". If baby was adopted enter "888-88-8888'.

8. Mother's racial or ethnic group:

The abstractor should check the race of the child's mother. If the mother's race is recorded as mixed (e.g. Afro-American, Spanish-American, Japanese-American), use the minority ethnic group as the race of the mother (i.e. Black, Hispanic, Asian).

9. Residence at birth (for determineiting the place of residence pleas see Appendix G and Appendix H):

Enter the mother's street address at the time of birth. If unknown, enter "UNK." If baby was adopted, enter "ADOPTED." (Note: record the street address on a separate piece of paper to give to the SA for determining the correct census tract. The address will not be entered into the computer file; it will be destroyed)

10. City:
Enter the mother's (natural mother if baby is adopted) city of residence. If unknown, enter "UNK."

11. County:
Enter the mother's (natural mother if baby is adopted) county of residence using the codes listed in Appendix J.

12. Zip code:
Enter the mother's (natural mother if baby is adopted) zip code. If unknown, code "99999."

13. Home phone:
Enter the mother's home phone number (area code and number). Do not enter area code 803. If unknown, code "999-9999." If baby was adopted, code "888-8888."

14. Marital status:
Enter the mother's marital status. If unknown, enter "UNK".

15. Education:
Enter the mother's education year. If unknown, enter "UNK".

16. Work Place:
Enter the mother's work place.If unknown,enter "UNK".If baby was adopted enter "Adopted".

17. Work phone number:
Enter the mother's work phone number. If unknown,enter" 999-9999". If baby was adopted enter "888-8888"

18. Father's name:
Enter father's name (last, first, middle). If unknown, enter "UNK." If baby was adopted, enter "ADOPTED."

19. Father's birth date:
If unknown, code "99-99-99."

20. Father's SSN:
Enter the father's Social Security number. If unknown, enter "999-99-9999".

21. Father's racial or ethnic group:
The abstractor should check the race of the child's father. If the father's race is recorded as mixed (e.g. Afro-American, Spanish-American, Japanese-American), use the minority ethnic group as the race of the mother (i.e. Black, Hispanic, Asian).

22. Father's residence at birth: (for determining the place of residence please see Appendix G and Appendix H):
Enter the father's street address . If unknown, enter "UNK." If baby was adopted, enter "ADOPTED."

23. City:
Enter the father's city of residence. If unknown, enter "UNK."

24. County:
Enter the father's county of residence using the codes listed in Appendix J. If unknown, enter "UNK."

25. Zip code:
Enter the father's zip code. If unknown, code "99999."

26. Home phone:
Enter the father's home phone number (area code and number). If unknown, code "999-9999." If baby was adopted, code "888-8888."

27. Education:
Enter the father's education year. If unknown, enter "UNK".

28. Work Place:
Enter the father's work place. If unknown, enter "UNK". If baby was adopted enter "Adopted".

29. Work phone number:
Enter the father's work phone number. If unknown,enter" 999-9999". If baby was adopted enter "888-8888"

30. Other contact:
Enter name (last, first, middle), address (street,city,county,zip code), and relation with the baby. If unknown, enter "UKN".

31. Date of birth:
Enter the complete date of birth of the case infant. Only valid calendar dates in numeric form (e.g. 02-12-89) are acceptable. The code "99-99-99" is invalid. A birth date must be known for the child to meet the case definition.

32.Baby's SSN:
Enter the baby's Social Security number. If unknown leave empty.

33. Sex:
Check the box (code) corresponding to the sex stated in the hospital record. If the sex is ambiguous, or if the biological sex determined by chromosome analysis differs from the assigned sex, code "#3 AMBIGUOUS," and record the difference in abstractor's note (please see Birth Defect Case Report Form Appendix P, page number 2).

34. Hospital of birth:
Use the 8-digit location code from Appendix L. If unknown, code Use the 8-digit location code from Appendix L. If unknown, code "9999." If a child is delivered outside a hospital (e.g., at home or in an ambulance), then record the hospital of first admission, the mother's chart number, and the infant's chart number.

35. Pediatrician:
Record the names (last, first, middle initial) of the first pediatrician who saw the infant after birth.

36. Obstetrician:
Record the name (last, first, middle initial) of obstetrician who admit the mother for delivery or saw her first after delivery.

37. Birth weight:

Record the birth weight either in pounds and ounces or in grams, but not both. Always round up 0.5 (ounces or grams) to the next whole integer. The pounds and ounces data will be converted to grams by the computer. Record the earliest documented weight, preferably from the delivery room. If unknown, code "9999" in grams; leave pounds and ounces blank.

38. Head circumference:

Record the infant's head circumference in centimeters or inches and indicate which measurement was used. If unknown, code "99.9".

39. Length:

Record the infant's length in centimeters or inches and indicate which measurement was used. If unknown, enter "99.9".

40. 1 minute and 5 minute Apgar scores:

Record the two digit Apgar scores from the hospital record.

41. Plurality:

Check the box (code) corresponding to the plurality of birth as stated in the hospital record.

42. Outcome of delivery:

Check the box (code) corresponding to the outcome of the delivery. Note that stillborn includes all non live births that meet the case definition. Spontaneous abortions are considered to be stillborn for the purpose of answering this question. For multiple births with multiple outcomes, explain the situation on abstractor's note of each case record.

43. Co-twin or co-triplet sex:

Record the sex of the other twin or triplets. If more than three infants were born, leave blank and list the sexes of the other infants under Abstractor's Note (see SRRHIS BD Case Report Form page 2).

44. Co-twin or triplet Concordance:

Record status of other twin. If the twins /triplet share some, but not all, of their defects, code 2/3 and record the discrepancies under Abstractor's Note (see SRRHIS BD Case Report Form page 2). If more than two/three infants were born, leave blank and record the defect status of the other infants.

45. Co-twin/ triplet delivery outcome (LB/SB):
Record birth status (live born/stillborn (LB/SB) of the twin/triplet of case infant. If more than three infants were born, leave blank and record the birth status of the other infants under Abstractor's Note (see SRRHIS BD Case Report Form page 2).

46. Gestational age by neonatal exam:
Record the most exact gestational age (rounded to the nearest whole number) available from a Dubowitz, Ballard, or another type of exam. If the infant had both a Dubowitz and a non-Dubowitz exam, always record the Dubowitz. If no neonatal examination is recorded on the chart, code "99." If the infant is described by a pediatrician as "term" (i.e., no exact gestational age), code "88."

47. Ultrasound date:
Indicate the date of the earliest ultrasound performed up through 28 weeks. If an ultrasound was performed after 28 weeks and it was not used as a prenatal diagnosis, then enter the date under PRESENT PREGNANCY INFORMATION, not here.

48. Ultrasound dating:
Enter the gestational age in weeks of the earliest ultrasound performed up through 28 weeks. If an ultrasound was performed after 28 weeks and it was not used as a prenatal PRESENT PREGNANCY INFORMATION.

49. Date of LMP:
Record the first day of last menstrual period (LMP). If only the month and year of the LMP are known, enter "99" for the day. If the entire date is unknown, enter "99-99-99.

50. Date of EDC:
Record the estimated date of confinement. If unknown, enter "99-99-99."

51. Expired:
Enter yes or no. If baby expired abstractor should enter information in field 52-56.

52 Place of death:
Use the 4-digit location code from attachment 3. If the child is still alive, leave blank. If EXPIRED is coded "1," this field must be completed. If place of death is unknown, enter "9999."

53. Autopsy:
Check the box indicating the autopsy status at the hospital where the infant died. If EXPIRED is coded "1," this field must be coded. If the child is not dead, leave blank.

54. Date:
If an autopsy was performed, indicate the date. If unknown, enter "99-99-99." If no autopsy was performed or the child is still alive, leave blank.

55. Place:
Use the 8-digit location code from appendix3. If no autopsy was performed, leave blank. If an autopsy was done but the place is unknown, enter "9999."

56. Autopsy result:
Enter autopsy result , if unknown enter "UKN".

57. Total number of previous pregnancies:
Use the digit zero before any number less than 10. Do not include the pregnancy being discussed in the case record. Include all pregnancies regardless of birth weight. Include all abortions, both spontaneous and induced, as well as all stillbirths. If unknown (i.e., no past obstetric history is available), code "99." Note that the total number of previous pregnancies does not necessarily have to equal the sum of births and abortions due to multiple births (e.g., twins).

58. Number of live births:
Include any live birth, regardless of birth weight. Use the digit zero before any number less than 10. Do not include the pregnancy being recorded. If unknown, code "99."

59. Number of stillbirths:
Use the digit zero before any number less than 10. Include all fetuses born dead of gestational age 20 weeks or greater. If unknown, code "99."

60. Number of induced abortions:
Use the digit zero before any number less than 10. If unknown, code "99."

61. Number of spontaneous abortions:
Use the digit zero before any number less than 10. Include all fetuses born dead of gestational age less than 20 weeks and weighing less than 500 grams. If unknown, code "99."

62. Number of unspecified-type abortions:
If the infant's mother has had previous abortions but the type was not specified, enter the number here. If unknown, code "9."

63. Prenatal DX test:
If evidence that a prenatal diagnostic test, such as amniocentesis or ultrasound was or was not performed, check the appropriate column. If no clear indication is available, check "NOT STATED." If ultrasound was used for a prenatal diagnosis, then indicate "1 DONE," but if it was performed after 28 weeks, do not complete ultrasound information. If ultrasound was used for dating purposes only, then record "2 NOT DONE" for this question.
If the PRENATAL DX TEST is marked "DONE," then all other fields regarding the test must be completed.

64. Type test:
Use the 2-digit codes in Appendix N to indicate the type of prenatal diagnostic test performed. Leave blank if no test was done.

65. Date:
Indicate the date the prenatal diagnostic testing was performed. If unknown, code "99-99-99." Leave blank if no test was done.

66. Hospitals of others admission:
This is to reflect additional hospital admissions. List the 8-digit code from Appendix L for the second hospital where the baby was admitted, readmitted, or transferred. If the only time the baby was hospitalized was at birth, leave blank.

Readmission/transfer:

Indicate whether the second hospital admission listed was for a readmission (including a first admission to a hospital other than the birth hospital) or a transfer. A readmission is defined as an infant who was previously hospitalized being discharged home and then subsequently admitted

to any hospital. A transfer is defined as an infant being transported directly from one hospital to another (without going home), regardless of whether the infant had ever been previously admitted to the latter hospital. If the infant was never readmitted/transferred, leave blank.

67. Second admission date:
Record the most recent date of the hospital of second admission. If unknown code "99-99-99." If no transfer or readmission occurred, leave blank.

68. Date of discharge:
Enter the date of discharge, if unknown, code "99-99-99."

69. Chart number:
Using right justification, record the infant's chart number at the hospital of others admission.

70. Prenatal complication section:
Record significant data about the present (index) pregnancy. This includes illnesses (acute or chronic) with dates and medications, drug, alcohol, or tobacco use, conditions or illnesses specific to pregnancy, and events leading up to an early delivery. To ensure proper interpretation, the abstractor should carefully examine the time and purpose of drugs administered around delivery. For example, pitocin given before delivery has important implications regarding induction or augmentation of labor; yet the same drug administered after delivery has no informative value worth abstracting. Make sure the most significant information (i.e., illness, drug usage) is recorded first.

71. Previous pregnancy and medical history:
Record the history for any previous pregnancies, including year, outcome, gestational age for abortions, birth weight, and sex. Make sure the most significant information (i.e., illness, drug usage, C-section, dilatation and curettage, toxemia) is recorded first. Record other medical conditions that were to related to pregnancies.

72. Family history:
Record family history of any diseases. The abstractor should be certain that all references to family members are from the point of view of the index case and not the mother's. For example, when interpreting the mother's obstetric record, a reference to her husband or her father should be recorded (from the child's point of view) as father and maternal grandfather, respectively. The use of standard abbreviations such as MGF (maternal

grandfather), MGM (maternal grandmother), and PGGF (paternal great grandfather) is acceptable when recording data in this section. Make sure the most significant information is recorded first.

73. Postnatal section:

A. Record any information about postnatal complication. Enter a date, place where postnatal diagnostic procedure was done,specific result and outcome.
If no clear information is available enter "NOT STATED".Leave empty if there was no complication.

B. Record any information about postnatal diagnostic procedures. Enter a date, place, name of procedure, specific result.If no clear information is available enter "NOT STATED".Leave empty if there was no complication.

74. Physical examination section:

This field is use to record all CONSULTATION and physical examination done by specialist. Enter date, place, physician's last name, specialty name, and result. If no clear information is available enter "NOT STATED".Leave empty if there was no complication.

75. Birth defect section .

These spaces represent the most important part of the case record. Carefully reviewed the entire chart, including facesheet, history and physical examination discharge summary, physician's notes, and nurse's notes, autopsy reports, cardiac cateryzation reports, operative reports, laboratory and x-rays result, social services notes, and all consultation to get the most complete and specific diagnoses possible. Record 6-digit British Pediatric Association (BPA) codes modified by MADCAP (please see Appendix D). Enter each reportable diagnosis description on the right of each corresponding diagnosis code. Each diagnosis should be writtenon a separate lane corresponding to a code. The only exeption to this rule would be if two or more defects have the same 6-digit code (e.g. epicantal folds and exophtalmos sharing the 743.800 code). If the infant is diagnosed with a syndrome, record the name and code of the syndrome as well as the individual defects. Abbreviations are not to be used in the diagnosis selection except for these six listed below:

ASD - atrial septal defect,
bil - bilateral,
con - congenital,
PDA - patent ductus arteriosus

PFO - patent foramen ovale,

VSD - ventricular septal defect

Teaching hospitals present special problems because a child may have multiple diagnoses and physicians. Take the diagnosis of the most expert physician examined the child for each anatomic system (e.g., the cardiologist's diagnoses for cardiac anomalies are to be abstracted instead of the resident's diagnoses). Many times it is not clear who is the most expert physician. In these cases, abstract all defects, including discrepant diagnoses. Include other diagnoses mentioned only once in the chart that have not been specifically ruled out either by a more expert physical examination or a laboratory tests. For conditions where multiple diagnostic possibilities are listed (e.g., child with cyanosis having four different diagnoses), review the rest of the chart and abstract only those diagnoses which have not been nullified by physical exam or laboratory tests. If there is a question of whether the diagnosis is reportable, enter it for review in the office.

X.Limitation of Surveillance:

1. Some birth defects are not recognized at birth or do not require subsequent hospitalization. Such cases are not usually collected by SRRHIS Birth Defects Registry because the only evidence would be in private physicians records and hospital outpatient records.

2. Certain diagnoses, such as Turner's Syndrome, are not clinically evident before the age of six years and maybe under ascertained.

3. Miscarriages (i.e. spontaneous abortions before 20 weeks gestation and weighing less than 500 grams are not reported because they are excluded by case definition.

4. Some cases are missed because the information available (obstetric and nursery log, admission slips...) is inaccurate or incomplete.

5. A small percentage of all births do not occur in a hospital. Some of these children will have reportable conditions. The ones who die or are hospitalized during their first year of life will be reported, but the others may be missed.

6. Some children whose parents move after birth or are born in the SRRHIS surveillance area but are diagnosed outside that area will be missed.

APPENDIX A

JOB DESCRIPTION
FOR
TEMPORARY GRANT POSITION

I. Department Name: DBE - Savannah River Region Health Information System
Dept. No.: 25030 Funds No.: ED-14

II. Job Title: Birth Defects Field Abstractor Class Code: _____ Slot No.: _____
(Enter name of position) (For HRM Use)

III. Description of Position:

Maintains cooperative relations with area hospitals and pathological laboratories participating in the SRRHIS birth defects program in order to gain access to health records data for the purpose of screening for all congenital malformations and birth defects, identifying reportable cases and gleaning pertinent information from the acceptable records. Responsible for representing MUSC to the assigned hospitals in a dignified, perspicuous, professional manner, bearing in mind the high standards of the University and the SRRHIS.

IV. Specific Duties:

1. Establishes contacts with personnel in various units (i.e. well baby nurseries, neonatal intensive care nurseries, obstetrics, pediatrics and pathology) of SRRHIS Hospitals in order to have access to all possible sources of information to be utilized in case ascertainment; (Essential) 12%

2. Plans and implements visits to different units within each hospital according to the estimated case load to determine which form of patient tracking is most effective for case ascertainment in each unit and ensures completion of the assigned cases by the end of the year period; (Essential) 12%

3. Spends two to three weeks per year in overnight trips to participating rural SC hospitals. Makes logistical arrangements, contacts, and schedules as necessary; (Marginal) 5%

4. Develops and maintains a positive professional working relationship at the assigned hospitals with the appropriate administrative staff including but not limited to the following professionals: Medical Records Administrator, Assistant Administrator in charge of medical records, Nurse/Administrator in Well-Baby Nurseries, Neonatal Intensive Care Nurseries, Obstetrics, Pediatrics and Hospital Pathologists; (Essential) 10%

5. Collects and compiles data from hospitals on congenital malformations and other birth defects diagnosed within the first year of life; (Essential) 45%

   a. Screens hospital logbooks, daily discharges and disease indices in order to identify potential cases and determine which patients meet the criteria to be included as cases in the surveillance system;

   b. Reviews medical records for diagnosis, maternal history, and demographic information and enters select information into a management system via a laptop computer;

   c. Reviews the collected data on each case to ensure that all eligibility criteria are met; reviews all data entered into the field data entry system for accuracy and completeness; ensures all information is coded according to current methods; alerts professional staff of any unusual cases that are identified when abstracting records;

   d. Keeps strict control over the confidential maintenance of case records and works with the SRRHIS staff in developing and maintaining quality control measures;

   e. Alerts study personnel to logistical and other problems in the data collection process.

6. Follow-up birth and infant death certificate data from state vital records department on infants identified as potential cases following the same guidelines outlined previously. (Marginal) 5%

7. Assists in the coordination of files and records for data processing jobs relating to surveillance activities. Maintains working knowledge of data files; (Essential) 3%

8. Assists technical and statistical personnel in the preparation of reports, manuscripts, charts, and statistical tables; (Marginal) 3%

9. Attends staff meetings to a) obtain current information on SRRHIS news, policies, and procedures; and b) report on the progress of completing the assigned case load and on the status of SRRHIS relations with the individual hospitals; (Marginal) 3%

10. Cooperates with other staff within SRRHIS to achieve its objectives. (Essential) 2%

V. Required Minimum Education and Experience:

- Bachelor's or Associate degree with two years experience in related field.
- Proficiency in medical terminology, medical records procedures, birth defects epidemiologic surveillance and complex data collection requirements. Skill in development of data collection instruments, quality control procedures, and tracking systems training manuals. This position requires a self-motivated individual with the ability to tactfully interface with a wide range of health officials and hospital staff in developing, coordinating and applying the procedures involved in the collection of birth defects surveillance data.

Typical Physical Demands:

Requires prolonged standing or sitting; requires eye-hand coordination and manual dexterity; requires use of office equipment, such as computer terminals, telephones or copiers; visual ability sufficient to read and write correspondence and reports; hearing ability sufficient to hold conversations with other individuals both in person and over the telephone; speaking ability sufficient to communicate effectively with other individuals both over the phone and in person; freedom from mental disorders which would interfere with performance of duties as described. The individual filling this position must be able to drive, possess a valid South Carolina driver's license, and have their own transportation.

VI. Supervisor's signature: Janis L. Koenig Date: 11-15-94

Dept. Head (or designee's) signature: Marilyn Edge Date: 11/15/94

(please attach copy of grant which authorizes position)

SAVANNAH RIVER REGION HEALTH INFORMATION SYSTEM FIELD WORK REPORT-BIRTH DEFECTS

HOSPITAL_______________

Visit Date	Time In	Time Out	# Patients Reviewed in Logs Labor/Del	Nursery	# Med. Records Screened	# Cases Abstracted

APPENDIX C

PARTICIPANT REPORTING AREAS:

STATE	COUNTIES
Georgia	Bryan Bulloch Burke Chatham Columbia Effingham Evans Jefferson Jenkins McDuffie Richmond Screven
South Carolina	Aiken Allendale Bamberg Barnwell Beaufort Berkeley Charleston Colleton Dorchester Edgefield Hampton Jasper Orangeburg

This reporting area will provide population-based information for all counties within 50 miles of the Savannah River Site as well as those downstream to Beaufort and Savannah. In addition, selected more distant counties will serve as comparison areas.

Appendix D

BIRTH DEFECTS AND GENETIC DISEASES BRANCH 6-DIGIT CODE

For Reportable Congenital Anomalies

Based on the 1979 British Pediatric Association (BPA) Classification of Diseases and the World Health Organization's 1979 International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)

Code modifications developed by Birth Defects & Genetic Diseases Branch, National Center for Environmental Health, Centers for Disease Control and Prevention, Public Health Service, U.S. Department of Health and Human Services, Atlanta, Georgia 30333.

INDEX TO 6-DIGIT CODE

INDEX (cont'd.)

Explanation of 6-Digit code

6th Digit Code - Master

.000 Blank
.001 Left Only
.002 Right Only
.003 Unilateral Unspecified
.004 Bilateral
.005
.006

Explanation of 6-Digit code

6th Digit Code - Master

.000 Blank
.001 Left Only
.002 Right Only
.003 Unilateral Unspecified
.004 Bilateral
.005
.006
.007
.008 Possible, Probable, Borderline, or Rule Out
.009 Not Otherwise Specified (NOS)

The previously cited sixth digit added by the record abstractor to the BPA/CDC code modification is used for the following reasons:

.001 Specify laterality if the location of the defect is known.
.002

.003 Specify if the defect is unilateral, when the specific location is unknown.

.004 Specify that the defect is bilateral (i.e., on both sides).

.005 Use in certain circumstances to more specifically
.006 define a particular defect. For example, these codes may be
.007 created to specify the location of a myelomeningocele in spina bifida as cervicothoracic, thoracolumbar, or lumbosacral (see 741.085, etc.)

.008 Rarely use this code specification; it is available for defects that are specified as probable or possible from the hospital record - e.g., "probable PDA" = 747.008, "probable VSD" = 745.498, or a case of Down syndrome without cytogenetic verification. Medical records of cases with this defect code should be reviewed periodically to update the defect list with the most definitive diagnosis.

.009 Indicate that the defect is "not otherwise specified" in any other part of the 6-digit code.

Notes:

An asterisk (*) beside a disease code indicates that the code was created byb CDC. A pound symbol (#) beside a disease code indicates that the condition or defect is listed on the MACDP Exclusion List. A check beside a disease code indicates that an addition/revision was made since the last printing of the Procedure Manual. Use of the code should be according to the exclusion list criteria. The abbreviations NEC and NOS used in this code are defined as not elsewhere classified and as not otherwise specified, respectively.

Anencephalus and Similar Anomalies

740.0	Anencephalus	
	740.000	Absence of brain
	740.010	Acrania
	740.020	Anencephaly
	740.030	Hemianencephaly, hemicephaly
	740.080	Other
740.1	Craniorachischisis	
	740.100	Craniorachischisis
740.2	Iniencephaly	
	740.200	Closed iniencephaly
	740.210	Open iniencephaly
	740.290	Unspecified iniencephaly

741 Spina Bifida

Includes: Spina bifida aperta (open lesions)
myelocele
rachischisis
Spina bifida cystica (closed lesions)
meningocele
meningomyelocele
myelomeningocele
Excludes: Spina bifida occulta (see 756.100)
craniorachischisis (see 740.100)

741.0 Spina Bifida with Hydrocephalus

741.000 Spina bifida aperta, any site, with hydrocephalus

741.010 Spina bifida cystica, any site, with hydrocephalus
and Arnold-Chiari malformation
Arnold-Chiari malformation, NOS

741.020 Spina bifida cystica, any site, with stenosed
aqueduct of Sylvius

741.030 Spina bifida cystica, cervical, with unspecified hydrocephalus
Spina bifida cystica, cervical, with hydrocephalus but without
mention ofArnold-Chiari malformation or Aqueduct stenosis

741.040 Spina bifida cystica, thoracic, with unspecified hydrocephalus,
no mention of Arnold-Chiari

741.050 Spina bifida cystica, lumbar, with unspecified hydrocephalus,
no mention of Arnold-Chiari

741.060 Spina bifida cystica, sacral, with unspecified hydrocephalus,
no mention of Arnold-Chiari

741.070 Spina bifida of any site with hydrocephalus of late onset

741.080 Other spina bifida, meningocele of specified site with hydrocephalus

741.085 Spina bifida, meningocele, cervicothoracic, with hydrocephalus

741.086 Spina bifida, meningocele thoracolumbar, with hydrocephalus

741.087 Spina bifida, meningocele, lumbosacral with hydrocephalus

741.090 Spina bifida of any unspecified type with hydrocephalus

742 Other Congenital Anomalies of Nervous System

742.0 Encephalocele

742.000	Occipital encephalocele
742.080	Other endephalocele of specified site Includes: midline defects
742.085	Frontal encephalocele
742.086	Parietal encephalocele
742.090	Unspecified encephalocele

742.1 Microcephalus

742.100	Microcephalus

742.2 Reduction deformities of brain

742.200	Anomalies of cerebrum
742.210	Anomalies of corpus callosum
742.220	Anomalies of hypothalamus
742.230	Anomalies of cerebellum
742.240	Agyria and lissencephaly
742.250	Microgyria, polymicrogyria
742.260	Holoprosencephaly
742.270	Arrhinencephaly
742.280	Other specified reduction defect of brain
742.290	Unspecified reduction defect of brain

742.3 Congenital hydrocephalus

Excludes: hydrocephalus with any condition in 741.9 (use 741.0)

742.300	Anomalies of aqueduct of Sylvius
742.310	Atresia of foramina of Magendid and Luschka Dandy-Walker syndrome
742.320	Hydranencephaly
742.380	Other specified hydrocephaly Includes: communicating hydrocephaly
742.385	Hydrocephalus secondary to intraventricular hemorrhage (IVH) or CNS bleed
742.390	Unspecified hydrocephaly, NOS

742.4 Other specified anomalies of brain

742.400 Enlarged brain and/or head
megalencephaly
macrocephaly
742.410 Porencephaly
Includes: porencephalic cysts
742.420 Cerebral cysts
742.480 Other specified anomalies of brain
Includes: cortical atrophy
cranial nerve defects
742.485 Ventricular cysts
Excludes: arachnoid cysts
742.486 Small brain

742.5 Other specified anomalies of spinal cord
Excludes: syringomyelia (336.000)

742.500 Amyelia
742.510 Hypoplasia and dysplasia of spinal cord
atelomyelia
myelodysplasia
742.520 Diastematomyelia
742.530 Other cauda equina anomalies
742.540 Hydromyelia
Hydrorachis
742.580 Other specified anomalies of spinal cord and membranes
Includes: congenital tethered cord

742.8 Other specified anomalies of nervous system
Excludes: congenital oculofacial paralysis
Moebius syndrome (use 352.600)
742.800 Jaw-winking syndrome
Marcus Gunn syndrome
742.810 Familial dysautonomia
Riley-Day syndrome
742.880 Other specified anomalies of nervous system

742.9 Unspecified anomalies of brain, spinal cord and nervous system

742.900 Brain, unspecified anomalies
742.910 Spinal cord, unspecified anomalies
742.990 Nervous system, unspecified anomalies

743 Congenital Anomalies of Eye

743.000	Anophthalmos	
	agenesis of eye	cryptophthalmos
743.100	Microphthalmos, small eyes	
	aplasia of eye	hypoplasia of eye
	dysplasia of eye	rudimentary eye

743.2 Buphthalmos

743.200	Buphthalmos congenital glaucome hydrophthalmos
743.210	Enlarged eye, NOS
743.220	Enlarged cornea keratoglobus congenital megalocornea

743.3 Congenital cataract and lens anomalies

743.300	Absence of lens congenital aphakia
743.310	Spherical lens Spherophakia
743.320	Cataract, NOS
743.325	Cataract, anterior polar
743.326	Cataract, other specified
743.330	Displaced lens
743.340	Coloboma of lens
743.380	Other specified lens anomalies
743.390	Unspecified lens anomalies

743.4 Coloboma and other anomalies of anterior segments

743.400	Corneal opacity
743.410	Other corneal anomalies Excludes: megalocornea (use 743.220)
743.420	Absence of iris aniridia
743.430	Coloboma of iris
743.440	Other anomalies of iris polycoria ectopic pupil Peter's anomaly Excludes: brushfield spots (use 743.800)
743.450	Blue sclera
743.480	Other specified colobomas and anomalies of anterior segments Rieger's anomaly
743.490	Unspecified colobomas and anomalies of anterior eye segments

744 Congenital Anomalies of Ear, Face, and Neck

744.0 Anomalies of ear causing impairment of hearing

744.000 Absence or stricture of auditory canal
744.010 Absence of auricle (pinna)
absence of ear, NOS
744.020 Anomaly of middle ear
fusion of ossicles
744.030 Anomaly of inner ear
Includes: congenital anomaly of membranous labyrinth
organ of Corti
744.090 Unspecified anomalies of ear with hearing impairment
Includes: congenital deafness, NOS

744.1 Accessory auricle

744.100 Accessory auricle
Polyotia
744.110 Preauricular appendage, tag, or lobule
(in front of ear canal)
744.120 Other appendage, tag, or lobule include papillomas,
ear tags

744.2 Other specified anomalies of ear

744.200 Macrotia (enlarged pinna)
744.210 Microtia (hypoplastic pinna and absence or
stricture of external auditory meatus)
744.220 Bat ear
744.230 Other misshapen ear
pointed ear elfin pixie-like
lop ear cauliflower ear
cleft in ear malformed ear
absent or decreased cartilage
744.240 Misplaced ears
744.245 Low set ears
744.246 Posteriorly rotated ears
744.250 Absence or anomaly of eustachian tube
744.280- Other specified anomalies of ear (see also 744.230)
Excludes: Darwin's tubercle

744.3 Unspecified anomalies of ear

744.300 Unspecified anomalies of ear
Congenital: ear (any part)
anomaly, deformity, NOS

744.4 Branchial cleft, cyst, or fistula; preauricular sinus

744.400 Branchial cleft, sinus, fistula cyst, or pit
744.410 Preauricular sinus, cyst, or pit
744.480 Other branchial cleft anomalies
Includes: dermal sinus of head
744.500 Webbing of neck
Includes: pterygium colli
redundant neck skin folds

744.8 Other unspecified anomalies of face and neck

744.800 Macrostomia (large mouth)
744.810 Microstomia (small mouth)
744.820 Macrocheilia (large lips)
744.830 Microcheilia (small lips)
744.880 Other specified anomalies of face/neck

744.9 Unspecified anomalies of face and neck

744.900 Congenital anomaly of neck, NOS
Includes: short neck
744.910 Congenital anomaly of face, NOS
Abnormal facies

745 Bulbus Cordis Anomalies and Anomalies of Cardiac Septal Closure

745.0 Common truncus (see 747.200 for pseudotruncus)

745.000 Persistent truncus arteriosus
absent septum between aorta and pulmonary artery

745.010 Aortic septal defect
Includes: aortopulmonary window
Excludes: atrial septal defect (use 745.590)

745.1 Transposition of great vessels

745.100 Transposition of great vessels, complete (no VSD)

745.110 Transposition of great vessels, incomplete (w/VSD)
Taussig-Bing syndrome

745.120 Corrected transposition of great vessels,
L-transposition, ventri in version
Excludes: dextrocardia (use 746.800)

745.180 Other specified transposition of great vessels
Includes: double outlet right ventricle

745.190 Unspecified transposition of great vessels

745.2 Tetralogy of Fallot

745.200 Fallot's tetralogy

745.210 Fallot's pentalogy
Fallot's tetralogy plus ASD

745.3 Single ventricle

745.300 Single ventricle
Common ventricle
Cor triloculare biatriatum

745.4 Ventricular septal defect

745.400 Roger's disease
745.410 Eisenmenger's Syndrome
745.420 Gerbode defect
745.480 Other specified ventricular septal defect
745.490 VSD (ventricular septal defect), NOS
Excludes: common atrioventricular canal type (use 745.620)
745.498 Probable VSD

745.5 Ostium secundum type atrial septal defect

745.500 Nonclosure of foramen ovale, NOS
Patent foramen ovale (PFO)
Always code if ≥2500 gm and ≥6 weeks of age
Excludes: <2,500 gm regardless of presence of other defects
Includes: <6 weeks of age at diagnosis only if another reportable defect is present.
745.510 Ostium (septum) secundum defect
745.520 Lutembacher's syndrome
745.580 Other specified atrial septal defect
745.590 ASD (atrial septal defect), NOS
Auricular septal defect, NOS
Partial foramen ovale
PFO vs. ASD

745.6 Endocardial cushion defects

745.600 Ostium primum defects
745.610 Single common atrium, cor triloculare biventriculare
745.620 Common atrioventricular canal with ventricular septal defect (VSD)
745.630 Common atrioventricular canal
745.680 Other specified cushion defect
745.690 Endocardial cushion defect, NOS

745.7 Cor biloculare

745.700 Cor biloculare

745.8 Other specified defects of septal closure

745.800 Other specified defects of septal closure

745.9 Unspecified defect of septal closure

745.900 Unspecified defect of septal closure

746 Other Congenital Anomalies of Heart

746.0 Anomalies of pulmonary valve

746.000 Atresia, hypoplasia of pulonary valve
See 746.995 if valve is not specified (e.g., "Pulmonary atresia")

746.010 Stenosis of pulmonary valve
See 746.995 of valve not specified (e.g., "pulmonary stenosis")
Excludes: pulmonary infundibular stenosis (use 746.830)

746.020 Pulmonary valve insufficiency or regurgitation, congenital
Excludes: cases designated as mild, minimal, trivial or physiologic

746.080 Other specified anomalies of pulmonary valve
Excludes: pulmonary infundibular stenosis (use 746.830)

746.090 Unspecified anomaly of pulmonary valve

746.1 Tricuspid atresia and stenosis

746.100 Tricuspid atresia, stenosis, hypoplasia

746.105 Tricuspid valve insufficiency or regurgitation, congenital
Excludes: cases designated as mild, minimal, trivial, or physiologic
Ebstein's anomaly

746.2 Ebstein's anomaly

746.200 Ebstein's anomaly

746.3 Congenital stenosis of aortic valve

746.300 Congenital stenosis of aortic valve
Includes: congenital aortic stenosis
subvalvular aortic stenosis
Excludes: supravalvular aortic stenosis (747.220)

746.4 Congenital insuffiency of aortic valve

746.400 Aortic valve insuffiency or regurgitation, congenital
bicuspid aortic valve
Excludes: cases designated as mild, minimal, trivial, or physiologic

746.480 Other specified anomalies of the aortic valves
Includes: aortic valve atresia
Excludes: supravalvular aortic stenosis (747.220)

746.490 Unspecified anomalies of the aortic valves

746.5 Congenital mitral stenosis

746.500 Congenital mitral stenosis

746.505 Absence, atresia, or hypoplasia of mitral valve

746.6 Mitral valve insufficiency or regurgitation, congenital

746.600 Mitral valve insuffiency or regurgitation, congenital
Excludes: cases designated as mild, minimal, trivial, or physiologic

746.7 Hypoplastic left heart syndrome

746.700 Hypoplastic left heart syndrome
Atresia, or marked hypoplasia of the ascending aorta and defective development of left ventricle (with mitral valve atresia)

746.8 Other specified anomalies of the heart

746.800 Dextrocardia without situs inversus (situs solitus)
Dextrocardia with no mention of situs inversus
Excludes: dextrocardia with situs inversus (use 759.300)

746.810 Levocardia

746.820 Cor triatriatum

746.830 Pulmonary infundibular (subvalvular) stenosis

746.840 Trilogy of Fallot

746.850 Anomalies of pericardium

746.860 Anomalies of myocardium
cardiomegaly, congenital, NOS
cardiomyopathy, congenital
cardiomyopathy, hypertrophic

746.870 Congenital heart block

746.880 Other specified anomalies of heart
Includes: ectopia (ectopic) cordis (mesocardia), conduction defects, NOS

746.881 Hypoplastic left ventricle
Excludes: hypoplastic left heart syndrome (746.700)

746.882 Hypoplastic right heart (ventricle)
Uhl's disease

746.883 Hypoplastic ventricle, NOS

746.885 Anomalies of coronary artery or sinus

746.886 Ventricular hypertrophy (right or left)

746.887 Other defects of the atria
Excludes: congenital Wolfe-Parkinson-White (use 426.705)
rhythm anomalies (use 426.-, 427.-)

746.9 Unspecified anomalies of heart

746.900 Unspecified anomalies of heart valves

746.910 Anomalous bands of heart

746.920 Acyanotic congenital heart disease, NOS

746.930 Cyanotic congenital heart disease, NOS
Blue baby

746.990 Unspecified anomaly of heart:
Includes: congenital heart disease (CHD)
Heart murmur

746.995 "Pulmonic" or "pulmonary" atresia, stenosis, or hypoplasia, NOS
(No mention of valve or artery)

747 Other Congenital Anomalies of Circulatory System

747.000	Patent ductus arteriosus (PDA) Always code if ≥2500 gm and ≥6 weeks of age Excludes: <2500 gm regardless of presence of other defects Includes: <6 weeks of age at diagnosis only if there was medical/surgical intervention such as indomethacin or surgical ligation, or if another reportable defect is present.
747.008	Probable PDA

747.1 Coarctation of aorta

747.110	Preductal (proximal) coarctation of aorta
747.110	Postductal (distal) coarctation of aorta
747.190	Unspecified coarctation of aorta

747.2 Other anomalies of aorta

747.200	Atresia of aorta absence of aorta pseudotruncus arteriosus
747.210	Hypoplasia of aorta tubular hypoplasia of aorta
747.215	Interrupted aortic arch
747.220	Supra-aortic stenosis (supravalvular) Excludes: aortic stenosis, congenital (see 746.300)
747.230	Persistent right aortic arch
747.240	Aneurysm of sinus of Valsalva
747.250	Vascular ring (aorta) double aortic arch Includes: vascular ring compression of trachea
747.260	Overriding aorta dextroposition of aorta
747.270	Congenital aneurysm of aorta congenital congenital dilatation of aorta
747.280	Other specified anomalies of aorta
747.290	Unspecified anomalies of aorta

747.3 Anomalies of pulmonary artery

747.300	Pulmonary artery atresia, absence or agenesis Use 746.995 if artery or valve is not specified
747.310	Pulmonary artery atresia with septal defect
747.320	Pulmonary artery stenosis Use 746.995 if artery or valve is not specified
747.325	Peripheral pulmonary artery stenosis Includes: peripheral pulmonic stenosis (PPS) peripheral pulmonic stenosis (PPS) murmor only if documented by echocardiogram)
747.330	Aneurysm of pulmonary artery dilatation of pulmonary artery
747.340	Pulmonary arteriovenous malformation or aneurysm
747.380	Other specified anomaly of pulmonary artery Includes: pulmonary artery hypoplasia
747.390	Unspecified anomaly of pulmonary artery

747.4 Anomalies of great veins

747.400	Stenosis of vena cava (inferior or superior)
747.410	Persistant left superior vena cava
747.420	(TAPVR) Total anomalous pulmonary venous return
747.430	Partial anomalous pulmonary venous return
747.440	Anomalous portal vein termination
747.450	Portal vein - hepatic artery fistula
747.480	Other specified anomalies of great veins
747.490	Unspecified anomalies of great veins

747.5 Absence of hypoplasia of umbilical artery

747.500	Single umbilical artery

747.6 Other anomalies of peripheral vascular system

747.600	Stenosis of renal artery
747.610	Other anomalies of renal artery
747.620	Arteriovenous malformation (peripheral) Excludes: pulmonary (747.340) cerebral (747.800) retinal (743.510)
747.630	Congenital phlebectasia congenital varix
747.640	Other anomalies of peripheral arteries Includes: aberrant subclavian artery
747.650	Other anomalies of peripheral veins Excludes: Budd-Chiari - occlusion of hepatic vein (use 453-000)
747.680	Other anomalies of peripheral vascular system Includes: primary pulmonary artery hypertension
747.690	Unspecified anomalies of peripheral vascular system

747.8 Other specified anomalies of circulatory system

747.800 Arteriovenous (malformation) aneurysm of brain
747.810 Other anomalies of cerebral vessels
Includes: vein of Galen
747.880 Other specified anomalies of circulatory system
Excludes: congenital aneurysm:
coronary (746.880)
peripheral (747.640)
pulmonary (747.330)
retinal (743.510)
ruptured cerebral arteriovenous aneurysm (430.000)
ruptured cerebral aneurysm (430.000)

747.9 Unspecified anomalies of circulatory system

747.900 Unspecified anomalies of circulatory system

748 Congenital Anomalies of Respiratory System

748.0 Choanal atresia

748.000 Choanal atresia
atresia of nares, anterior or posterior
congenital stenosis

748.1 Other anomalies of nose

748.100 Agenesis or underdevelopment of nose
748.110 Accessory nose
748.120 Fissured, notched, or cleft nose
748.130 Sinus wall anomalies
748.140 Perforated nasal septum
748.180 Other specified anomalies of nose
flat bridge of nose
wide nasal bridge
small nose and nostril
absent nasal septum
748.185 Tubular nose, single nostril, proboscis
748.190 Unspecified anomalies of nose
Excludes: congenital deviation of the nasal septum (use 754.020)

748.2 Web of larynx

748.205 Web of larynx-glottic
748.206 Web of larynx-subglottic
748.209 Web of larynx-NOS

748.3 Other anomalies of larynx, trachea, and bronchus

748.300 Anomalies of larynx and supporting cartilage
748.310 Congenital subglottic stenosis
748.330 Other anomalies of trachea
Excludes: vascular ring compression of the trachea (use 747.250)
748.340 Stenosis of bronchus
748.350 Other anomalies of bronchus
748.360 Congenital laryngeal stridor, NOS
748.380 Other specified anomalies of larynx and bronchus
748.385 Cleft larynx, laryngotracheoesophageal cleft
748.390 Unspecified anomalies of larynx, trachea, and bronchus

748.4 Congenital cystic lung

748.400 Single cyst, lung or lung cyst
748.410 Multiple cysts, lung
Polycystic lung
748.420 Honeycomb lung
748.480 Other specified congenital cystic lung

748.5 Agenesis or aplasia of lung

748.500 Agenesis or aplasia of lung
748.510 Hypoplasia of lung; pulmonary hypoplasia (exclude if isolated defect in infants <2,500 gm)
748.520 Sequestration of lung
748.580 Other specified dysplasia of lung
Fusion of lobes of lung
748.590 Unspecified dysplasia of lung

748.6 Other anomalies of lung

748.600 Ectopic tissues in lung
748.610 Bronchiectasis
748.620 Accessory lobe of lung
748.625 Bilobar right lung or right lung with left lung bronchial pattern
748.690 Other and unspecified anomalies of lung

748.8 Other specified anomalies of respiratory system

748.800 Anomaly of pleura
748.810 Congenital cyst of mediastinum
748.880 Other specified respiratory system anomalies
Includes: congenital lobar emphysema
lymphanglectasia of lungs

748.9 Unspecified anomalies of respiratory system

748.900 Unspecified anomalies of respiratory system
Absence of respiratory organ, NOS
Anomaly of respiratory system, NOS

749 Cleft Palate and Cleft Lip

749.0 Cleft Palate alone

(If description of condition includes Pierre Robin Sequence, use additional code, 524.080)

749.000	Cleft hard palate, unilateral
749.010	Cleft hard palate, bilateral
749.020	Cleft hard palate, central
749.030	Cleft hard palate, NOS
749.040	Cleft soft palate, alone unilateral
749.050	Cleft soft palate, alone bilateral
749.060	Cleft soft palate, alone central
749.070	Cleft soft palate, alone NOS
749.080	Cleft uvula
749.090	Cleft palate, NOS palatoschisis

749.1 Cleft lip alone

Includes: alveolar ridge cleft
cleft gum
harelip

749.100	Cleft lip, unilateral
749.110	Cleft lip, bilateral
749.120	Cleft lip, central
749.190	Cleft lip, NOS (fused lip) cleft gum

749.2 Cleft lip with cleft palate

749.200	Cleft lip, unilateral, with any cleft palate
749.210	Cleft lip, bilateral, with any cleft palate
749.220	Cleft lip, central, with any cleft palate
749.290	Cleft lip, NOS, with any cleft palate

750 Other Congenital Anomalies of Upper Alimentary Tract

750.000 Tongue tie
Ankyloglossia

750.1 Other anomalies of tongue
Excludes: protruding tongue (never a defect)

750.100 Aglossia
Absence of tongue
750.110 Hypoglossia (small tongue)
Microglossia
750.120 Macroglossia (large tongue)
750.130 Dislocation or displacement of tongue
Glossoptosis
750.140 Cleft tongue or spilt tongue
750.180 Other specified anomalies of tongue
750.190 Unspecified anomalies of tongue

750.2 Other specified anomalies of mouth and pharynx

750.200 Pharyngeal pouch
750.210 Other pharyngeal anomalies
750.230 Other anomalies of salivary glands or ducts
750.240 High arched palate
750.250 Other anomalies of palate
750.260 Lip fistulae or pits
750.270 Other lip anomalies
Includes: notched lip, prominent philtrum, long philtrum
Excludes: cleft lip (see 749)
750.280 Other specified anomalies of mouth and pharynx
Excludes: receding jaw (see 524.0)
large and small mouth (see 744.8)

750.3 Tracheoesophageal (T-E) fistula, esophageal atresia & stenosis

750.300 Esophageal atresia without mention of T-E fistula
750.310 Esophageal atresia with mention of T-E fistula
750.320 Tracheoesophageal fistula without mention of esophageal atresia
750.325 Tracheoesophageal fistula - "H" type
750.330 Bronchoesophageal fistula with or without mention of esophageal atresia
750.340 Stenosis or stricture of esophagus
750.350 Esophageal web
750.380 Other tracheoesophageal anomalies

750.4 Other specified anomalies of esophagus

750.400	Congenital dilation of esophagus Giant esophagus
750.410	Displacement of esophagus
750.420	Diverticulum of esophagus esophageal pouch
750.430	Duplication of esophagus
750.480	Other specified anomalies of esophagus

750.5 Congenital hypertrophic pyloric stenosis

750.500	Pylorospasm
750.510	Congenital hypertrophic pyloric stenosis
750.580	Other congenital pyloric obstruction

750.6 Congenital hiatus hernia

750.600	Congenital hiatus hernia Cardia displacement through esophageal hiatus Partial thoracic stomach Excludes: congenital diaphragmatic hernia (756.610)

750.7 Other specified anomalies of stomach

750.700	Microgastria
750.710	Megalogastria
750.720	Cardiospasm achalasia of cardia, congenital
750.730	Displacement or transposition of stomach
750.740	Diverticulum of stomach
750.750	Duplication of stomach
750.780	Other specified anomalies of stomach

750.8 Other specified anomalies of upper alimentary tract

750.800	Other specified anomalies of upper alimentary tract

750.9 Unspecified anomalies of upper alimentary tract

750.900	Unspecified anomalies of mouth and pahrynx
750.910	Unspecified anomalies of esophagus
750.920	Unspecified anomalies of stomach
750.990	Unspecified anomalies of upper alimentary tract

751 Other Congenital Anomalies of Digestive System

751.0 Meckel's diverticulum

751.000 Persistent omphalomesenteric duct
persistent vitelline duct
751.010 Meckel's diverticulum

751.1 Atresia and stenosis of small intestine

751.100 Stenosis, atresia or absence of duodenum
751.110 Stenosis, atresia or absence of jejunum
751.120 Stenosis, atresia or absence of ileum
751.190 Stenosis, atresia or absence of small intestine
751.195 Stenosis, atresia or absence of small intestine with fistula

751.2 Atresia and stenosis of large intestine, rectum and anal canal

751.200 Stenosis, atresia or absence of large intestine
Stenosis, atresia or absence of appendix
751.210 Stenosis, atresia or absence of rectum with fistula
751.220 Stenosis, atresia or absence of rectum without mention of fistula
751.230 Stenosis, atresia or absence of anus with fistula
Includes: imperforate anus with fistula
751.240 Stenosis, atresia or absence of anus without mention of fistula
Includes: imperforate anus without fistula

751.3 Hirschsprung's disease and other congenital functional disorders of the colon

751.300 Total intestinal aganglionosis
751.310 Long-segment Hirschsprung's disease; aganglionosis beyond the rectum
751.320 Short-segment Hirschsprung's disease; aganglionosis involving no more than the anal
sphincter and the rectum

751.330 Hirschsprung's disease, NOS
751.340 Congenital megacolon
congenital macrocolon, not aganglionic

751.4 Anomalies of intestinal fixation

751.400	Malrotation of cecum and/or colon
751.410	Anomalies of mesentery
751.420	Congenital adhesions or bands of omentum and peritoneum; Ladd's bands
751.490	Other specified and unspecified malrotation
751.495	Malrotation of small intestine alone

751.5 Other anomalies of intestine

751.500	Duplication of anus, appendix, cecum, or intestine enterogenous cyst
751.510	Transposition of appendix, colon, or intestine
751.520	Microcolon
751.530	Ectopic (displaced) anus
751.540	Congenital anal fistula
751.550	Persistent cloaca
751.560	Duodenal web
751.580	Other specified anomalies of intestine Includes: rectal fissures
751.590	Unspecified anomalies of intestine

751.6 Anomalies of gallbladder, bile ducts, and liver

751.600	Absence or agenesis of liver, total or partial
751.610	Cystic or fibrocystic disease of liver
751.620	Other anomalies of liver hepatomegaly hepatosplenomegaly (also use code 759.020) Excludes: Budd-Chiari (use 453.000)
751.630	Agenesis or hypoplasia of gallbladder
751.640	Other anomalies of gallbladder duplication of gallbladder
751.650	Agenesis or atresia of hepatic or bile ducts Includes: biliary atresia Excludes: congenital or neonatal hepatitis (use 774.480 or 774.490)
751.660	Choledochal cysts
751.670	Other anomalies of hepatic or bile ducts
751.680	Anomalies of biliary tract, NEC

751.7 Anomalies of pancreas

Excludes: fibrocystic disease of pancreas (277.000)
diabetes mellitus, congenital, neonatal

751.700	Absence, agenesis or hypoplasia of pancreas
751.710	Accessory pancreas
751.720	Annular pancreas
751.730	Ectopic pancreas
751.740	Pancreatic cyst
751.780	Other specified anomalies of pancreas
751.790	Unspecified anomalies of pancreas

751.8 Other specified anomalies of digestive system

751.800	Absence of alimentary tract, NOS (complete or partial)
751.810	Duplication of alimentary tract
751.820	Ectopic digestive organs, NOS
751.880	Other specific anomalies of digestive system

751.9 Unspecified anomalies of digestive system

751.900 Unspecified anomalies of digestive system
congenital of digestive system, NOS
anomaly, NOS
deformity, NOS
obstruction, NOS

752 Congenital Anomalies of Genital Organs

Excludes: congenital hydrocele (778.600)
testicular feminization syndrome (257.800)
syndromes associated with anomalies in number and form of chromosomes (758)

752.0 Anomalies of ovaries

752.000	Absence or agenesis of ovaries
752.010	Streak ovary
752.020	Accessory ovary
752.080	Other specified anomalies of ovaries
752.085	Multiple ovarian cysts
752.090	Unspecified anomailes of ovaries

752.1 Anomalies of fallopian tubes and broad ligaments

752.100	Absence of fallopian tube or broad ligament
752.110	Cyst of mesenteric remnant epoophoron cyst cyst of Gartner's duct
752.120	Fimbrial cyst parovarian cyst
752.190	Other and unspecified anomalies of fallopian tube and broad ligaments

752.2 Doubling of uterus

752.200	Doubling of uterus doubling of uterus (any degree) or associated with doubling of cervix and vagina

752.3 Other anomalies of uterus

752.300	Absence or agenesis of uterus
752.310	Displaced uterus
752.320	Fistulae involving uterus with digestive or urinary tract Includes: uterointestinal fistula uterovesical fistula
752.380	Other anomalies of uterus bicornuate uterus unicornis uterus
752.390	Unspecified anomalies of uterus

752.4 Anomalies of cervix, vagina, and external female genitalia

752.400	Absence, atresia or agenesis of cervix
752.410	Absence or atresia of vagina, complete or partial
752.420	Congenital rectovaginal fistula
752.430	Imperforate hymen
752.440	Absence or other anomaly of vulva fusion of vulva hypoplastic labia majora
752.450	Absence or other anomaly of clitoris Includes: Clitoromegaly enlarged clitoris clitoral hypertrophy prominent clitoris
752.460	Embryonal cyst of vagina
752.470	Other cyst of vagina, vulva, or canal of Nuck
752.480	Includes: vaginal tags hymenal tags
752.490	Unspecified anomalies of cervix, vagina, or external female genitalia

752.5 Undescended testicle

Not coded if < 1 year of age, unless there was medical/surgical intervention or another reportable defect
Excludes: retractible testicle

752.500	Undescended testicle, unilateral undescended, unpalpable
752.501	Left undescended testicle
752.502	Right undescended testicle
752.514	Undescended testicle, bilateral
752.520	Undescended testicle, NOS (Cryptorchidism)
752.530	Ectopic testis, unilateral and bilateral

752.6 Hypospadias and epispadias

752.600	Hypospadias (alone), NOS
752.605	1 degree, glandular, coronal
752.606	2 degree, penile
752.607	3 degree, perineal, scrotal
752.610	Epispadias
752.620	Congenital chordee (with hypospadias), NOS
752.621	Congenital chordee alone (chordee w/o hypospadias)
752.625	Cong. chordee with 1 degree, coronal hypospadias
752.626	Cong. chordee with 2 degree, penile hypospadias
752.627	Cong. chordee with 3 degree, perineal, scrotal hypospadias

752.7 Indeterminate sex and pseudohermaphroditism

Excludes: pseudohermaphroditism:
female, with adrenocortical disorder (see 255.200)
male, with gonadal disorder with specified chromosomal anomaly (see758)

752.700	True hermaphroditism ovotestis
752.710	Pseudohermaphroditism, male
752.720	Pseudohermaphroditism, female pure gonadal dysgenesis Excludes: gonadal agenesis (758.690)
752.730	Pseudohermaphrodite, NOS
752.790	Indeterminate sex, NOS ambiguous genitalia

752.8 Other specified anomalies of male genital organs

752.800	Absence of testis monorchidism, NOS
752.810	Aplasia or hypoplasia of testis and scrotum
752.820	Other anomalies of testis and scrotum polyorchidism bifid scrotum Excludes: torsion of the testes or spermatic cord (use #608.200)
752.830	Atresia of vas deferens
752.840	Other anomalies of vas deferens and prostate
752.850	Absence or aplasia of penis
752.860	Other anomalies of penis absent or hooded foreskin redundant foreskin (never a defect)
752.865	Small penis, hypoplastic penis, or micropenis
752.870	Cysts of embryonic remnants cyst: hydatid of Morgagni Wolffian duct appendix testis
752.880	Other specified anomalies of genital organs microgenitalia macrogenitalia

752.9 Unspecified anomalies of genital organs

752.900	Unspecified anomalies of genital organs Congenital: of genital organ, NEC anomaly, NOS or deformity, NOS

753 Congenital Anomalies of Urinary System

753.0 Renal agenesis and dysgenesis

753.000 Bilateral absence, agenesis, dysplasia, or hypoplasia of kidneys
Potter's syndrome
753.009 Renal agenesis, NOS
753.010 Unilateral absence, agenesis, dysplasia or hypoplasia of kidneys

753.1 Cystic kidney disease

753.100 Renal cyst (single)
753.110 Polycystic kidneys, infantile type
753.120 Polycystic kidneys, adult type
753.130 Polycystic kidneys, NOS
753.140 Medullary cystic disease, juvenile type
753.150 Medullary cystic disease, adult type
Medullary sponge kidney
753.160 Multicystic renal dysplasia
Multicystic kidney
753.180 Other specified cystic disease
Includes: cystic kidneys, NOS

753.2 Obstructive defects of renal pelvis and ureter

753.200 Congenital hydronephrosis
753.210 Atresia, stricture, or stenosis of ureter
Includes: ureteropelvic junction obstruction/stenosis
ureterovesical junction obstruction/stenosis
hypoplastic ureter
753.220 Megaloureter, NOS
Includes: hydroureter
753.290 Other and unspecified obstructive defects of renal pelvis and ureter

753.3 Other specified anomalies of kidney

753.300 Accessory kidney
753.310 Double or triple kidney and pelvis
pyelon duplex or triplex
753.320 Lobulated, fused, or horseshoe kidney

753.330 Ectopic kidney
753.340 Enlarged, hyperplastic or giant kidney
753.350 Congenital renal calculi
753.380 Other specified anomalies of kidney

753.4 Other specified anomalies of ureter

753.400 Absence of ureter
753.410 Accessory ureter
double ureter, duplex collecting system
753.420 Ectopic ureter
753.480 Other specified anomalies of ureter
Includes: ureterocele
753.485 Variations of vesicoureteral reflux

753.5 Exstrophy of urinary bladder

753.500 Exstrophy of urinary bladder
ectopia vesicae
extroversion of bladder

753.6 Atresia and stenosis of urethra and bladder neck

753.600 Congenital posterior urethral valves or posterior urethral obstruction
753.610 Other atresia, or stenosis of bladder neck
753.620 Obstruction, atresia or stenosis of anterior urethra
753.630 Obstruction, atresia or stenosis of urinary meatus
Includes: meatal stenosis
753.690 Other and unspecified atresia and stenosis of urethra and bladder neck

753.7 Anomalies of urachus

753.700 Patent urachus
753.710 Cyst of urachus
753.790 Other and unspecified anomaly of urachus

753.8 Other specified anomalies of bladder and urethra

753.800 Absence of bladder or urethra
753.810 Ectopic bladder
753.820 Congenital diverticulum or hernia of bladder
753.830 Congenital prolapse of bladder (mucosa)
753.840 Double urethra or urinary meatus
753.850 Ectopic urethra or urethral orifice

753.860 Congenital digestive-urinary tract fistulae
rectovesical fistula
753.870 Urethral fistula, NOS
753.880 Other specified anomalies of bladder and urethra

753.9 Unspecified anomalies of urinary system

753.900 Unspecified anomaly of kidney
753.910 Unspecified anomaly of ureter
753.920 Unspecified anomaly of bladder
753.930 Unspecified anomaly of urethra
753.990 Unspecified anomaly of urinary system, NOS

754 Certain Congenital Musculoskeletal Anomalies

754.0 Of skull, face, and jaw
Excludes: dentofacial anomalies (524.0)
Pierre Robin sequence (524.080)
syphilitic saddle nose (090.000)

754.000 Asymmetry of face
754.010 Compression (Potter's) facies
754.020 Congenital deviation of nasal septum
bent nose
754.030 Dolichocephaly
754.040 Depressions in skull
Includes: large fontanelle
small fontanelle
754.050 Plagiocephaly
754.055 Asymmetric head
754.060 Scaphocephaly, no mention of craniosynostosis
754.070 Trigonocephaly, no mention of craniosynostosis
754.080 Other specified skull deformity, no mention of craniosynostosis
Includes: brachycephaly
acrocephaly
turricephaly
oxycephaly
754.090 Deformity of skull, NOS

754.1 Anomalies of sternocleidomastoid muscle

754.100 Anomalies of sternocleidomastoid muscle
Includes: absent or hypoplastic sternocleidomastoid
contracture of sternocleidomastoid muscle
sternomastoid tumor

Excludes: congenital sternocleidomastoid torticollis (use 756.860)

754.2 Certain congenital musculoskeletal deformities of spine

754.200 Congenital postural scoliosis
754.210 Congenital postural lordosis
754.220 Congenital postural curvature of spine, NOS

754.3 Congenital dislocation of hip

754.300 Congenital dislocation of hip
754.310 Unstable hip
preluxation of hip
subluxation of hip
predislocation status of hip at birth

754.4 Congenital genu recurvatum and bowing of long bones of leg

754.400 Bowing, femur
754.410 Bowing, tibia and/or fibula
754.420 Bow legs, NOS
754.430 Genu recurvatum
754.440 Dislocation of knee, congenital
754.490 Deformity of leg, NOS

754.5 Varus (inward) deformities of feet

754.500 Talipes equinovarus
754.510 Talipes calcaneovarus
754.520 Metatarsus varus or metatarsus adductus
754.530 Complex varus deformities
754.590 Unspecified varus deformities of feet

754.6 Valgus (outward) deformities of feet

754.600 Talipes calcaneovalgus
754.610 Congenital pes planus
754.615 Pes valgus
754.680 Other specified valgus deformities of foot
754.690 Unspecified valgus deformities of foot

754.7 Other deformities of feet

754.700	Pes cavus Claw foot (use 755.350 for claw foot)
754.720	Short Achilles tendon
754.730	Clubfoot, NOS talipes, NOS
754.735	Congenital deformities of foot, NOS
754.780	Other specified deformities of ankle and/or toes Includes: dorsiflexion of foot Excludes: widely spaced 1st and 2nd toes (use 755.600)

754.8 Other specified congenital musculoskeletal deformities

754.800	Pigeon chest (pectus carinatum)
754.810	Funnel chest (pectus excavatum)
754.820	Other anomalies of chest wall Includes: deformed chest, barrel chest
754.825	Shield chest
754.830	Dislocation of elbow
754.840	Club hand or fingers
754.850	Spade-like hand
754.880	Other specified deformity of hands (see 755.500 for specified anomalies of fingers)

755 Other Congenital Anomalies of Limbs

755.0 Polydactyly

755.005	Accessory fingers (postaxial polydactyly, Type A)
755.006	Skin tag (postaxial polydactyly, Type B)
755.007	Unspecified finger or skin tag (postaxial polydactyly, NOS)
755.010	Accessory thumbs (preaxial polydactyly)
755.020	Accessory toes (postaxial)
755.030	Accessory big toe (preaxial)
755.090	Accessory digits, NOS (hand/foot not specified)
755.095	Accessory digits hand, NOS (preaxial, postaxial not specified)
755.096	Accessory digits foot, NOS (preaxial, postaxial not specified)

755.1 Syndactyly

755.100	Fused fingers
755.110	Webbed fingers
755.120	Fused toes

755.130	Webbed toes Excludes: cases with webbing of the second and third toes Includes: webbing of other toes
755.190	Unspecified syndactyly (see below for specified site)
755.191	Unspecified syndactyly thumb and/or fingers, unilateral
755.192	Unspecified syndactyly thumb and/or fingers, bilateral
755.193	Unspecified (webbed vs. fused) syndactyly thumb and/or fingers, NOS
755.194	Unspecified syndactyly toes unilateral
755.195	Unspecified syndactyly toes bilateral
755.196	Unspecified syndactyly toes, NOS
755.199	Unspecified syndactyly (i.e., webbed vs. fused) digits not known

755.2 Reduction defects of upper limb

If description of condition includes amniotic or constricting bands use additional code, 658.800

755.200	Complete absence of upper limb amelia of upper limb
755.210	Absence of upper arm and forearm with hand present phocomelia of upper limb
755.220	Total absence of forearm only (radius and ulna)
755.230	Total absence of forearm and hand
755.240	Absence of hand and/or preaxial fingers Excludes: hypoplasia of upper limb (use 755.585) absent postaxial fingers (use 755.270) absent thumb (use 755.260)
755.250	Lobster claw hand Excludes: shortening of arm (use 755.580)
755.260	Preaxial (longitudinal) reduction defects of upper limb Includes: absence of radius absence of thumb
755.270	Postaxial (longitudinal) reduction defects of upper limb Includes: absence of ulna absence of fingers
755.280	Other specified upper limb reduction defects
755.290	Unspecified reduction defect of upper limb Includes: congenital amputation of upper limb, NOS

755.3 Reduction defects of lower limb

If description of condition includes amniotic or constricting bands use additional code, 658.800

755.300 Complete absence of lower limb
amelia of lower limb
755.310 Absence of thigh and lower leg with foot present
phocomelia of lower limb
755.320 Absence of lower leg only
755.330 Absence of lower leg and foot
755.340 Absence of foot or toes
Excludes: hypoplasia of lower limb (use 755.685)
755.350 Claw foot or lobster claw foot
Excludes: shortening of leg (use 755.680)
755.360 Longitudinal reduction defect of leg, NOS
755.365 Absent tibia (preaxial longitudinal defect)
755.366 Absent fibula (postaxial longitudinal defect)
755.380 Other specified reduction defect of lower limb
Includes: absent upper leg or thigh only
755.390 Unspecified reduction defect of lower limb
Includes: congenital amputation of lower limb, NOS

755.4 Reduction defects, unspecified limb

If description of condition includes amniotic or constricting bands use additional code, 658.800

755.400 Absence limb, NOS
amelia, NOS
755.410 Phocomelia, NOS
755.420 Amputation of unspecified limb
755.430 Longitudinal reduction defect, NOS
755.440 Absent digits, NOS
755.480 Other specified reduction defect of unspecified limb
755.490 Unspecified reduction defect of unspecified limb

755.5 Other anomalies of upper limb, including shoulder girdle
Includes: complex anomalies involving all or part of upper limb

755.500 Anomalies of fingers
Includes: camptodactyly clinodactyly
macrodactylia brachydactyly
triphalangeal thumb incurving fingers
acrocephalosyndactyly (see 756.050)
Apert's syndrome (see 756.055)
755.510 Anomalies of hand
Excludes: simian crease (use 757.200)
755.520 Anomalies of wrist

755.525 Accessory carpal bones
755.526 Madelung's deformity
755.530 Anomalies of forearm, NOS
755.535 Radioulnar dysostosis
755.536 Radioulnar synostosis
755.540 Anomalies of elbow and upper arm
755.550 Anomalies of shoulder
755.555 Cleidocranial dysostosis
755.556 Sprengel's deformity
755.560 Other anomalies of whole arm
755.580 Other specified anomalies of upper limb
Includes: hyperextensibility of upper limb
shortening of arm
755.585 Hypoplasia of upper limb
Includes: hypoplasia of fingers, hands, or arms
Excludes: aplasia or absent upper limb (see 755.2)
755.590 Unspecified anomalies of upper limb

755.6 Other anomalies of lower limb, including pelvic girdle
Includes: complex anomalies involving all or part of lower limb

755.600 Anomalies of toes
Includes: overlapping toes hammer toes
widely spaced first and second toes
755.605 Hallux valgus
755.606 Hallux varus
755.610 Anomalies of foot
Includes: plantar furrow
Excludes: lobster claw foot (use 755.350)
755.616 Rocker-bottom foot
755.620 Anomalies of ankle
astragaloscaphoid synostosis
755.630 Anomalies of lower leg
angulation of tibia, tibial torsion
(exclude if clubfoot present)
755.640 Anomalies of knee
hyperextended knee
755.645 Genu valgum
755.646 Genu varum
755.647 Absent patella or rudimentary patella
755.650 Anomalies of upper leg
anteversion of femur
755.660 Anomalies of hip

Includes: coxa vara
coxa valga
other abnormalities of hips

755.665 Hip dysplasia, NOS
755.666 Unilateral hip dysplasia
755.667 Bilateral hip dysplasia
755.670 Anomalies of pelvis
fusion of sacroiliac joint
755.680 Other specified anomalies of lower limb
hyperextended legs
shortening of legs
755.685 Hypoplasia of lower limb
Includes: hypoplasia of toes, feet, legs
Excludes: aplasia or absent lower limb (see 755.3)
755.690 Unspecified anomalies of legs

755.8 Other specified anomalies of unspecified limb

755.800 Arthrogryposis multiplex congenita
Includes: distal arthrogryposis syndrome
Temporarily includes: flexion contractures of individual joints
755.810 Larsen's syndrome
755.880 Other specified anomalies of unspecified limb
Includes: overlapping digits, NOS
hyperextended joints, NOS
Excludes: hyperextended knees (use 755.640)

755.9 Unspecified anomalies of unspecified limb

755.900 Unspecified anomalies of unspecified limb

756 Other Congenital Musculoskeletal Anomalies

756.0 Anomalies of skull and face bones
Excludes: skull and face deformities in 754
Pierre Robin sequence (use 524.080)

756.000 Craniosynostosis, NOS
craniostenosis, NOS
closed-skull sutures, NOS
756.005 Sagittal craniosynostosis
756.006 Metopic craniosynostosis
756.010 Coronal craniosynostosis
756.020 Lambdoidal craniosynostosis

756.030	Other types of craniosynostosis Includes: basilar craniosynostosis
756.040	Craniofacial dysostosis Includes: Crouzon's disease
756.045	Mandibulofacial dysostosis Includes: Franceschetti syndrome Treacher-Collins syndrome
756.046	Other craniofacial syndromes Includes: oculomandibulofacial syndrome Hallermann-Streiff syndrome
756.050	Acrocephalosyndactyly, NOS
756.055	Acrocephalosyndactyly types I or II Apert syndrome
756.056	Acrocephalosyndactyly type III
756.057	Other specified acrocephalosyndactylies
756.060	Goldenhar syndrome oculoauriculovertebral dysplasia
756.065	Hemifacial microsomia
756.080	Other specified skull and face bone anomalies Includes: localized skull defects flat occiput mid-facial hypoplasia prominent occiput prominent maxilla hypotelorism Excludes: macrocephaly (use 742.400) small chin (see 524.0) Pierre Robin sequence (use 524.080)
756.085	Hypertelorism, telecanthus, wide set eyes
756.090	Unspecified skull and face bone anomalies Excludes: dentofacial anomalies (524.0) skull defects associated with brain anomalies such as: anencephalus (740.0) encephalocele (742.0) hydrocephalus (742.3) microcephalus (742.100)

756.1 Anomalies of spine

756.100	Spina bifida occulta
756.110	Klippel-Feil syndrome Wildervanck syndrome
756.120	Kyphosis kyphoscoliosis

756.130	Congenital spondylolisthesis
756.140	Anomalies of cervical vertebrae
756.145	Hemivertebrae (cervical)
756.146	Agenesis (cervical)
756.150	Anomalies of thoracic vertebrae
756.155	Hemivertebrae of thoracic vertebrae
756.156	Agenesis of thoracic vertebrae
756.160	Anomalies of lumbar vertebrae
756.165	Hemivertebrae of lumbar vertebrae
756.166	Agenesis of lumbar vertebrae
756.170	Sacrococcygeal anomalies Includes: agenesis of sacrum Excludes: pilonidal sinus (see 685.100)
756.179	Sacral mass, NOS
756.180	Other specified vertebral anomalies
756.185	Hemivertebrae, NOS
756.190	Unspecified anomalies of spine

756.2 Cervical rib

756.200	Cervical rib supernumerary rib in cervical region

756.3 Other anomalies of ribs and sternum

756.300	Absence of ribs
756.310	Misshapen ribs
756.320	Fused ribs
756.330	Extra ribs
756.340	Other anomalies of ribs
756.350	Absence of sternum
756.360	Misshapen sternum
756.380	Other anomalies of sternum Includes: double ossification center in the manubrium, bifid sternum, short sternum
756.390	Anomalies of thoracic cage, unspecified Excludes: deformed chest (use 754.820)

756.4 Chondrodystrophy

756.400	Asphyxiating thoracic dystrophy Jeune syndrome thoracic-pelvic-phalangeal dysplasia Excludes: homozygous achondroplasia

756.410	Chondrodysplasia Ollier syndrome, enchondromatosis
756.420	Chondrodysplasia with hemangioma Kast syndrome Maffucci syndrome
756.430	Achondroplastic dwarfism
756.440	Other specified chondrodystrophies Excludes: Conradi's (use 756.575)
756.445	Diastrophic dwarfism
756.446	Metatrophic dwarfism
756.447	Thanatophoric dwarfism
756.450	Metaphyseal dysostosis
756.460	Spondyloepiphyseal dysplasia
756.470	Exostosis Excludes: Gardner syndrome (see 759.630)
756.480	Other specified chondrodystrophy
756.490	Unspecified chondrodystrophy Excludes: lipochondrodystrophy (use 277.510)

756.5 Osteodystrophies

756.500	Osteogenesis imperfecta
756.505	Osteopsathyrosis
756.506	Fragilitas ossium
756.510	Polyostotic fibrous dysplasia Albright-McCune-Sternberg syndrome
756.520	Chondroectodermal dysplasia
756.525	Ellis-van Creveld syndrome
756.530	Infantile cortical hyperostosis Caffey syndrome
756.540	Osteopetrosis Albers-Schonberg syndrome marble bones
756.550	Progressive diaphyseal dysplasia Engelmann syndrome Camurati-Engelmann disease
756.560	Osteopoikilosis
756.570	Multiple epiphyseal dysplasia
756.575	Conradi syndrome chondrodysplasia punctata Excludes: warfarin embryopathy
756.580	Other specified osteodystrophies
756.590	Unspecified osteodystrophies

756.6 Anomalies of diaphragm

756.600	Absence of diaphragm
756.610	Congenital diaphragmatic hernia
756.615	Diaphragmatic hernia (Bochdalek)
756.616	Diaphragmatic hernia (Morgagni)
756.617	Hemidiaphragm
756.620	Eventration of diaphragm
756.680	Other specified anomalies of diaphragm
756.690	Unspecified anomalies of diaphragm

756.7 Anomalies of abdominal wall

756.700	Exomphalos, omphalocele
756.710	Gastroschisis Excludes: umbilical hernia (553.100)
756.720	Prune belly syndrome
756.790	Other and unspecified anomalies of abdominal wall
756.795	Epigastric hernia

756.8 Other specified anomalies of muscle, tendon, fascia and connective tissue

756.800	Poland syndrome or anomaly
756.810	Other absent or hypoplastic muscle Includes: absent pectoralis major Excludes: prune belly syndrome (use 756.720)
756.820	Absent tendon
756.830	Nail-patella syndrome
756.840	Amyotrophia congenita
756.850	Ehlers-Danlos syndrome
756.860	Congenital torticollis (see also 754.100, anomalies of sternocleidomastoid muscle)
756.880	Other specified anomalies of muscle, tendon, fascia and connective tissue Includes: myopathy, congenital NOS

756.9 Unspecified anomalies of musculoskeletal system

756.900	Unspecified anomalies of muscle
756.910	Unspecified anomalies of tendon
756.920	Unspecified anomalies of bone
756.930	Unspecified anomalies of cartilage

756.940	Unspecified anomalies of connective tissue
756.990	Unspecified anomalies of musculoskeletal system

757 Congenital Anomalies of the Integument

757.000	Hereditary edema of legs Hereditary trophedema Milroy's disease

757.1 Ichthyosis congenita

757.100	Harlequin fetus
757.110	Collodion baby
757.115	Bullous type
757.120	Sjogren-Larsson syndrome
757.190	Other and unspecified
757.195	Ichthyosis vulgaris
757.196	X-linked ichthyosis
757.197	Ichthyosiform erythroderma

757.2 Dermatoglyphic anomalies

757.200	Abnormal palmar creases Includes: simian creases, transverse palmar creases

757.3 Other specified anomalies of skin
Excludes: pigmented mole (216.900)
hemangioma (see 228.0)

757.300	Specified syndromes, not elsewhere classified, involving skin anomalies
757.310	Skin tags Includes: anal tags Excludes: preauricular tag (see 744.110) vaginal tags (see 752.480)
757.320	Urticaria pigmentosa
757.330	Epidermolysis bullosa
757.340	Ectodermal dysplasia Excludes: Ellis-van Creveld syndrome (756.525)
757.345	X-linked type ectodermal dysplasia
757.346	Other specified ectodermal dysplasias
757.350	Incontinentia pigmenti
757.360	Xeroderma pigmentosum
757.370	Cutis laxa hyperelastica

757.380 Nevus, not elsewhere classifiable
Includes: port wine stain or nevus flammeus
Excludes: hairy nevus (use 216.900)
Sturge-Weber syndrome (use 759.610)

757.385 Birthmark, NOS

757.386 Mongolian blue spot

757.390 Other specified anomalies of skin
Includes: cafe au lait spots hyperpigmented areas
skin cysts hypoplastic dermal patterns

757.395 Absence of skin

757.4 Specified anomalies of hair
Excludes: kinky hair syndrome (use 759.870)

757.400 Congenital alopecia
Excludes: ectodermal dysplasia (use 757.340)

757.410 Beaded hair
Monilethrix

757.420 Twisted hair
Pili torti

757.430 Taenzer's hair

757.450 Persistent or excessive lanugo
Includes: hirsutism

757.480 Other specified anomalies of hair

757.5 Specified anomalies of nails

757.500 Congenital anonychia
Absent nails

757.510 Enlarged or hypertrophic nails

757.515 Onychauxis

757.516 Pachyonychia

757.520 Congenital koilonychia

757.530 Congenital leukonychia

757.540 Club nail

757.580 Other specified anomalies of nails

757.585 Hypoplastic (small) fingernails and/or toenails

757.6 Specified anomalies of breast

757.600 Absent breast with absent nipple

757.610 Hypoplastic breast with hypoplastic nipple

757.620 Accessory (ectopic) breast with nipple

757.630 Absent nipple

757.640 Small nipple (hypoplastic)
757.650 Accessory (ectopic) nipple, supernumerary
757.680 Other specified anomalies of breast
Widely spaced nipples
Excludes: inverted nipples (never a defect)

757.8 Other specified anomalies of the integument

757.800 Includes: scalp defects
For specified anomalies of skin see 757.390
For specified anomalies of hair see 757.480
For specified anomalies of nails see 757.580

757.9 Unspecified anomalies of the integument

757.900 Unspecified anomalies of skin
757.910 Unspecified anomalies of hair, NOS
757.920 Unspecified anomalies of nail, NOS
757.990 Unspecified anomalies of the integument, NOS

758 Chromosomal Anomalies

758.0 Down syndrome

Clinical Down syndrome karyotype identified as:

758.000 Down syndrome, karyotype trisomy 21
758.010 Down syndrome, karyotype trisomy G, NOS
758.020 Translocation trisomy - duplication of a 21
758.030 Translocation trisomy - duplication of a G, NOS
758.040 Mosaic Down syndrome
758.090 Down syndrome, NOS

758.1 Patau syndrome

Clinical Patau syndrome karyotype identified as:

758.100 Patau syndrome, karyotype trisomy 13
758.110 Patau syndrome, karyotype trisomy D, NOS
758.120 Translocation trisomy - duplication of a 13
758.130 Translocation trisomy - duplication of a D, NOS
758.190 Patau syndrome, NOS

758.2 Edwards syndrome

Clinical Edwards syndrome karyotype identified as:

758.200	Edwards syndrome, karyotype trisomy 18
758.210	Edwards syndrome, karyotype trisomy E, NOS
758.220	Translocation trisomy - duplication of an 18
758.230	Translocation trisomy - duplication of an E, NOS
758.290	Edwards syndrome, NOS
758.295	Edwards phenotype - normal karyotype

758.3 Autosomal deletion syndromes

758.300	Antimongolism syndrome Clinical antimongolism syndrome: karyotype - partial or total deletion of: 21 G, NOS NOS
758.310	Cri du chat syndrome Clinical Cri du chat syndrome: karyotype - deletion of: 5 B, NOS NOS
758.320	Wolff-Hirschorn syndrome Clinical Wolff-Hirschorn syndrome: karyotype - deletion of: 4 B, NOS NOS
758.330	Deletion of long arm of 13 deletion of long arm of D, NOS
758.340	Deletion of long arm of E deletion of long arm of 17 or 18
758.350	Deletion of short arm of E deletion of short arm of 17 or 18
758.360	Monosomy G mosaicism
758.380	Other loss of autosomal material
758.390	Unspecified autosomal deletion syndromes

758.4 Balanced autosomal translocation in normal individual

758.400	Balanced autosomal translocation in normal individual

758.5 Other conditions due to autosomal anomalies

758.500 Trisomy 8
758.510 Other trisomy C syndromes
Trisomy: 6, 7, 9, 10, 11, 12, or C, NOS
758.520 Other total trisomy syndromes
Trisomy 22
Trisomy, NOS
758.530 Partial trisomy syndromes
758.540 Other translocations
Excludes: balanced translocation in normal individual (use 758.400)
758.580 Other specified anomalies of autosomes, NOS
Includes: marker autosome
758.585 Polyploidy
758.586 Triploidy
758.590 Unspecified anomalies of autosomes

758.6 Gonadal Dysgenesis
Excludes: pure gonadal dysgenesis (752.720)
Noonan syndrome (759.800)

758.600 Turner's phenotype, karyotype 45, X [XO]
758.610 Turner's phenotype, variant karyotypes
karyotype characterized by:
isochromosome
mosaic, including XO
partial X deletion
ring chromosome
Excludes: Turner's phenotype, karyotype normal XX (use 759.800, Noonan syndrome)
758.690 Turner syndrome, karyotype unspecified, NOS
Bonneville-Ullrich syndrome, NOS

758.7 Klinefelter syndrome

758.700 Klinefelter's phenotype, karyotype 47, XXY
758.710 Klinefelter's phenotype, other karyotype with additional X chromosomes
XX
XXXY
XXYY
XXXXY
758.790 Klinefelter syndrome, NOS

758.8 Other conditions due to sex chromosome anomalies

758.800	Mosaic XO/XY, 45X/46XY Excludes: with Turner's phenotype (758.610)
758.810	Mosaic XO/XX Excludes: with Turner's phenotype (758.610)
758.820	Mosaic XY/XXY,46XY/47XXY Excludes: Klinefelter's phenotype (758.710)
758.830	Mosaic including XXXXY,49XXXXY Excludes: with Klinefelter's phenotype (use 758.710)
758.840	XYY, male, 47XYY mosaic XYY male
758.850	XXX female,47XXX
758.860	Additional sex chromosomes, NOS
758.880	Other specified sex chromosome anomaly Includes: fragile X
758.890	Unspecified sex chromosome anomaly

758.9 Conditions due to anomaly of unspecified chromosomes

758.900	Mosaicism, NOS
758.910	Additional chromosome(s), NOS
758.920	Deletion of chromosome(s), NOS
758.930	Duplication of chromosome(s), NOS
758.990	Unspecified anomaly of chromosome(s)

759 Other and Unspecified Congenital Anomalies

759.0 Anomalies of spleen

759.000	Absence of spleen asplenia
759.005	Ivemark syndrome
759.010	Hypoplasia of spleen
759.020	Hyperplasia of spleen splenomegaly hepatosplenomegaly (also use code 751.620)
759.030	Misshapen spleen
759.040	Accessory spleen
759.050	Ectopic spleen
759.080	Other specified anomalies of spleen
759.090	Unspecified anomalies of spleen

759.1 Anomalies of adrenal gland

759.100 Absence of adrenal gland
759.110 Hypoplasia of adrenal gland
759.120 Accessory adrenal gland
759.130 Ectopic adrenal gland
759.180 Other specified anomaly of adrenal gland
Excludes: congenital adrenal hyperplasia (use 255.200)
759.190 Unspecified anomalies of adrenal gland

759.2 Anomalies of other endocrine glands

759.200 Anomalies of pituitary gland
759.210 Anomalies of thyroid gland
759.220 Thyroglossal duct anomalies
thyroglossal cyst
759.230 Anomalies of parathyroid gland
759.240 Anomalies of thymus
thymic hypertrophy
absent thymus
759.280 Other specified anomalies of endocrine gland
759.290 Unspecified anomaly of endocrine gland

759.3 Situs inversus

759.300 Dextrocardia with complete situs inversus
759.310 Situs inversus with levocardia
759.320 Situs inversus thoracis
759.330 Situs inversus abdominis
759.340 Kartagener syndrome (triad)
759.390 Unspecified situs inversus
Excludes: dextrocardia (746.800) not associated with complete situs inversus

759.4 Conjoined twins

759.400 Dicephalus
two heads
759.410 Craniopagus
head-joined twins
759.420 Thoracopagus
thorax-joined twins

759.430 Xiphopagus
xiphoid- and pelvis-joined twins
759.440 Pygopagus
buttock-joined twins
759.480 Other specified conjoined twins
759.490 Unspecified conjoined twins

759.5 Tuberous sclerosis

759.500 Tuberous sclerosis
Bourneville's disease
epiloia

759.6 Other hamartoses, not elsewhere classified

759.600 Peutz-Jeghers syndrome
759.610 Encephalocutaneous angiomatosis
Kalischer's disease
Sturge-Weber syndrome
759.620 Von Hippel-Lindau syndrome
759.630 Gardner syndrome
759.680 other specified hamartomas
759.690 unspecified hamartomas

759.7 Multiple congenital anomalies,

759.700 Multiple congenital anomalies,
anomaly, multiple, NOS
deformity, multiple, NOS

759.8 Other specified anomalies and syndromes

759.800 Cong malformation syndromes affecting facial appearance
cyclops
Noonan syndrome
oral-facial-digital (OFD) syndrome, type I
Orofaciodigital syndrome, type II (Mohr syndrome)
Waardenburg syndrome
whistling face syndrome
759.820 Cong malformation syndromes associated with short stature
Amsterdam dwarf (Cornelia de Lange syndrome)
Cockayne syndrome
Laurence-Moon-Biedl syndrome
Russell-Silver syndrome

Seckel syndrome
Smith-Lemli-Opitz syndrome

759.840 Cong malformation syndromes involving limbs
Carpenter syndrome
Holt-Oram syndrome
Klippel-Trenaunay-Weber syndrome
Rubinstein-Taybi syndrome
sirenomelia
thrombocytopenia-absent radius (TAR) syndrome

759.860 Cong malformation syndromes with other skeletal changes
Marfan syndrome
Stickler syndrome

759.870 Cong malformation syndromes with metabolic disturbances
Alport syndrome
Beckwith (Wiedemann-Beckwith) syndrome
leprechaunism
Menkes syndrome (kinky hair syndrome)
Prader-Willi syndrome
Zellweger syndrome

759.890 Other specified anomalies
Includes: hemihypertrophy
Meckel-Gruber syndrome

759.9 Congenital anomaly, unspecified

759.900 Anomalies of umbilicus
low-lying umbilicus
umbilical cord atrophy

759.910 Embryopathia, NEC

759.990 Congenital anomaly, NOS

APPENDIX E
Condition Warrenting Chart Review

Record#	WARRANTNB	WARRANTNM	KINDNB
20	000.002	Infants who weight less than 2,500 gm (5 lbs 8 ozs or are premature (gestation age < 37 weeks)	1
21	000.003	Stillbirth and neonatal deaths	1
22	000.004	Infants with a history of asphyxia at birth (apgar score at 5 minutes less than 7)	1
23	000.005	Infants with a history of surgical procedure except for circumcision	1
24	000.006	Infants admitted to neonatal intensive care or special care nurseries	1
9	243.990	Hypothyroidism, congenital / hypotonia	1
14	520.600	Natal teeth	1
7	742.385	Central nervous system hemorrhage (defect if associated with hydrocephalus)	1
17	742.580	Tethered cord, congenital	1
4	743.450	Blue sclera (babies>2,500 gm)	1
6	744.230	Cauliflower ear	1
19	744.500	Webbing of the neck	1
15	744.900	Short neck	1
1	744.910	Abnormal facings	1
5	746.860	Cardiomegaly--in presence of no other cardiovascular defects	1
18	746.886	Ventricular hypertrophy	1
8	746.990	Congenital heart disease	1
16	747.500	Single umbilical artery	1

10 750.500 Intermittent pyloric stenosis / intenstinal obstruction or intussusception --never a defect,alone
1
2 752.790 Amiguous genitalia
1
13 759.700 Multiple congenital anomalies
1
12 777.100 Meconium plug
1
11 777.600 Meconium peritonitis
1
3 778.000 Asscites or anasarce, congenital
1
39 999.001 Not Birth Defect.
1
40 999.002 Not Savannah River Region case.
1
25 001.001 Funny looking kid
2
26 001.002 Failure to thrive
2
27 001.003 Developmental delay
2
28 001.004 Fever of unknown origin (<1 year old)
2
29 001.005 Infant and chidhood surgery--exclude:related to injury,tonsillectomy,circumcision,etc
2
30 001.006 Recurrent infections, sepsis
2
31 001.007 Central nervous system conditions:seizure,hypotonia,tethered cord,paralysis,paresis,largeor small head
2
32 001.008 Gastrointestinal conditions: recurrent or persistent vomiting or diarrhea prolonged jaundice.....
2
33 001.009 Genitourinary conditions:recurrent urinary tract infecttion,urinary obstruction, blood in urine, hypertension
2
34 001.010 Cardivascular conditions: congestive heart failure / cyanosis
2
35 001.011 Respiratory conditions:apnea, recurrent pneumonia, respiratory distress, persistent hoarseness of voice
2

36 001.012 Other conditions: enlargrd thyroid gland, short neck
2

37 001.013 All infant deaths(under 1 year)--exclude deaths related to "prematurity", sids, accident, homicide
2

38 001.014 Childhood deaths between ages 1 and 6 years--exclude deaths related to injury,poisoning or sids
2

41 999.001 Not Birth Defect.
2

42 999.002 Not Savannah River Region case
2

APPENDIX F

Exclusion List

List ordered alphabetically

524.000 Abnormalities of jaw size
micrognathia
macrognathia
255.200 Adrenogenital syndrome
270.200 Albinism
277.620 Alpha-1 antitrypsin deficiency
658.800 Amniotic bands (constricting bands, amniotic cyst)
270.600 Arginosuccinic aciduria
778.000 Ascites, congenital

216 Benign neoplasm of skin

Includes: blue nevus pigmented nevus
papilloma dermatofibroma
syringoadenoma hydrocystoma
* * dermoid cyst syringoma
Excludes: skin of female genital organs (use 221.000),
skin of male genital organs (use 222.000)
216.200 Benign neoplasm of skin, ear and external auditory canal
Includes: auricle ear external meatus
auricular canal external canal
pinna
Excludes: cartilage of ear
216.100 Benign neoplasm of skin, eyelid, including canthus
Excludes: cartilage of eyelid
216.000 Benign neoplasm of skin, lip
Excludes: vermillion border of lip
216.700 Benign neoplasm of skin, lower limb, hip
216.300 Benign neoplasm of skin, other and unspecified parts of face
Includes: cheek, external nose, external
eyebrow temple
216.800 Benign neoplasm of skin, other specified sites of skin
Excludes: epibulbar dermoid cyst (use 743.810)
216.400 Benign neoplasm of skin, scalp and skin of neck
216.900 Benign neoplasm of skin, site unspecified
Includes: hairy nevus (>4 inches diameter)
sebaceous cyst

216.500 Benign neoplasm of skin, trunk, except scrotum
Includes: axillary fold
perianal skin
skin of: chest wall, abdominal wall, groin, buttock, anus, perineum, back, umbilicus, breast
Excludes: anal canal
anus, NOS
skin of scrotum
216.600 Benign neoplasm of skin, upper limb, shoulder
221.000 Benign skin neoplasm of female genital organs
222.000 Benign skin neoplasm of male genital organs
453.000 Budd-Chiari, occlusion of hepatic vein
427.900 Cardiac arrhythmias, NEC
330.100 Cerebral lipidoses
Includes: Tay-Sachs disease, gangliosidosis
363.200 Chorioretinitis
279.200 Combined immunodeficiency syndrome
771.280 Congenital infection, other specified
Excludes: human immunodeficiency virus (HIV) infection and acquired immunodeficiency syndrome (AIDS)
277.000 Cystic fibrosis
No mention of meconium ileus
277.010 Cystic fibrosis
With mention of meconium ileus
228.100 Cystic hygroma
Lymphangioma, any site
771.100 Cytomegalovirus (CMV) (in utero infections only)
253.820 Diencephalic syndrome
279.110 DiGeorge syndrome
277.400 Disorders of bilirubin excretion
425.300 Endocardial fibroelastosis
553.200 Epigastric hernia
767.600 Erb's palsy
368.000 Esotropia
378.000 Exotropia
351.000 Facial palsy
331.890 Familial degenerative CNS disease
760.710 Fetal alcohol syndrome
760.718 Fetal alcohol syndrome, probable
Includes: "facies"
760.750 Fetal hydantoin (Dilantin) syndrome
282.200 Glucose-6-phosphate dehydrogenase (G-6-PD) deficiency
271.000 Glycogen storage diseases

228.0 Hemangioma

Include if greater than 4-inches diameter, if multiple hemangiomas, or if cavernous hemangioma

228.040 Hemangioma, intra-abdominal
228.020 Hemangioma, intracranial
228.090 Hemangioma, of other sites
228.000 Hemangioma, of unspecified site
228.030 Hemangioma, retinal
228.010 Hemangioma, skin & subcutaneous, NOS
286.000 Hemophilia (all types)
774.490 Hepatitis, neonatal, NOS
774.480 Hepatitis, neonatal, other specified
282.100 Hereditary elliptocytosis
282.000 Hereditary spherocytosis
771.220 Herpes simplex (in utero infections only)
Includes: encephalitis
meningoencephalitis
202.300 Histiocytosis, malignant
277.510 Hurler syndrome
Includes: lipochondrodystrophy
778.600 Hydrocele, congenital
270.700 Hyperglycinemia
251.200 Hypoglycemia, idiopathic
252.100 Hypoparathyroidism, congenital
275.330 Hypophosphatemic rickets
253.280 Hypopituitarism, congenital
243.990 Hypothyroidism, congenital
345.600 Infantile spasms, congenital
550.000 Inguinal hernia with mention of gangrene
550.900 Inguinal hernia with no obstruction
with no mention of gangrene
550.100 Inguinal hernia with obstruction (incarcerated)
with no mention of gangrene
208.000 Leukemia, congenital, NOS

214 Lipoma

214.300 Lipoma, intra-abdominal organs
214.200 Lipoma, intrathoracic organs
214.810 Lipoma, lumbar or sacral lipoma
paraspinal lipoma
214.100 Lipoma, other skin and subcutaneous tissue
214.800 Lipoma, other specified sites
214.000 Lipoma, skin and subcutaneous tissue of face

214.400 Lipoma, spermatic cord
214.900 Lipoma, unspecified site
457.800 Lymphatics - other specified disorders of (including chylothorax)
524.000 Macrognathia
270.300 Maple syrup urine disease
777.600 Meconium peritonitis
777.100 Meconium plug syndrome
524.000 Micrognathia
352.600 Moebius syndrome
520.600 Natal teeth
239.200 Neck cyst
774.490 Neonatal hepatitis, NOS
774.480 Neonatal hepatitis, other specified
159.800 Neoplasms of the abdomen, other specified
191.000 Neoplasms of the CNS
Includes: medulloblastoma
gliomas
171.800 Neoplasms of the connective tissue
Includes: Ewing's sarcoma
fibrosarcoma
155.000 Neoplasms of the liver
Includes: hepatoblastoma
hemangio-epithelioma
162.800 Neoplasms of the lung
186.000 Neoplasms of the testes
194.000 Neuroblastoma
237.700 Neurofibromatosis
379.500 Nystagmus
270.100 Phenylketonuria (PKU)
* 524.080 Pierre Robin sequence
# 685.100 Pilonidal sinus (sacrodermal), sacral sinus, sacral dimple
# 277.630 Pseudocholinesterase enzyme deficiency
# 284.000 Red cell aplasia
362.600 Retinal degeneration, peripheral
362.700 Retinitis pigmentosa
190.500 Retinoblastoma
771.000 Rubella, congenital (in utero infections only)
685.100 Sacral dimple
282.600 Sickle cell anemia
090.000 Syphilis, congenital (in utero infections only)
238.030 Teratoma, abdomen
238.010 Teratoma, head and face
238.020 Teratoma, neck
238.000 Teratoma, NOS
238.080 Teratoma, other specified

238.040 Teratoma, sacral, coccygeal
257.800 Testicular feminization syndrome
771.090 TORCH infection, unspecified (in utero infections only)
608.200 Torsion of the testes or spermatic cord
771.210 Toxoplasmosis (in utero infections only)
553.100 Umbilical hernia
286.400 von Willebrand disease
335.000 Werdnig-Hoffman disease
189.000 Wilms tumor (nephroblastoma)
426.705 Wolfe-Parkinson-White syndrome, congenital

Other Specified Codes Used in Metro Atlanta Congenital Defects Program

List ordered by 6-digit code number

090.000 Syphilis, congenital (in utero infections only)
155.000 Neoplasms of the liver
Includes: hepatoblastoma
hemangio-epithelioma
159.800 Neoplasms of the abdomen
162.800 Neoplasms of the lung
171.800 Neoplasms of connective tissue
Includes: Ewing's sarcoma
fibrosarcoma
186.000 Neoplasms of the testes
189.000 Wilms tumor (nephroblastoma)
190.500 Retinoblastoma
191.000 Neoplasms of the CNS
Includes: gliomas
medulloblastoma
194.000 Neuroblastoma
202.300 Histiocytosis, malignant
208.000 Leukemia, congenital, NOS

214 Lipoma
214.000 Lipoma, skin and subcutaneous tissue of face
214.100 Lipoma, other skin and subcutaneous tissue
214.200 Lipoma, intrathoracic organs
214.300 Lipoma, intra-abdominal organs
214.400 Lipoma, spermatic cord
214.800 Lipoma, other specified sites
214.810 Lipoma, lumbar or sacral lipoma
paraspinal lipoma
214.900 Lipoma, unspecified site

216 Benign neoplasm of skin

Includes: blue nevus pigmented nevus
papilloma dermatofibroma
syringoadenoma *dermoid cyst
hydrocystoma syringoma
Excludes: skin of female genital organs (use 221.000),
skin of male genital organs (use 222.000)

216.000 Skin of lip
Excludes: vermillion border of lip

216.100 Eyelid, including canthus
Excludes: cartilage of eyelid

216.200 Ear and external auditory canal
Includes: auricle ear external meatus
auricular canal external canal
pinna
Excludes: cartilage of ear

216.300 Skin of other and unspecified parts of face
Includes: cheek, external nose, external
eyebrow temple

216.400 Scalp and skin of neck

216.500 Skin of trunk, except scrotum
Includes: axillary fold
perianal skin
skin of: chest wall
abdominal wall
groin
buttock
anus
perineum
back
umbilicus
breast
Excludes: anal canal
anus, NOS
skin of scrotum

216.600 Skin of upper limb, shoulder

216.700 Skin of lower limb, hip

216.800 Other specified sites of skin
Excludes: epibulbar dermoid cyst (use 743.810)

216.900 Site unspecified
Includes: hairy nevus (>4 inches diameter)
sebaceous cyst

221.000 Benign skin neoplasm of female genital organs

222.000 Benign skin neoplasm of male genital organs

228.0 Hemangioma

Include if greater than 4-inches diameter, if multiple hemangiomas, or if cavernous hemangioma

228.000 Hemangioma, of unspecified site
228.010 Hemangioma, skin & subcutaneous, NOS
228.020 Hemangioma, intracranial
228.030 Hemangioma, retinal
228.040 Hemangioma, intra-abdominal
228.090 Hemangioma, of other sites
228.100 Cystic hygroma
Lymphangioma, any site
237.700 Neurofibromatosis
238.000 Teratoma, NOS
238.010 Teratoma, head and face
238.020 Teratoma, neck
238.030 Teratoma, abdomen
238.040 Teratoma, sacral, coccygeal
238.080 Teratoma, other specified
239.200 Neck cyst
243.990 Hypothyroidism, congenital
251.200 Hypoglycemia, idiopathic
252.100 Hypoparathyroidism, congenital
253.280 Hypopituitarism, congenital
253.820 Diencephalic syndrome
255.200 Adrenogenital syndrome (adrenal hyperplasia)
257.800 Testicular feminization syndrome
270.100 Phenylketonuria (PKU)
270.200 Albinism
270.300 Maple syrup urine disease
270.600 Arginosuccinic aciduria
270.700 Hyperglycinemia
271.000 Glycogen storage diseases
275.330 Hypophosphatemic rickets
277.000 Cystic fibrosis with no mention of meconium ileus
277.010 Cystic fibrosis with mention of meconium ileus
277.400 Disorders of bilirubin excretion
277.510 Hurler syndrome
Includes: lipochondrodystrophy
277.620 Alpha-1 antitrypsin deficiency
277.630 Pseudocholinesterase enzyme deficiency
279.110 DiGeorge syndrome
279.200 Combined immunodeficiency syndrome
282.000 Hereditary spherocytosis
282.100 Hereditary elliptocytosis
282.200 Glucose-6-phosphate dehydrogenase (G-6-PD) deficiency
282.600 Sickle cell anemia

284.000 Red cell aplasia
286.000 Hemophilia (all types)
286.400 von Willebrand disease
330.100 Cerebral lipidoses
Includes: Tay-Sachs disease
gangliosidosis
331.890 Familial degenerative CNS disease
335.000 Werdnig-Hoffman disease
345.600 Infantile spasms, congenital
351.000 Facial palsy
352.600 Moebius syndrome
362.600 Retinal degeneration, peripheral
362.700 Retinitis pigmentosa
363.200 Chorioretinitis
368.000 Esotropia
378.000 Exotropia
379.500 Nystagmus
425.300 Endocardial fibroelastosis
426.705 Congenital Wolfe-Parkinson-White syndrome
427.900 Cardiac arrhythmias, NEC
453.000 Budd-Chiari, occlusion of hepatic vein
457.800 Other specified disorders of lymphatics (including chylothorax)

520.600 Natal teeth
524.000 Abnormalities of jaw size
micrognathia
macrognathia
* 524.080 Pierre Robin sequence
# 550.000 Inguinal hernia
with mention of gangrene
550.100 Inguinal hernia with obstruction, (incarcerated)
with no mention of gangrene
550.900 Inguinal hernia with no obstruction
with no mention of gangrene
553.100 Umbilical hernia
553.200 Epigastric hernia
608.200 Torsion of testes or spermatic cord
658.800 Amniotic bands (constricting bands, amniotic cyst)
685.100 Pilonidal sinus (sacrodermal), sacral sinus, sacral dimple
760.710 Fetal alcohol syndrome
760.718 Probable fetal alcohol syndrome
Includes: "facies"
760.750 Fetal hydantoin (Dilantin) syndrome
767.600 Erb's palsy

771 Congenital infections (in utero infections only)

Excludes: congenital syphilis (use 090.000)

771.000 Rubella, congenital

771.090 TORCH infection, unspecified

771.100 Cytomegalovirus (CMV)

771.210 Toxoplasmosis

771.220 Herpes simplex

Includes: encephalitis
meningoencephalitis

771.280 Congenital infection, other specified

Excludes: human immunodeficiency virus (HIV) infection and acquired immunodeficiency syndrome (AIDS)

774.480 Hepatitis, neonatal, other specified

774.490 Hepatitis, neonatal, NOS

777.100 Meconium plug syndrome

777.600 Meconium peritonitis

778.000 Ascites, congenital

778.600 Hydrocele, congenital

ATTACHMENT 8

Appendix G

PLACE OF RESIDENCE AT DELIVERY

The residence at delivery is generally the place of usual residence as stated by the patient, or, as the Census Bureau states, "the place where he or she lives and sleeps most of the time or the place where the person considers to be his or her usual home." Residency is determined without regard to legal status or citizenship.

The following rules which provided for certain categories of persons whose residence is not immediately apparent have been adopted from the SEER Program Code Manual, Revised Edition (6/92):

Persons with More than One Residence: (e.g., "snowbirds") are considered residents of the place they designate as their residence at the time of diagnosis if their usual residence cannot be determined.

Persons with No Usual Residence: (e.g.. transients or homeless persons) are considered residents of the place where they were staying when diagnosed with cancer. This may be the address of a shelter or the hospital where the diagnosis was made.

Persons Away at School: College students are considered residents of the area in which they are living while attending college. But children in boarding schools below the college level are considered residents of their parents' home.

Persons in Institutions: According to the Census Bureau, "Persons under formally authorized supervised care or custody" are considered residents of the institution. This includes incarcerated persons; persons in nursing, convalescent, and rest homes; persons in homes, schools, hospitals, or wards for the physically handicapped, mentally retarded, or mentally ill; and long-term residents of other hospitals, such as Veterans Administration (VA) hospitals.

Appendix G Continued

Note that rules used by departments of vital statistics for classification of residency at time of death may differ from Census rules and SEER rules. For example, persons who die in nursing homes may be considered on the death certificate as

residents of the place they lived before entering the nursing home, or of a residence they own but were not living in, rather than residents of the nursing home at death. It is important to review each case carefully and apply Census/SEER rules to determine residency, regardless of residency stated on the death certificate.

APPENDIX H

Persons in the Armed Forces and on Maritime Ships: Members of the armed forces are considered residents of the area in which the installation is located. For military personnel and their family members, use the stated address of the patient, whether on the installation or in the surrounding community.

The Census Bureau has formulated detailed rules for determining residency of persons assigned to Navy and Coast Guard ships and maritime ships. The rules include reference to such information as a ship's deployment, port of departure and destination, and its homeport. (Rules were simplified for the 1990 Census.) Refer directly to Census Bureau publications for the detailed rules to be applied.

Appendix I

SOUTH CAROLINA CITIES/TOWNS WITH CORRESPONDING COUNTIES

CITY/TOWN	COUNTY
Abbeville	Abbeville
Adams Run	Charleston
Aiken	Aiken
Aiken South	Aiken
Aiken West	Aiken
Alcolv	Clarendon
Allendale	Allendale
Anderson	Anderson
Andrews	Georgetown
	Williamsburg
Arcadia	Spartanburg
Arcadia Lakes	Richland
Ardincaple	Richland
Arial	Pickens
Arkwright	Spartanburg
Awendaw	Charleston
Aynor	Horry
Baldwin Mills	Chester
Ballentine	Richland
Bamberg	Bamberg
Barnwell	Barnwell
Batesburg	Lexington
	Saluda
Bath	Aiken
Beaufort	Beaufort
Beech Island	Aiken
Belton	Anderson
Belvedere	Aiken
Bendale	Richland
Bennettsville	Marlboro
Berea	Greenville
Bethune	Kershaw
Bingham	Dillon
Bishopville	Lee
Blacksburg	Cherokee
Blackstock	Chester
	Fairfield
Blackville	Barnwell
Blair	Fairfield
Blenheim	Marlboro
Bluffton	Beaufort
Blythewood	Richland
Bonneau	Berkeley
Bowling Green	York
Bowman	Orangeburg
Boyden Arbor	Richland
Bradley	Greenwood
Branchville	Orangeburg
Brandon	Greenville
Brunson	Hampton
Buffalo	Union
Burnettown	Aiken
Burton	Beaufort
Cades	Williamsburg
Calhoun Falls	Abbeville
Callison	Greenwood
Camden	Kershaw
Cameron	Calhoun
Campobello	Spartanburg
Canadys	Colleton
Carlisle	Union
Cassatt	Kershaw

* Some cities span two counties; the second listing for a city is the secondary county.

Appendix I Continued

Catawba	York	Dale	Beaufort
Cateechee	Pickens	Dalzell	Sumter
Cayce	Lexington	Darlington	Darlington
Centenary	Marion	Denmark	Bamberg
Central	Pickens	Dillon	Dillon
Central Pacolet	Spartanburg	Donalds	Abbeville
Chapin	Lexington	Donaldson AFB	Greenville
Chappells	Newberry	Doneraile	Darlington
Charleston	Charleston	Dorchester	Dorchester
Charleston AFB	Charleston	Drayton	Spartanburg
Cheraw	Chesterfield	Due West	Abbeville
Chesnee	Spartanburg	Duford	Horry
Chester	Chester	Duncan	Spartanburg
Chesterfield	Chesterfield	Dunean	Greenville
City View	Greenville	Dupont	Charleston
Clarks Hill	McCormick		
Clearwater	Aiken	Early Branch	Hampton
Clemson	Pickens	Easley	Pickens
Cleveland	Greenville	East Gaffney	Cherokee
Clifton	Spartanburg	Eastover	Richland
Clinton	Laurens	Edgefield	Edgefield
Clio	Marlboro	Edgemoor	Chester
Clover	York	Edisto Island	Charleston
Columbia	Richland	Effingham	Florence
	Lexington	Ehrhardt	Bamberg
Conestee	Greenville	Elgin	Lancaster
Converse	Spartanburg	Elko	Barnwell
Conway	Horry	Elliott	Lee
Cope	Orangeburg	Elloree	Orangeburg
Cordesville	Berkeley	Enoree	Spartanburg
Cordova	Orangeburg	Equinox	Anderson
Cottageville	Colleton	Estill	Hampton
Coward	Florence	Eureka	Aiken
Cowpens	Spartanburg	Eutawville	Orangeburg
Cross	Berkeley		
Cross Anchor	Spartanburg	Fair Forest	Spartanburg
Cross Hill	Laurens	Fair Play	Oconee

Fairfax	Hampton	Green Pond	Colleton
	Allendale	Green Sea	Horry
Fingerville	Spartanburg	Greenville	Greenville
Florence	Florence	Greenwood	Greenwood
Folly Beach	Charleston	Greer	Spartanburg
Forest Acres	Richland		Greenville
Forest Beach	Beaufort	Gresham	Marion
Forest Lake	Richland		
Foreston	Clarendon	Hagood	Sumter
Fork	Dillon	Hamer	Dillon
Fort Jackson	Richland	Hampton	Hampton
Fort Lawn	Chester	Hanahan	Berkeley
Fort Mill	York	Hardeeville	Jasper
Fort Motte	Calhoun	Harleyville	Dorchester
Fountain Inn	Laurens	Hartsville	Darlington
	Greenville	Heath Springs	Lancaster
Frogmore	Beaufort	Hemingway	Williamsburg
Furman	Hampton	Hickory Grove	York
		Hilda	Barnwell
Gable	Clarendon	Hilton Head	Beaufort
Gadsden	Richland	Hodges	Greenwood
Gaffney	Cherokee	Holly Hill	Orangeburg
Galivants Ferry	Horry	Hollywood	Charleston
Garnett	Hampton	Honea Path	Anderson
Gaston	Lexington		Abbeville
Georgetown	Georgetown	Hopkins	Richland
Gifford	Allendale	Huger	Berkeley
Gilbert	Lexington		
Glendale	Spartanburg	Industrial	York
Gloverville	Aiken	Inman	Spartanburg
Gluck	Anderson	Inman Mills	Spartanburg
Goose Creek	Berkeley	Irmo	Lexington
Govan	Bamberg		Richland
Gramling	Spartanburg	Irwin	Lancaster
Graniteville	Aiken	Islandton	Colleton
Gray Court	Laurens	Isle of Palms	Charleston
Great Falls	Chester	Iva	Anderson
Greeleyville	Williamsburg		

Jackson	Aiken	Lincolnville	Charleston
Jacksonboro	Colleton	Little Mountain	Newberry
Jamestown	Berkeley	Little River	Horry
Jedburg	Dorchester	Little Rock	Dillon
Jefferson	Chesterfield	Livingston	Orangeburg
Jenkinsville	Fairfield	Lobeco	Beaufort
Joanna	Laurens	Lockhart	Union
Johns Island	Charleston	Lodge	Colleton
Johnsonville	Florence	Longs	Horry
Johnston	Edgefield	Loris	Horry
Jonesville	Union	Lowndesville	Abbeville
		Lowrys	Chester
Kershaw	Lancaster	Lugoff	Kershaw
	Kershaw	Luray	Hampton
Kinards	Newberry	Lydia	Darlington
Kings Creek	Cherokee	Lydia Mills	Laurens
Kingstree	Williamsburg	Lyman	Spartanburg
Kline	Barnwell	Lynchburg	Lee
Ladson	Charleston	Manning	Clarendon
	Berkeley	Marietta	Greenville
LaFrance	Anderson	Marion	Marion
Lake City	Florence	Martin	Allendale
Lakeview	Dillon	Mauldin	Greenville
Lamar	Darlington	Mayesville	Sumter
Lancaster	Lancaster	Mayo	Spartanburg
Lando	Chester	McBee	Chesterfield
Landrum	Spartanburg	McClellanville	Charleston
Lane	Williamsburg	McColl	Marlboro
Langley	Aiken	McConnells	York
Latta	Dillon	McCormick	McCormick
Laurel Bay	Beaufort	Meggett	Charleston
Laurens	Laurens	Miley	Hampton
Leesville	Lexington	Modoc	McCormick
Lena	Hampton	Monarch Mills	Union
Lexington	Lexington	Moncks Corner	Berkeley
Liberty	Pickens	Monetta	Saluda
Liberty Hill	Kershaw		Aiken

Montmorenci	Aiken	Pacolet Park	Spartanburg
Moore	Spartanburg	Pageland	Chesterfield
Mount Carmel	McCormick	Pamplico	Florence
Mount Crogham	Chesterfield	Park Place	Greenville
Mount Holly	Berkeley	Parksville	McCormick
Mount Pleasant	Charleston	Parris Island	Beaufort
Mountain Rest	Oconee	Patrick	Chesterfield
Mountville	Laurens	Pauline	Spartanburg
Mullins	Marion	Pawleys Island	Georgetown
Murrells Inlet	Georgetown	Paxville	Clarendon
Myrtle Beach	Horry	Peak	Newberry
Myrtle Beach AFB	Horry	PeeDee	Marion
		Pelion	Lexington
Neeses	Orangeburg	Pelzer	Anderson
Nesmith	Williamsburg	Pendleton	Anderson
New Ellenton	Aiken	Perry	Aiken
New Zion	Clarendon	Pickens	Pickens
Newberry	Newberry	Piedmont	Anderson
Newry	Oconee		Greenville
Nichols	Marion	Pinehurst	Dorchester
Ninety Six	Greenwood	Pineland	Jasper
Norris	Pickens	Pineridge	Lexington
North	Orangeburg	Pineville	Berkeley
North Augusta	Aiken	Pinewood	Sumter
North Charleston	Charleston	Pinopolus	Berkeley
North Hartsville	Darlington	Plum Branch	McCormick
No. Myrtle Beach	Horry	Pomaria	Newberry
Norway	Orangeburg	Pontiac	Richland
		Port Royal	Beaufort
Oakley	Berkeley	Pregnall	Dorchester
Olanta	Florence	Prosperity	Newberry
Olar	Bamberg		
Orangeburg	Orangeburg	Rains	Marion
Oswego	Sumter	Ravenel	Charleston
Owings	Laurens	Reevesville	Dorchester
		Reidville	Spartanburg
Pacolet	Spartanburg	Rembert	Sumter
Pacolet Mills	Spartanburg	Richburg	Chester

Richland	Oconee	Shaw AFB	Sumter
Ridge Spring	Saluda	Sheldon	Beaufort
Ridgeland	Jasper	Shulerville	Berkeley
Ridgeville	Dorchester	Silverstreet	Newberry
Ridgeway	Fairfield	Simpsonville	Greenville
Rion	Fairfield	Six Mile	Pickens
Ritter	Colleton	Slater	Greenville
Riverside	Lancaster	Smoaks	Colleton
Rock Hill	York	Smyrna	York
Roebuck	Spartanburg	Snelling	Barnwell
Roundo	Colleton	Society Hill	Darlington
Rowesville	Orangeburg	South Congaree	Lexington
Ruby	Chesterfield	Southern Shops	Spartanburg
Ruffin	Colleton	Spartanburg	Spartanburg
Russelville	Berkeley	Spring Mills	Lancaster
	Colleton	Springdale	Lexington
		Springfield	Orangeburg
Saint Charles	Lee	Starr	Anderson
Saint George	Dorchester	Startex	Spartanburg
Saint Helena Island	Beaufort	State Park	Richland
Saint Matthews	Calhoun	Strangeville	Orangeburg
Saint Stephens	Berkeley	Stuckey	Williamsburg
Salem	Oconee	Sullivan's Island	Charleston
Salley	Aiken	Summerton	Clarendon
Salters	Williamsburg	Summerville	Dorchester
Saluda	Saluda	Summit	Lexington
Sandy Springs	Anderson	Sumter	Sumter
Sans Souci	Greenville	Surfside Beach	Horry
Santee	Orangeburg	Swansea	Lexington
Saxon	Spartanburg	Sycamore	Allendale
Scotia	Hampton		
Scranton	Florence	Tamassee	Oconee
Seabrook	Beaufort	Tatum	Marlboro
Sellers	Marion	Taylor	Greenville
	Dillon	Tigerville	Greenville
Seneca	Oconee	Tillman	Jasper
Shannontown	Sumter	Timmonsville	Florence
Sharon	York	Townville	Anderson

Travelers Rest	Greenville
Trenton	Edgefield
Trio	Williamsburg
Troy	Greenwood
Turbeville	Clarendon
Ulmers	Allendale
Una	Spartanburg
Union	Union
Utica	Oconee
Van Wyck	Lancaster
Vance	Orangeburg
Varnville	Hampton
Vaucluse	Aiken
Wadmalaw Island	Charleston
Wagener	Aiken
Walhalla	Oconee
Wallace	Marlboro
Walterboro	Colleton
Ward	Saluda
Ware Shoals	Greenwood
Warrenville	Aiken
Waterloo	Laurens
Wedgefield	Sumter
Wellford	Spartanburg
West Columbia	Lexington
West Pelzer	Anderson
West Union	Oconee
Westminster	Oconee
Westville	Kershaw
White Rock	Richland
White Stone	Spartanburg
Whitmire	Newberry
Whitney	Spartanburg
Williams	Colleton
Williamston	Anderson
Williston	Barnwell
Wilson	Clarendon
Windsor	Aiken
Windy Hill	Florence
Winnsboro	Fairfield
Winnsboro Mills	Fairfield
Woodford	Orangeburg
Woodford	Orangeburg
Woodruff	Spartanburg
Yemassee	Beaufort
	Hampton
Yonges Island	Charleston
York	York

Appendix I Continued

GEORGIA CITIES/TOWNS WITH CORRESPONDING COUNTIES

CITY/TOWN	COUNTY	CITY/TOWN	COUNTY
Abbeville	Wilcox	Atlanta	DeKalb
Acworth	Cobb		Fulton
Adiarsville	Bartow	Attapulgus	Decatur
Adel	Cook	Auburn	Barrow
Adrian	Emanuel	Augusta	Richmond
	Johnson	Austell	Cobb
Ailey	Montgomery		Douglas
Alamo	Wheeler	Avondale Estates	DeKalb
Alapaha	Berrien	Axson	Atkinson
Albany	Dougherty		
Aldora	Lamar	Baconton	Mitchell
Alexander	Burke	Bainbridge	Decatur
Allentown	Twiggs	Baldwin	Banks
	Wilkinson		Habersham
Alma	Bacon	Ball Ground	Cherokee
Almon	Newton	Barnesville	Lamar
Alpharetta	Fulton	Bartow	Jefferson
Alto	Banks	Barwick	Brooks
	Habersham		Thomas
Alto Park	Floyd	Baxley	Appling
Ambrose	Coffee	Belvedere	DeKalb
Americus	Sumter	Berlin	Colquitt
Amsterdam	Decatur	Berryton	Chattooga
Andersonville	Sumter	Bethlehem	Barrow
Appling	Columbia	Bibb City	Muscogee
Arabi	Crisp	Blackshear	Pierce
Aragon	Polk	Blackwells	Cobb
Arco (Dock Junction)	Glynn	Blairsville	Union
Arlington	Calhoun	Blakely	Early
	Early	Bloomingdale	Chatham
Arrowhead	Clayton (see Jonesboro)	Blue Ridge	Fannin
Ashburn	Turner	Blythe	Burke
Athens	Clarke		Richmond

* Some of the cities span two counties; the second listing for a city is the secondary county.

Bogart	Clarke	Cecil	Cook
	Oconee	Cedartown	Polk
Bonaire	Houston	Centerville	Houston
Boston	Thomas	Chalybeate Springs	Meriwether
Bostwick	Morgan	Chamblee	DeKalb
Bowdon	Carroll	Chatsworth	Murray
Bowersville	Hart	Chauncey	Dodge
Bowman	Elbert	Chester	Dodge
Braselton	Jackson	Chickamauga	Walker
Bremen	Haralson	Chicopee	Hall
Bronwood	Terrell	Clarkdale	Cobb
Brookfield	Tift	Clarkesville	Habersham
Brooklet	Bulloch	Clarkston	DeKalb
Broxton	Coffee	Claxton	Evans
Brunswick	Glynn	Clayton	Rabun
Buchanan	Haralson	Clermont	Hall
Buena Vista	Marion	Cleveland	White
Buford	Gwinnett	Climax	Decatur
	Hall	Clyo	Effingham
Butler	Taylor	Cobbtown	Tattnall
Byromville	Dooly	Cochran	Bleckley
Byron	Peach	Cogdell	Clinch
		Cohutta	Whitfield
Cadwell	Laurens	Colbert	Madison
Cairo	Grady	College Park	Clayton
Calhoun	Gordon		Fulton
Calvary	Grady	Collins	Tattnall
Camilla	Mitchell	Colquitt	Miller
Canon	Franklin	Columbus	Muscogee
	Hart	Comer	Madison
Canton	Cherokee	Commerce	Jackson
Carlton	Madison	Concord	Pike
Carnesville	Franklin	Constitution	DeKalb
Carollton	Carroll	Conyers	Rockdale
Cartersville	Bartow	Coolidge	Thomas
Cassville	Bartow	Cordele	Crisp
Cataula	Harris	Cornelia	Habersham
Cave Spring	Floyd	Covington	Newton

Appendix I Continued

Crawford	Oglethorpe	Dudley	Laurens
Crawfordville	Taliaferro	Duluth	Gwinnett
Culloden	Monroe	Dunaire	DeKalb
Cumming	Forsyth	Dunwoody	DeKalb
Cusseta	Chattahoochee	DuPont	Clinch
Cuthbert	Randolph		
		East Dublin	Laurens
Dacula	Gwinnett	East Ellijay	Gilmer
Dahonega	Lumpkin	East Griffin	Spalding
Dallas	Paulding	Eastman	Dodge
Dalton	Whitfield	East Newnan	Coweta
Damascus	Early	East Point	Fulton
Danielsville	Madison	Eatonton	Putnam
Danville	Twiggs	Eden	Effingham
	Wilkinson	Edison	Calhoun
Darien	McIntosh	Elberta	Houston
Dasher	Lowndes	Elberton	Elbert
Davisboro	Washington	Elizabeth	Cobb
Dawson	Terrell	Ellaville	Schley
Dawsonville	Dawson	Ellenton	Colquitt
Dearing	McDuffie	Ellenwood	Clayton
Decatur	DeKalb	Ellerslie	Harris
Deenwood	Ware	Ellijay	Gilmer
Demorest	Habersham	Embry Hills	DeKalb
De Soto	Sumter	Emerson	Bartow
De Soto Park	Floyd	Emory University	DeKalb
Dexter	Laurens	Enigma	Berrien
Dock Junction	Glynn	Epworth	Fannin
Doerun	Colquitt	Eton	Murray
Donalsonville	Seminole	Eulonia	McIntosh
Doraville	DeKalb	Evans	Columbia
Douglas	Coffee	Everett	Glynn
Douglasville	Douglas	Experiment	Spalding
Dillard	Rabun		
Druid Hills	DeKalb	Fairburn	Fulton
Dry Branch	Bibb	Fairmount	Gordon
	Twiggs	Fair Oaks	Cobb
Dublin	Laurens	Fargo	Clinch

Fayetteville	Fayette	Gough	Burke
Fitzgerald	Ben Hill	Gracewood	Richmond
Flemington	Liberty	Grantville	Coweta
Flintstone	Walker	Gray	Jones
Flippen	Henry	Grayson	Gwinnett
Flovilla	Butts	Greensboro	Greene
Flowery Branch	Hall	Greenville	Meriwether
Folkston	Charlton	Griffin	Spalding
Forest Park	Clayton	Grovetown	Columbia
Forsyth	Monroe	Guyton	Effingham
Fort Benning	Chattahoochee		
	Muscogee	Habersham	Habersham
Fort Gaines	Clay	Haddock	Jones
Fort Gordon	Richmond	Hagan	Evans
Fort Oglethorpe	Catoosa	Hahira	Lowndes
	Walker	Hamilton	Harris
Fort Stewart	Liberty	Hampton	Henry
Fort Valley	Peach	Hapeville	Fulton
Fowlstown	Decatur	Hardwick	Baldwin
Franklin	Heard	Harlem	Columbia
Franklin Springs	Franklin	Harrison	Washington
Funston	Colquitt	Hartwell	Hart
		Hawkinsville	Pulaski
Gaines Community	Clarke	Hazelhurst	Jeff Davis
Gainesville	Hall	Helen	White
Gainesville Cotton Mills		Helena	Telfair
	Hall	Haphzibah	Richmond
Garden City	Chatham	Hiawassee	Towns
Garden Lakes	Floyd	Highland Mills	Spalding
Gardi	Wayne	Hillsboro	Jasper
Geneva	Talbot	Hilltonia	Screven
Georgetown	Quitman	Hinesville	Liberty
Gibson	Glascock	Hiram	Paulding
Glen Haven	DeKalb	Hoboken	Brantley
Glennville	Tattnall	Hogansville	Troup
Glenwood	Wheeler	Holly Springs	Cherokee
Glynco	Glynn	Homeland	Charlton
Gordon	Wilkinson	Homer	Banks

Homerville	Clinch	Leesburg	Lee
Hortense	Brantley	Lenox	Cook
Hoschton	Jackson	Leslie	Sumter
		Lexington	Oglethorpe
Ideal	Macon	Lilburn	Gwinnett
Indian Springs	Butts	Lincoln Park	Upson
Iron City	Seminole	Lincolnton	Lincoln
Irwinton	Wilkinson	Lindale	Floyd
Irwinville	Irwin	Linwood	Walker
Isle of Hope	Chatham	Lithia Springs	Douglas
		Lithonia	DeKalb
Jackson	Butts	Lizella	Bibb
Jasper	Pickens	Locust Grove	Henry
Jefferson	Jackson	Loganville	Gwinnett
Jeffersonville	Twiggs		Walton
Jenkinsburg	Butts	Lookout Mountain	Walker
	Henry	Louisville	Jefferson
Jesup	Wayne	Louvale	Stewart
Jonesboro	Clayton	Ludowici	Long
Junction City	Talbot	Lula	Banks
			Hall
Kennesaw	Cobb	Lumber City	Telfair
Keysville	Burke		Wheeler
Kingsland	Camden	Lumpkin	Stewart
Kingston	Bartow	Luthersville	Meriwether
Kite	Johnson	Lyerly	Chattooga
Knoxville	Crawford	Lyons	Toombs
LaFayette	Walker	Mableton	Cobb
LaGrange	Troup	Macon	Bibb
Lake City	Clayton	Madison	Morgan
Lakeland	Lanier	Manchester	Meriwether
Lakemont	Rabun		Talbot
Lake Park	Lowndes	Manor	Ware
La Vista	DeKalb	Mansfield	Newton
LavOnia	Franklin	Marietta	Cobb
Lawrenceville	Gwinnett	Marietta East	Cobb
Leary	Calhoun		

Marine Center	Dougherty	Mountain Park	Cherokee
Marlow	Effingham		Fulton
Marshallville	Macon	Mountain View	Clayton
Martinez	Columbia	Mount Airy	Habersham
	Richmond	Mount Berry	Floyd
Maysville	Banks	Mount Vernon	Montgomery
	Jackson	Mount Zion	Carroll
McCaysville	Fannin	Mystic	Irwin
McDonough	Henry		
McIntosh	Liberty	Nahunta	Brantley
McIntyre	Wilkinson	Nashville	Berrien
McRae	Telfair	Nelson	Cherokee
Meansville	Pike		Pickens
Mechanicsville	Gwinnett	Newborn	Jasper
Meigs	Mitchell		Newton
	Thomas	New Holland	Hall
Meldrim	Effingham	Newington	Screven
Menlo	Chattooga	Newnan	Coweta
Metter	Candler	Newton	Baker
Midville	Burke	Nicholls	Coffee
Midway	Hardwick	Nicholson	Jackson
	Baldwin	Norcross	Gwinnett
Millen	Jenkins	Norman Park	Colquitt
Millwood	Ware	North Atlanta	DeKalb
Milner	Lamar	North Canton	Cherokee
Milstead	Rockdale	North Decatur	DeKalb
Molena	Pike	North Druid Hills	DeKalb
Monroe	Walton	Norwood	Warren
Montezuma	Macon		
Montgomery	Chatham	Oakdale	Cobb
Monticollo	Jasper	Oak Grove	DeKalb
Moody	Lowndes	Oakwood	Hall
Moreland	Coweta	Ochlocknee	Thomas
Morgan	Calhoun	Ocilla	Irwin
Morrow	Clayton	Oconee	Washington
Morven	Brooks	Odum	Wayne
Moultrie	Colquitt	Offerman	Pierce
Mountain City	Rabun	Oglethorpe	Macon

Omega	Tift
Oxford	Newton
Palmetto	Coweta
	Fulton
Panthersville	DeKalb
Paradise	Park
	Chatham
Patterson	Pierce
Pavo	Brooks
	Thomas
Peachtree City	Fayette
Pearson	Atkinson
Pelham	Mitchell
Pembroke	Bryan
Pendergrass	Jackson
Perry	Houston
Phillipsburg	Tift
Pinehurst	Dooly
Pine Lake	DeKalb
Pine Mountain	Harris
Pine Mountain Valley	Harris
Pineora	Effingham
Pine Park	Grady
Pineview	Wilcox
Pitts	Wilcox
Plains	Sumter
Pooler	Chatham
Portal	Bulloch
Porterdale	Newton
Port Wentworth	Chatham
Poulan	Worth
Powder Springs	Cobb
Preston	Webster
Putney	Dougherty
Quitman	Brooks
Radium Springs	Dougherty
Ray City	Berrien
Rebecca	Turner
Redan	DeKalb
Red Oak	Fulton
Register	Bulloch
Rehoboth	DeKalb
Reidsville	Tattnall
Remerton	Lowndes
Rentz	Laurens
Resaca	Gordon
Rex	Clayton
Reynolds	Taylor
Rhine	Dodge
Riceboro	Liberty
Richland	Stewart
Richmond Hill	Bryan
Rincon	Effingham
Ringgold	Catoosa
Rising Fawn	Dade
Riverdale	Clayton
Riverside	Floyd
Roberta	Crawford
Rochelle	Wilcox
Rockmart	Polk
Rocky Face	Whitfield
Rocky Ford	Screven
Rome	Floyd
Rose Hill	Chatham
Rossville	Walker
Roswell	Fulton
Royston	Franklin
	Hart
	Madison
Russell	Barrow
Rutledge	Morgan
Sale City	Mitchell

Sandersville	Washington	Stillmore	Emanuel
Sandy Springs	Fulton	St. Marys	Camden
Sardis	Burke	Stockbridge	Henry
Sargent	Coweta	Stockton	Lanier
Sasser	Terrell	Stone Mountain	DeKalb
Savannah	Chatham	Stonewall	Fulton
Savannah Beach	Chatham	St. Simons	Glynn
Scotland	Telfair	Sugar Hill	Gwinnett
	Wheeler	Summerville	Chattooga
Scottdale	DeKalb	Surrency	Appling
Screven	Wayne	Suwanee	Gwinnett
Sea Island	Glynn	Swainsboro	Emanuel
Senoia	Coweta	Swords	Morgan
Shady Dale	Jasper	Sycamore	Turner
Shannon	Floyd	Sylvania	Screven
Shellman	Randolph	Sylvester	Worth
Shiloh	Harris		
Siloam	Greene	Talbotton	Talbot
Silver Creek	Floyd	Tallapoosa	Haralson
Silvertown	Upson	Tallulah Falls	Habersham
Skyland	DeKalb		Rabun
Smithville	Lee	Tarrytown	Montgomery
	Sumter	Tate	Pickens
Smyrna	Cobb	Taylorsville	Bartow
Snellville	Gwinnett		Polk
Social Circle	Walton	Temple	Carroll
Soperton	Treutlen	Tennille	Washington
South Cobb	Cobb	Thomaston	Upson
Sparks	Cook	Thomasville	Thomas
Sparta	Hancock	Thomson	McDuffie
Springfield	Effingham	Thunderbolt	Chatham
Stapleton	Jefferson	Tifton	Tift
Starrs Mill	Fayette	Tiger	Rabun
State College	Chatham	Tignall	Wilkes
Statenville	Echols	Timothy	Clarke
Statesboro	Bulloch	Toccoa	Stephens
Statham	Barrow	Toccoa Falls	Stephens
St. George	Charlton	Toco Hills	DeKalb

Toombsboro	Wilkinson	Waynesboro	Burke
Trenton	Dade	West Green	Coffee
Trion	Chattooga	Westoak	Cobb
Tucker	DeKalb	West Point	Harris
Tunnel Hill	Whitfield		Troup
Twin City	Emanuel	Whigham	Grady
Twin Lakes	Lowndes	White	Bartow
Ty Ty	Tift	Whitehall	Clarke
		Whitesburg	Carroll
Unadilla	Dooly	Whitestone	Gilmer
Union City	Fulton	Whitesville	Harris
Union Point	Greene	Wildwood	Dade
Unionville	Tift	Willacoochee	Atkinson
Uvalda	Montgomery	Williamson	Pike
		Wilmington Island	Chatham
Valdosta	Lowndes	Wilshire	Chatham
Van Wert	Polk	Winder	Barrow
Varnell	Whitfield	Windsor Forest	Chatham
Videlia	Montgomery	Winterville	Clarke
	Toombs	Woodbine	Camden
Vienna	Dooly	Woodbury	Meriwether
Villa Ricca	Carroll	Woodland	Talbot
	Douglas	Woodstock	Cherokee
Vinings	Cobb	Woodville	Greene
Vista Grove	DeKalb	Wray	Irwin
		Wrens	Jefferson
Waco	Haralson	Wrightsville	Johnson
Wadley	Jefferson	Wayside	Jones
Waleska	Cherokee	Winston	Douglas
Waresboro	Ware		
Warm Springs	Meriwether	Yatesville	Upson
Warner Robins	Houston	Young Harris	Towns
Warrenton	Warren		
Warwick	Worth	Zeublon	Pike
Washington	Wilkes		
Watkinsville	Oconee		
Waverly Hall	Harris		
Waycross	Ware		

APPENDIX J

CANSUR/NET 1.34

CODES FOR SOUTH CAROLINA COUNTIES/STATES

ABBV. ST	CODE	COUNTY
SC	001	ABBEVILLE
SC	003	AIKEN
SC	005	ALLENDALE
SC	007	ANDERSON
SC	009	BAMBERG
SC	011	BARNWELL
SC	013	BEAUFORT
SC	015	BERKELEY
SC	017	CALHOUN
SC	019	CHARLESTON
SC	021	CHEROKEE
SC	023	CHESTER
SC	025	CHESTERFIELD
SC	027	CLARENDON
SC	029	COLLETON
SC	031	DARLINGTON
SC	033	DILLON
SC	035	DORCHESTER
SC	037	EDGEFIELD
SC	039	FAIRFIELD
SC	041	FLORENCE
SC	043	GEORGETOWN
SC	045	GREENVILLE
SC	047	GREENWOOD
SC	049	HAMPTON
SC	051	HORRY
SC	053	JASPER
SC	055	KERSHAW
SC	057	LANCASTER
SC	059	LAURENS
SC	061	LEE
SC	063	LEXINGTON
SC	065	MCCORMICK
SC	067	MARION
SC	069	MARLBORO
SC	071	NEWBERRY
SC	073	OCONEE
SC	075	ORANGEBURG
SC	077	PICKENS
SC	079	RICHLAND
SC	081	SALUDA
SC	085	SPARTANBURG
SC	085	SUMTER
SC	087	UNION
SC	089	WILLIAMSBURG
SC	091	YORK

ABBV. ST	CODE	STATE
AK	000	ALASKA
AL	000	ALABAMA
AR	000	ARKANSAS
AZ	000	ARIZONA
LA	000	LOUISIANA NOS
CM	129	NO MARIANA ISLANDS
CO	000	COLORADO
CT	000	CONNECTICUT
DC	000	DISTRICT OF COLUMBIA
DC	000	WASHINGTON, DC
DE	000	DELAWARE
FL	000	FLORIDA
GA	000	GEORGIA
GU	126	GUAM
HI	000	HAWAII
IA	000	IOWA
ID	000	IDAHO
IL	000	ILLINOIS
IN	000	INDIANA
KS	000	KANSAS
KY	000	KENTUCKY
LA	000	LOUISIANA
MA	000	MASSACHUSETTS
MD	000	MARYLAND
ME	000	MAINE
MI	000	MICHIGAN
MN	000	MINNESOTA
MO	000	MISSOURI
MS	000	MISSISSIPPI
MT	000	MONTANA
NC	000	NORTH CAROLINA
ND	000	NORTH DAKOTA
NE	000	NEBRASKA
NH	000	NEW HAMPSHIRE
NJ	000	NEW JERSEY
NM	000	NEW MEXICO
NV	000	NEVADA
NY	000	NEW YORK
OH	000	OHIO
OK	000	OKLAHOMA
OR	000	OREGON
PA	000	PENNSYLVANIA
PR	000	PUERTO RICO
RI	000	RHODE ISLAND
SC	026	SOUTH CAROLINA
SD	000	SOUTH DAKOTA

CANSUR/NET 1.34

CODES FOR SOUTH CAROLINA COUNTIES/STATES

ABBV. ST	CODE	COUNTY

ABBV. ST	CODE	STATE
TN	000	TENNESSEE
TT	000	TRUST TERRITORIES
TT	129	NO MARIANA ISLANDS
TX	000	TEXAS
UT	000	UTAH
VA	000	VIRGINIA
VI	000	VIRGIN ISLANDS
VT	000	VERMONT
WA	000	WASHINGTON STATE
WI	000	WISCONSIN
WV	000	WEST VIRGINIA
WY	000	WYOMING
XX	000	UNITED STATES
XX	000	US NOS
XX	000	USA NOS
XX	121	AMERICAN SAMOA
XX	121	SAMOA AMERICAN
XX	999	UNKNOWN

APPENDIX J

CANSUR/NET 1.34

GEORGIA COUNTY CODES

ABBV. ST.	COUNTY	CODE
GA	BRYAN	029
GA	BULLOCH	031
GA	BURKE	033
GA	CHATHAM	051
GA	COLUMBIA	073
GA	EFFINGHAM	103
GA	EVANS	109
GA	JEFFERSON	163
GA	JENKINS	165
GA	MCDUFFIE	189
GA	RICHMOND	245
GA	SCREVEN	251

APPENDIX K

Acceptable Abstracting Abbreviations

AB, ab	abort, abortion
abd; abdom	abdomen
abn	abnormal
abs	absent
ACTH	adrenocortocotropic hormone
ACVD	arteriosclerotic cardiovascular disease
AD	auris dextra (right ear)
ADH	antidiuretic hormone
adm; admt	admission; admit
AFB	acid fast bacillus
AGA	appropriate gestational age
AKA	also known as
alb	albumin
ALL	acute lymphocytic leukemia
ALS	amyotrophic lateral sclerosis
AMA	against medical advice
ANA	antinuclear antibody (laboratory study titer)
anom	anomaly
ANS	autonomic nervous system
ant	anterior
ante	before
AODM	adult onset diabetes mellitus
AP	anterior - posterior
Ap	apical
approx	approximately
ARBOW	artificial rupture bag of water
AROM	artificial rupture of membrane
AS	auris sinistra (left ear)
ASD	atrial septal defect
ASHD	arteriosclerotic heart disease
ASO	antistreptolysin O (laboratory study titer)
AU	aures unitas (both ears); auris uterque (each ear)
ausc	auscultate
AV	atrioventricular; arteriovenous
axill	axillary

Ba	barium
band	band neutrophil (white blood count - laboratory study)
baso	basophil (white blood count - laboratory study)
BBB	bundle branch block of the heart
BCP	birth control pill
BCP 23	biochemical profile (same as SMA 23)
BE	barium enema

BIH ..... bilateral inguinal hernia
bil; bilat ..... bilateral
bili ..... bilirubin
BM ..... bowel movement
BMR ..... basal metabolism rate
BOM ..... bilateral otitis media
BOW ..... bag of waters
BP; B.P. ..... blood pressure
BPD ..... bronchopulmonary dysplasia
BSO ..... bilateral salpingo-oophorectomy
BUN ..... blood urea nitrogen (laboratory study)
Bx ..... biopsy

C ..... centigrade
C1 - C7 ..... cervical vertebrae 1-7
C & S ..... culture and sensitivity (laboratory study)
C section; c/s . cesarean section
C spine ..... cervical spine
Ca ..... calcium
CA; ca ..... carcinoma; cancer
CABG ..... coronary artery bypass graft
CAD ..... coronary artery disease
CAHD ..... coronary artery heart disease
CAN ..... cord around neck
CAT ..... computerized axial tomography
cath ..... catheter; cathererization
CBD ..... common bile duct
cc ..... cubic centimeter
CCU ..... coronary care unit
CDH ..... congenital dislocated hip
CF ..... cystic fibrosis
CHF ..... congestive heart failure
chol ..... cholesterol (laboratory study)
Chol ..... cholecystectomy
chr ..... chronic
CIS ..... carcinoma in situ
Cl ..... chlorine; chloride
CLL ..... chronic lymphocytic leukemia
CL ..... cleft lip
CL+P ..... cleft lip and palate
CLP ..... cleft palate
cm ..... centimeter
CML ..... chronic myelocytic leukemia
CMV ..... cytomegalovirus
CNS ..... central nervous system
c/o ..... complains of
coag ..... coagulation
compd ..... compound

cong	congenital
COPD	chronic obstructive pulmonary disease
cor	heart
CPD	cephalopelvic disproportion
CP	cerebral palsy
CPK	creatinine phosphokinase (laboratory study)
CPR	cardiopulmonary resuscitation
CSF	cerebrospinal fluid
CST	contraction stress test
CT	computerized tomography (scan)
CV	cardiovascular
CVA	cerebral vascular accident; costovertebral angle
c/w	compatible with
Cx	cervix
CXR	chest x-ray
cysto	cystoscopy

D & C	dilatation and curettage
DC	discontinue; discharge
dd; DD	discharge diagnosis; developmental disability
deform	deformity
derm	dermatology
DES	diethystilbestrol
DIC	disseminated intravascular coagulation
DIP	distal interphalangeal (joint)
DKA	diabetic ketoacidosis
DM	diabetes mellitus
DNA	deoxyriboneucleic acid
DOA	dead on arrival
DOB	date of birth
DOD	date of death
DOE	dyspnea on exertion
DP	dorsalis pedis (pulse)
DPT	diphtheria, pertussis, tetanus (vaccine)
dr	dram
DTR	deep tendon reflex
DU	duodenal ulcer
Dx	diagnosis

ECCD	endocardial cushion defect
ECG (EKG)	electrocardiogram
EDC	estimated date of confinement (pregnancy)
EEG	electroencephalogram
EKG (ECG)	electrocardiogram
EMG	electromyogram
ENT	ears, nose, throat
EOM	extraocular movement; extraocular muscles
eos	eosinophil (white blood count - laboratory study)

ER ..... emergency room
ESR ..... erythrocyte sedimentation rate (laboratory study)
eti ..... etiology
ETOH ..... ethyl alcohol; ethanol
ETP ..... early termination of pregnancy
EUA ..... examination under anesthesia
EXAM ..... examination
excis ..... excision
expl ..... exploratory
expl. lap ..... exploratory laparotomy

F ..... Fahrenheit
FAS ..... fetal alcohol syndrome
FB; fb ..... fingerbreadth; foreign body
FBS ..... fasting blood sugar
F.H.; F.Hx .... family history
FHR ..... fetal heart rate
FHT ..... fetal heart tone
fibrill ..... fibrillation
fl ..... fluid
FLK ..... "funny looking kid" syndrome
fluoro ..... fluroscopy
FROM ..... full range of motion
FSH ..... follicle-stimulating hormone
FTP ..... failure to progress
FTT ..... failure to thrive
FUO ..... fever of unknown origin
Fx ..... fracture

G ..... gravida (followed by number indicating number of pregnancies)
GB ..... gallbladder
GC ..... gonococcus (gonorrhea)
GE ..... gastroesophageal
GER ..... gastroesophageal reflux
gest ..... gestation
GI ..... gastrointestinal
glu ..... glucose (laboratory study)
Gm; gm ..... gram
Grav ..... gravida (number of pregnancies)
GTT ..... glucose tolerance test
GU ..... genitourinary
GYN; gyn ..... gynecology

h ..... hours
H & P ..... history and physical
HB; hgb ..... hemoglobin
HBP ..... high blood pressure, hypertension
HCG ..... human chorionic gonadotropin
hct ..... hematocrit
HEENT ..... head, eye, ears, nose, throat
H.M. ..... heart murmurs
HMD ..... hyaline membrane disease
hosp ..... hospital
hrs ..... hours
ht ..... height
HTN ..... hypertension
Hx ..... history
hyst ..... hysterectomy

I & D ..... incision and drainage
ICN ..... intensive care nursery
ICS ..... intercostal space
ICU ..... intensive care unit
Ig ..... immunoglobulin
IH ..... inguinal hernia
impress ..... impression
ing; inguin .... inguinal
IQ ..... intelligence quotient
IRDS ..... idiopathic respiratory distress syndrome
irrig ..... irrigation
ITP ..... idiopathic thrombocytopenia purpura
IUD ..... intrauterine device
IUFD ..... intrauterine fetal demise
IUGR ..... intrauterine growth retardation
IUP ..... intrauterine pregnancy
IV ..... intravenous
IVP ..... intravenous pyelogram

JODM ..... juvenile onset diabetes mellitus
JRA ..... juvenile rheumatoid arthritis

K; K+ ..... potassium (electrolytes - laboratory study)
KCl ..... potassium chloride
Kg; kg ..... kilogram
KUB ..... kidneys, ureters, bladder

L; l ..... liter
L ..... left
L & D ..... labor and delivery
L & W ..... living and well
L1 - L5 ..... lumbar vertebrae 1-5
lab ..... laboratory
lap ..... laparotomy
lat ..... lateral
lb ..... pound
LBW ..... low birth weight
LCM ..... left costal margin
LDH ..... lactic dehydrogenase (laboratory study)
LFT ..... liver function test
LGA ..... large gestational age
LH ..... luteinizing hormone
LIQ ..... lower inner quadrant (breast)
LLE ..... left lower extremity
LLL ..... left lower lobe (lung)
LLQ ..... left lower quadrant (abdomen)
LLSB ..... left lower sternal border
LMP ..... last menstrual period
LN ..... lymph node
loc ..... local
LOC ..... loss of consciousness
LOQ ..... lower outer quadrant (breast)
LP ..... lumbar puncture
LS ..... lumbosacral
LSB ..... left sternal border
LSK ..... liver, spleen, kidneys
lt ..... left
LUE ..... left upper extremity
LUL ..... left upper lobe (lung)
LUQ ..... left upper quadrant (abdomen)
LV ..... left ventricular
LVH ..... left ventricular hypertrophy
lymph ..... lymphocyte (white blood count - laboratory study)
lytes ..... electrolytes (laboratory study)

m ..... meter
malig ..... malignant
mc ..... millicurie
MCA ..... multiple congenital anomalies
mcg ..... microgram
MCH ..... maternal - child health
MCL ..... midclavicular line
MCP ..... metacarpophalangeal (joint)
MD ..... medical doctor; muscular dystrophy
med ..... medication; medial

met; metas	metastases; metastatic
mg	milligram
$MgSO_4$	magnesium sulfate (medication)
MH; M.Hx	mental health; maternal history; marital history
MI	myocardial infarction
micro	microscopic
min	minute
ml	milliliter
mm	millimeter
MMC	meningomyelocele; myelomeningocele
mod	moderate; modified
mono	monocyte (white blood count - laboratory study); mononucleosis
mo, mos	month, months
MP	metacarpophalangeal; metatarsophalangeal (joint)
MR	mental retardation; medical records
MS	mid sternal line; multiple sclerosis
MTP	metatarsophalangeal (joint)
MVA	motor vehicle accident
Mx	microscopic
N & V	nausea and vomiting
Na	sodium (electrolyte - laboratory study)
NA	not applicable
NEC	not elsewhere classified; necrotizing enterocolitis
NED	no evidence of disease
neg	negative
Neuro	neurology
NG; N/G	nasogastric
ng	nanogram
NICU	neonatal intensive care unit; neurological intensive care unit
ni	normal
nml	normal
noct; noc	nocturnal; night
NOS	not otherwise specified
NPC	no prenatal care
NS	not stated; normal saline
NSR	normal sinus rhythm (heart); nasoseptal reconstruction
NST	nonstress test
NSVD	normal spontaneous vaginal delivery
N/V	nausea and vomiting

O_2 ..... oxygen
OB ..... obstetrics
ob/gyn ..... obstetrics and gynecology
OBS ..... organic brain syndrome
OC ..... oral contraceptive
OCG ..... oral cholecystogram (gallbadder x-ray study)
OCT ..... oxytocin challenge test
OD ..... oculus dexter (right eye)
OM ..... otitis media
OP; op ..... operation; outpatient
OPD ..... outpatient department
ophth ..... ophthalmology
OR ..... operating room
ortho ..... orthopedics
OS ..... oculus sinister (left eye)
os ..... opening
OT ..... occupational therapy
OTOL ..... otology
OU ..... oculi unitas (both eyes); oculus uterque (each eye)
oz ..... ounce

P ..... pulse; para (followed by number indicating number of live births)
PA ..... posterior-anterior; pernicious anemia
PAC ..... premature atrial contraction (heart)
palp ..... palpable
PAP ..... Papanicolau test or smear (laboratory study)
para ..... number of previous live births
PAT ..... paroxsysmal atrial tachycardia
path ..... pathology
PBI ..... protein-bound iodine (laboratory study)
PCO_2 ..... carbon dioxide pressure (blood gas—laboratory study)
PDA ..... patent ductus arteriosis
PE ..... physical examination; pulmonary embolus
PED(S) ..... pediatric(s)
PFC ..... persistent fetal circulation (same as PTC - prolonged transitional circulation)
PFO ..... patent foramen ovale
PFT ..... pulmonary function test
pg ..... pregnant
PH; P.Hx ..... past or prior history
phos ..... phosphorus (laboratory study)
PHPV ..... persistent hyperplastic primary vitreous
PIA ..... prolonged infantile apnea
PID ..... pelvic inflammatory disease
PIP ..... proximal interphalangeal (joint)
PKU ..... phenylketonuria
PM; p.m. ..... post mortem; post meridian (afternoon - evening)

PMD ..... private medical doctor
PMH ..... past medical history
PMP ..... previous menstrual period
pO_2 ..... oxygen pressure (blood gas - laboratory study)
POL ..... premature onset of labor
pos ..... positive
poss ..... possible
post ..... posterior
PP ..... postpartum
ppd ..... pack per day (cigarettes)
PPD ..... purified protein derivative (tuberculin)
PPTL ..... post partum tubal ligation
PRBOW ..... premature rupture bag of waters
preop ..... preoperative
prep ..... preparation
prob ..... probable
procto ..... proctoscopy
PROM ..... premature rupture of membranes
pro time ..... prothrombin time (laboratory study)
PSRBOW ..... premature spontaneous rupture bag of waters
psych ..... psychiatry; psychology
pt ..... patient
PT ..... physical therapy; prothrombin time (laboratory study); posterior tibial (pulse)
PTA ..... prior to admission
PTC ..... prolonged transitional circulation
PTL ..... postterm labor
PTT ..... partial thromboblastin time (laboratory study)
PUD ..... peptic ulcer disease
PVC ..... premature ventricular contraction (heart)
PX ..... physical examination

Q ..... quadrant
q ..... quaque (every); long arm of a chromosome
q am ..... every morning
qd; qd ..... every day
q hs ..... every night before sleep
qid ..... quarter in die (four times a day)
qod ..... every other day
q pm ..... every afternoon
qt ..... quart

R ..... respiration; right
RA ..... rheumatoid arthritis
RBC ..... red blood cell
RCM ..... right costal margin
RDS ..... respiratory distress syndrome
REM ..... rapid eye movement
RES ..... reticuloendothelial system
retic ..... reticulocyte (white blood count - laboratory study)
RF ..... rheumatic fever
Rh ..... rhesus factor in blood
RHD ..... rheumatic heart disease
RIQ ..... right inner quadrant (abdomen)
RLE ..... right lower extremity
RLF ..... retrolental fibroplasia
RLL ..... right lower lobe (lung)
RLQ ..... right lower quadrant (abdomen)
RML ..... right middle lobe (lung)
RNA ..... riboneucleic acid
R/O ..... rule out
ROM ..... range of motion; rupture of membranes
ROP ..... retinopathy of prematurity
ROQ ..... right outer quadrant (abdomen)
ROS ..... review of systems; review of slides
RSR ..... regular sinus rhythm (heart)
rt ..... right
RUE ..... right upper extremity
RUL ..... right upper lobe
RUQ ..... right upper quadrant
RV ..... rectovaginal
RVH ..... right ventricular hypertrophy
Rx ..... prescription; therapy; treatment

S1 - S4 ..... systolic heart sounds
S1 - S5 ..... sacral vertebrae 1-5
SA ..... sinoauricular (node)
Sa; sarc ..... sarcoma
SAH ..... subarachnoid hemorrhage
SBE ..... subacute bacterial endocarditis
SC ..... sternoclavicular (joint)
SCV ..... supraclavicular
sed rate ..... sedimentation rate (laboratory study)
seg ..... segmented neutrophil (white blood count - laboratory study)
SEM ..... systolic ejection murmur
SGA ..... small gestational age
SGOT ..... serum glutamic oxaloacetic transaminase (laboratory study)
SGPT ..... serumglutamic pyruvic transaminase (laboratory study)
SH; SHx ..... social history
SI ..... sacroiliac

sib(s) ..... sibling(s)
SIDS ..... sudden infant death syndrome
SLE ..... systemic lupus erythematosus
SMA12;
SMA 12/60;
SMA23 ..... sequential multiple analysis (laboratory study)
S & O ..... salpingo-oophorectomy
s & s ..... signs and symptoms
SOB ..... shortness of breath
SOL ..... spontaneous onset of labor
SP ..... suprapubic
s/p ..... status post
spec ..... specimen
sp. gr ..... specific gravity
SQ ..... social quotient; subcutaneous
sq cell ca ..... squamous cell carcinoma
SR ..... sedimentation rate; surgical removal
SROM ..... spontaneous rupture of membranes
staph ..... staphylococcus (microorganism)
staph epi ..... staphylococcus epidermidis (microorganism)
STD ..... sexually transmitted disease
strep ..... streptococcus (microorganism)
sub-q ..... subcutaneous
surg ..... surgery
SVC ..... superior vena cava
SVD ..... spontaneous vaginal delivery
Sx ..... symptoms
syst ..... systolic
Sz ..... seizure

T ..... temperature
T1–T12 ..... thoracic vertebrae 1-12
T & A ..... tonsillectomy and adenoidectomy
T & T ..... tympanotomy with tube placement
TAB ..... therapeutic abortion
tachy ..... tachycardia (heart)
TAH ..... total abdominal hysterectomy
TAH BSO ..... total abdominal hysterectomy and bilateral salpingo-oophrectomy
TAPVR ..... total anomalous pulmonary venous return
TB ..... tuberculosis
TBA ..... to be adopted
TE ..... tracheoesophageal
TEF ..... tracheoesophageal fistula
temp ..... temperature
TGA ..... transposition of great arteries
TBV ..... transposition of great vessels
THR ..... total hip replacement
TIA ..... transient ischemic attack

TIBC ..... total iron-binding capacity (laboratory study)
tid ..... ter in die (three times a day)
TL ..... tubal ligation
TM ..... tympanic membrane
TMJ ..... temporomandibular joint
TNTC ..... too numerous to count
TOA ..... tubo-ovarian abscess
TOF ..... tetralogy of fallot
TORCH ..... toxoplasmosis, rubella, cytomegalovirus, herpes (syphilis)
TP ..... total protein (laboratory study)
trach ..... tracheotomy
TSH ..... thyroid stimulating hormone
TTN ..... transient tachypnea of newborn
TUR ..... transurethral resection
turb ..... turbinate
TURBN ..... transurethral resection of bladder neck
TURBT ..... transurethral resection of bladder tumor
TURP ..... transurethral resection of prostate
U ..... unit
UA ..... urinalysis
UCHD ..... usual childhood diseases
UCHI ..... usual childhood illnesses
UDT ..... undescended testicle
UGI ..... upper gastrointestinal series
UH ..... umbilical hernia
UIQ ..... upper inner quadrant (breast)
umb ..... umbilical
unilat ..... unilateral
UOQ ..... upper outer quadrant
UPI ..... uteroplacental insufficiency
UPJ ..... ureteropelvic junction
URI ..... upper respiratory infection
urol ..... urology
US, U/S ..... ultrasound
UTI ..... urinary tract infection
UVJ ..... ureterovesical junction

vag ..... vaginal
VD ..... veneral disease
VDRL ..... test for syphilis, named for Veneral Disease Research Laboratory
VLBW ..... very low birth weight
VS, vs ..... versus
VSD ..... ventricular septal defect
VT; V tach .... ventricular tachycardia
vtx ..... vertex

WBC	white blood count (part of CBC - laboratory study); white blood cells
WD; w/d	well developed
WF	white female
WISC	Wechsler Intelligence Scale for Children
WM	white male
WN; w/n	well nourished
WNL	within normal limits
WPW	Wolfe-Parkinson-White Syndrome
WPPSI	Wechsler Preschool Primary Scale of Intelligence
wt	weight
X	times
XT	exotropia
Y/O; y.o	years old

APPENDIX L

Participating Hospitals Codes

Record#	HOSPITNB	HOSPITNM
9	370000	At Home
11	370010	Abbeville County Memorial Hospital
12	370020	HCA Aiken Regional Med Ctr
13	370030	Anderson Memorial Hospital
14	370045	Bamberg County Memorial Hospital
15	370048	Barnwell County Hospital
16	370050	Beaufort Memorial Hospital
17	370055	Naval Hospital Beaufort
18	370060	Marlboro Park Hospital
19	370065	Lee County Memorial Hospital
20	370070	Kershaw County Memorial Hospital
3	370080	Baker Hospital
21	370081	Charleston Memorial Hospital
22	370085	Musc Mc Of Medical Univ Of Sc
24	370090	Roper Hospital
25	370100	St.francis Xa Vier Hospital
27	370103	Veterans Admin Med Cntr
29	370110	Chester County Hospital
30	370120	Bailey Memorial Hospital
33	370140	Richland Memorial Hospital
32	370170	Providence Hospital
31	370190	Baptist Medical Center
34	370210	Wm Jennings Bryan Dorn Vet Hospital
35	370230	Conway Hospital
26	370232	Trident Regional Med Cntr
36	370235	Southland Medical Center
37	370237	Wilson Clinic And Hospital
38	370240	St.eugene Community Hospital
40	370243	Edgefield County Hospital
39	370244	Baptist Medical Center Easley
41	370245	Allendale County Hospital
42	370247	Bruce Hospital Ysytem
44	370260	Mcleod Regional Medical Center
43	370265	Florence General Hospital
45	370280	Moncrief Army Community Hospital
46	370290	Cherokee Memorial Hospital
47	370295	Georgetown Memorial Hospital
48	370320	Greenville Hospital System
50	370330	St.francis Hospital
49	370340	Shriners Hos For Crpld Childrn

51	370350	W J Barge Memorial Hospital
52	370375	Self Memorial Hospital
53	370378	Allen Bennett Memorial Hospital
54	370380	Byerly Hospital
55	370390	Hilton Head Hospital
56	370411	Williamsburg Cnty Memorial Hospital
57	370416	Lower Florence County Hospital
58	370430	Elliott White Springs Memorial Hospital
59	370440	Laurens District Hospital
60	370443	Hope Hospital
61	370444	Loris Community Hospital
62	370445	Clarendon Memorial Hospital
63	370447	English Park Medical Center
64	370448	Marion Memorial Hospital
65	370460	Amieast Cooper Community Hospital
66	370470	Mullins Hospital
67	370477	HCA Grand Strand General Hospital
1	370480	Us Air Force Hospital
23	370490	Naval Hospital
28	370495	Chesterfield General Hospital
2	370500	Newberry County Memorial Hospital
4	370520	Regional Med Ctr Of Orangeburg
5	370540	Cannon Memorial Hospital
6	370549	Low Country General Hospital
7	370580	Ami Piedmont Medical Center
8	370590	Oconee Memorial Hospital
69	370595	Hillcrest Hospital
71	370600	Mary Black Memorial Hospital
70	370605	Ami Doctors Memorial Hospital
72	370610	Spartanburg Regional Medical Center
73	370640	Tuomey Hospital
68	370645	Us Air Force Hospital Shaw
74	370650	North Greenville Hospital
75	370660	Wallace Thomson Hospital
76	370665	Hampton General Hospital
77	370670	Colleton Regional Hospital
78	370671	Lexington Medical Center
79	370675	Fairfield Memorial Hospital
80	370677	B J Workman Memorial Hospital
81	370685	Divine Saviour Hospital
82	370994	Unspecified Out Of State Hospital
83	370995	Non-hospital, Nos
84	370996	Physician Only
85	370998	Unspecified State Hospital
86	370999	Unknown Hospital

10 379999 Not Stated

APPENDIX M

Procedures For Abstracting Adopted and Foster Children

Procedure for Abstracting Adopted Children

Column Number	Instructions
Patient's name	Enter "Adopted"
Mother's Name	Enter "Adopted"
Residence at Birth	Enter "Adopted" (Note: Record the street address on a separate piece of paper to give to the statistical assistant for determining the correct census tract. The address will not be entered into the computer file; it will be destroyed)
Father's Name	Enter "Adopted"
City	Enter the natural mother's city of residence
County	Enter the natural mother's county of residence
Zip	Enter the natural mother's zip of residence
Home Phone	Code 888-8888
Chart Number: Mother	Code 8888888888
Chart Number: Infant	Code 8888888888

Procedure for Abstracting Foster Children

Foster children are to be abstracted as a usual case except that "FOSTER CHILD" should be written in the Abstractor's Note (BDR Case Report Form; See appendix P, page 2.)

APPENDIX N
Prenatal Diagnostic Test Codes

Record#	PRECDNB	PRECDNM
1	01	Maternal Serum Afp Determination [02]
2	02	Amniocentesis [01,03,04,05,10]
3	03	Chorionic Villus Sampling [01,04,05]
4	04	Diagnostic Ultrasound [07,07]
5	05	Fetal Echocardiography [07]
6	06	Cordocentesis Or Percutaneous Umbilical Blood Sampling (pubs) [01,04,05,09]
7	07	Radiography [07]
8	08	Fetal Dye Studies [07]
9	09	Fetoscopy [07]
10	10	Fetal Surgery [08]
11	88	Other
12	89	Nos

Case Finding Control Sheet

Date:_____ **Hospital Name:**_____

Baby Name	MRN	Mother Name	MRN	Complications	Review	Date

APPENDIX O

Appendix P: Case Report

SRRHIS Birth Defect *Case Report* ID:

P1: Abstraction Section

Order No.: **State:**

Abstracted On: **Hospital:**

Abstracted By: **Department:**

Mother's Chart: **Baby's Chart:**

Commited On:

Mother's Last Name: **Mother's Last Name:**

Mother's SSN: **Mother's Race:**

Mother's Address:

Baby's Last Name: **Baby's First Name:**

Baby's Middle Name: **Baby's SSN:**

Baby's Birthday: **Baby's Sex:**

Baby's Age Section:

Warranting Condition 1:

2:

3:

4:

With Birth Defects:

SRRHIS Birth Defect *Case Report* ID:

P2: Demographic Section

Mother

Last Name: | First Name: | Middle Name:

Former Name: | Other Surname:

Birth Day: | SSN:

Race: | Ethnicity:

State: | County:

Address: | City:

Zip: | Home Phone:

Marital Status: | Education Year: 0

Work Place: | Work Phone:

Father

Last Name: | First Name: | Middle Name:

Birthday: | SSN:

Race: | Ethnicity: | Education Year: 0

State: | County: | City:

Address:

Zip: | Home Phone:

Work Place: | Work Phone:

Other Contact

Last Name: | First Name: | Middle Name:

Relation with the Baby:

State: | County: | City:

Address: | Zip:

Home Phone: | Patient Lives With:

Abstractor's Note

SRRHIS Birth Defect *Case Report* ID:

P3: Birth Information Section

Baby's LastName: **FirstName:** **Mid.Name:**

Birthday:

SSN:

Sex:

Birth Hospital:

Obstetrician's Last Name: **First Name:** **Phone:**

Pediatrician's Last Name: **First Name:** **Phone:**

Mother's Chart:

Baby's Chart:

Weight: 0 lb 0.0 oz = 0 g

Head Circumference: 0.0 in = 0.0 cm

Chest Circumference: 0.0 in = 0.0 cm

Length: 0.0 in = 0.0 cm

APGAR(1min): 0 **APGAR(5min):** 0

Delivery: **Plurality:**

	Outcome	Sex	Concordance
Twi			
Triplet			

Gestation Age: 0 Weeks **Type of Exam:**

Ultrasound Date: **Ultrasound Dating:** 0 Weeks

LMP Date: **EDC Date:**

Expired: **Date:**

Place: **Autopsy:**

Autopsy Result:

Mother's Total Previous Pregnacies: 0

SRRHIS Birth Defect *Case Report* ID:

P4: Other Hospital Admissions Section

No.: Hospital: Abstracted by:

Department: Abstracted by:

Mother's Chart No.: Baby's Chart No.:

Date of Admission: Date of Discharge:

Description:

No.: Hospital: Abstracted by:

Department: Abstracted by:

Mother's Chart No.: Baby's Chart No.:

Date of Admission: Date of Discharge:

Description:

No.: Hospital: Abstracted by:

Department: Abstracted by:

Mother's Chart No.: Baby's Chart No.:

Date of Admission: Date of Discharge:

Description:

No.: Hospital: Abstracted by:

Department: Abstracted by:

Mother's Chart No.: Baby's Chart No.:

Date of Admission: Date of Discharge:

Description:

No.: Hospital: Abstracted by:

Department: Abstracted by:

Mother's Chart No.: Baby's Chart No.:

Date of Admission: Date of Discharge:

Description:

SRRHIS Birth Defect *Case Report* ID:

P5: Medical and Family History Section

No. Member:

Description:

Condition Code:

Date of Onset: Condition End Date:

Birth Defect Code:

BD Cata.1:

BD Cata.2:

BD Cata.3:

No. Member:

Description:

Condition Code:

Date of Onset: Condition End Date:

Birth Defect Code:

BD Cata.1:

BD Cata.2:

BD Cata.3:

No. Member:

Description:

Condition Code:

Date of Onset: Condition End Date:

Birth Defect Code:

BD Cata.1:

BD Cata.2:

BD Cata.3:

SRRHIS **Birth Defect** *Case Report* ID:

P6: Previous Pregnacies Section

Total Number of Previous Pregnacies: 0	Total Number of Still Birth: 0
	Total Number of Live Birth: 0
	Total Number of Spontaneous Abortion: 0
	Total Number of Induced Abortion: 0
	Total Number of Unspecified Abortion: 0
	Total Number of Not Stated Delivery: 0

No. **Pregnacy No.** 0 **Delivery Date:**
Sex: **Weight:** 0 (g) = 0 (lb) 0.0 (oz)
Gestational Age: 0 (weeks) **Outcome:**
Plurality:

No. **Pregnacy No.** 0 **Delivery Date:**
Sex: **Weight:** 0 (g) = 0 (lb) 0.0 (oz)
Gestational Age: 0 (weeks) **Outcome:**
Plurality:

No. **Pregnacy No.** 0 **Delivery Date:**
Sex: **Weight:** 0 (g) = 0 (lb) 0.0 (oz)
Gestational Age: 0 (weeks) **Outcome:**
Plurality:

No. **Pregnacy No.** 0 **Delivery Date:**
Sex: **Weight:** 0 (g) = 0 (lb) 0.0 (oz)
Gestational Age: 0 (weeks) **Outcome:**
Plurality:

No. **Pregnacy No.** 0 **Delivery Date:**
Sex: **Weight:** 0 (g) = 0 (lb) 0.0 (oz)
Gestational Age: 0 (weeks) **Outcome:**
Plurality:

SRRHIS Birth Defect *Case Report* ID:

P7: Prenatal Diagnostic Procedures Section

No. **Procedure:**

Date: **Purpose:**

Place:

Outcome:

Specific Result:

No. **Procedure:**

Date: **Purpose:**

Place:

Outcome:

Specific Result:

No. **Procedure:**

Date: **Purpose:**

Place:

Outcome:

Specific Result:

No. **Procedure:**

Date: **Purpose:**

Place:

Outcome:

Specific Result:

No. **Procedure:**

Date: **Purpose:**

Place:

Outcome:

Specific Result:

SRRHIS Birth Defect *Case Report* ID:

P8: Prenatal Medication Section

No.	Description of Medication	Beginning Date	Ending Date	Trimester

SRRHIS Birth Defect *Case Report* ID:

P9: Prenatal Complications Section

No. ***Complication Group:***

Complication Name:

Description:

Date of Onset: ***Trimest:***

Resolved Date:

No. ***Complication Group:***

Complication Name:

Description:

Date of Onset: ***Trimest:***

Resolved Date:

No. ***Complication Group:***

Complication Name:

Description:

Date of Onset: ***Trimest:***

Resolved Date:

No. ***Complication Group:***

Complication Name:

Description:

Date of Onset: ***Trimest:***

Resolved Date:

No. ***Complication Group:***

Complication Name:

Description:

Date of Onset: ***Trimest:***

Resolved Date:

SRRHIS Birth Defect *Case Report* ID:

P10: Postnatal Complications Section

No. **Complication:**

Description:

Onset: **Resolved:**

No. **Complication:**

Description:

Onset: **Resolved:**

No. **Complication:**

Description:

Onset: **Resolved:**

No. **Complication:**

Description:

Onset: **Resolved:**

No. **Complication:**

Description:

Onset: **Resolved:**

No. **Complication:**

Description:

Onset: **Resolved:**

SRRHIS Birth Defect *Case Report* ID:

P11: Physical Examinations Section

No. **Date:** **Place:**
Speciality Code:
Outcome:
Result:
Physician's Last Name: **First Name:**

No. **Date:** **Place:**
Speciality Code:
Outcome:
Result:
Physician's Last Name: **First Name:**

No. **Date:** **Place:**
Speciality Code:
Outcome:
Result:
Physician's Last Name: **First Name:**

No. **Date:** **Place:**
Speciality Code:
Outcome:
Result:
Physician's Last Name: **First Name:**

No. **Date:** **Place:**
Speciality Code:
Outcome:
Result:
Physician's Last Name: **First Name:**

SRRHIS Birth Defect *Case Report* ID:

P12: Postnatal Diagnostic Procedures Section

No. **Date:** **Procedure Name:**

Site: **Place:**

Outcome:

Specific Result:

No. **Date:** **Procedure Name:**

Site: **Place:**

Outcome:

Specific Result:

No. **Date:** **Procedure Name:**

Site: **Place:**

Outcome:

Specific Result:

No. **Date:** **Procedure Name:**

Site: **Place:**

Outcome:

Specific Result:

No. **Date:** **Procedure Name:**

Site: **Place:**

Outcome:

Specific Result:

No. **Date:** **Procedure Name:**

Site: **Place:**

Outcome:

Specific Result:

SRRHIS Birth Defect *Case Report* ID:

P13: Birth Defects Section

No. **Description:**

Certainty: **Class:**

Birth Defect Code: **Status:**

BD Cata.1:

BD Cata.2:

BD Cata.3:

Prenatal DX: **Postnatal DX:** **Physycal Exam:**

No. **Description:**

Certainty: **Class:**

Birth Defect Code: **Status:**

BD Cata.1:

BD Cata.2:

BD Cata.3:

Prenatal DX: **Postnatal DX:** **Physycal Exam:**

No. **Description:**

Certainty: **Class:**

Birth Defect Code: **Status:**

BD Cata.1:

BD Cata.2:

BD Cata.3:

Prenatal DX: **Postnatal DX:** **Physycal Exam:**

APPENDIX C

Savannah River Region Health Information System

Summary of cases and pending cases as of August 1995

Summary of cases and pending cases as of August 1995

	Number of Patients Reviewed in Logs		Number of Medical Record screened	Number of Cases	
Hospital	1994	1995	Mother's & Baby	Pending	Birth Defect
1	1066	695	294	2	1
2	128	94	72	3	1
3	126	50	176	3	1
4	1066	892	56	4	3
5	340	175	96	1	2
6	1397	982	354	7	3
7	1229	832	292	2	5
8	81	62	58	8	2
9	403	212	54	1	3
10	1402	601	97	6	15
11	1009	599	132	to be reviewed	

APPENDIX D

Savannah River Region Health Information System
Birth Defects Registry

User's Guide for Data Entry Forms

October 1995

Savannah River Region Health Information System

Birth Defect Registry

User's Guide for

Data Entry Forms

Department of Biometry and Epidemiology
Medical University of South Carolina

October 1995

CONTENTS

Savannah River Region Health Information System
Birth Defect Registry

User's Guide for Data Entry Forms

Chapter 1: How to Install, Start and Quit the BDR Program

This Birth Defect Registry program is designed for the Savannah River Region Health Information System. The database structure is based on the Metropolitan Atlanta Congenital Defects Program provided by CDC.

To Install the BDR Software

1. Be sure that the FoxPro for Windows 2.6 is installed in C:\FPW26.

2. Copy all files on disks 1, 2, 3, and 4 to C:\ with the same sub-directory. A simple way to do this work is to drag A: to C: in the Windows File Manager Environment.

3. Add a new program group with name of "Birth Defect Registry".

4. Add two new program items. Their properties are as follows:

Description:	Case Record Input	System Codes Edit
Command Line:	c:\fpw26\foxprow.exe c:\fpw26\bdr.prg	bdrsys.prg
Working Directory:	c:\fpw26	c:\fpw26
Shortcut Key:	none	none

To Start the BDR Program

1. Insert the KEY DISK in drive A.

2. Double click the icon of the program item "Case Record Input". This operation opens the main menu for case record input.

3. Click the button with a book icon on it. This operation checks the KEY DISK in order to sure the user is valid.

4. Click the items on the main menu.

To Quit the BDR Program

1. Insert the KEY DISK in drive A.

2. Click the button with an EXIT icon on it. This operation updates the KEY DISK. If you fail to do so, the information you added or edited will be lost.

Chapter 2: General Instructions for Form Operation

1. Enabled and Disabled Objects

Forms are the most important interface between users and the database system. A form is composed by *function keys*, like ***Save, Search, Exit***, etc., and *data fields* specially arranged on the screen. A *function keys* will do a certain job when it is clicked on with the mouse, or when the **[Enter]** key is pressed while the cursor is located at this function key. *Data fields* are where we enter data. There are two working states for function keys and data fields: enabled and disabled. Work can only be done on enabled objects. The cursor can not be moved into a disabled object. Mouse clicks will cause nothing when the *function key* is currently disabled. The states of the objects can be changed during the operation by the program.

2. Obligatory Fields, Formatted Fields and Free Fields

Data fields that must contain information are called *obligatory fields*. A set of *obligatory field* is designed for every table, to ensure consistency. Data entered in the *formatted fields* must be in a certain format. For example, zip codes must be 5 digits, state abbreviations must be two letters and dates should be something like 12-12-95. Wrongly formatted data will be rejected by the program. Fields that may or may not have data are called *free fields.*

3. Moving the Cursor

Press **[Tab]** will bring the cursor to the next data field. If the field is fixed-length, then as soon as it is entered without error, the cursor will automatically move to the next field with a beep. All coded fields are fixed-length. **Don't use the [Enter] key to move the cursor**. With data fields, it works the same as the **[Tab]**, but with function keys, it works the same as a mouse click. To avoid mistake, it is a good custom to move cursor always using **[Tab]**. To move the cursor to the previous field. hold **[Shift]** and then press **[Tab]**. A mouse click can set the cursor at any enabled field or function key you want. The cursor will not move away when the entry in the current field is wrong or an empty block is left for a obligatory field, even if you click the ***Abort*** or ***Exit*** key. In this case, enter a data in correct format and valid range. For example:

Pop-Up List:	Pick any item.
Date:	Enter a reasonable date.
Name:	Enter UNKNOWN, or anything else.

4. Pop-Up List

When a field contains two blocks on the screen, the first block is the code area for the field, and the other is the name area. The name block is always disabled, characterized by a light color. If a valid code is entered into the code area, the corresponding name will appear at the name area automatically. If the code is wrong, *i.e.,* there is no such code value in the coding table, then a list with names will be popped up at the upper left corner of the screen. When the cursor is going to leave an obligatory field while it is currently empty, the pop-up list will also display. To make a choice in the pop-up list, you need just click the correct item. If the code area is presently not empty, and you want to change the code, a short cut way is to enter a *wrong code,* for example, *q*,or any other letter, and then press **[Tab]**. The pop-up list will disappear when an item is selected by the mouse, and the cursor will move to the next field at the same time.

5. System Help Message and Window Error Message

During operation, particularly for beginning users, it's a good method to get help from the help message at the bottom of the screen. These message varies with the current cursor position. The window error message will appear at the top right corner of the form with a beep when a data error occurs. Some window help messages are designed to be *No Wait*: they will disappear when a mouse moved or any key is pressed. Other window help messages are designed to be *Wait*: they will stay on until any key is pressed or the mouse is clicked(not just moved). If you want review the *No Wait* error message, press [**Tab**] without moving the mouse.

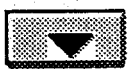
Chapter 3: Abstraction and Case Finding Form

Normally, you start your work with this form. On this form, there are three *data fields* areas and two *function keys* areas. The *data fields* areas include fields for abstraction information, mother's information and baby's information. At the right side of the screen, there are eleven *function keys*, used to manager the operation of the form. At the bottom of the form, there is a set of sorting factor keys, used to put the case records in specified orders according to the value of the sorting factor.

The ***Fox*** is a very active function key. It appears in almost every forms, though the function may different. In this form, at the adding mode, the ***Fox*** key will bring a default set of information to the screen, including the *Order Number, Abstraction State, Abstraction Hospital, Abstractor Initials, Screening Date, Mother's Residence State, County, City.* The *Order Number* is exactly one (1) more than that of the previous case record. You can change it when needed. but no duplicate values are permitted. When you change the default *Order Number* and happen to use a value which has been already used in another case record, a warning message will appear at the up right corner and the cursor will stay at the *Order Number* field asking for a proper value. After the ***Fox*** is clicked, it is disabled and the cursor is moved to the data field of *Order Number*. It is suggested that you change the *Order Number* value at the first time using this software in a year, to begin with the two digits of the year number. For any other case, you can accept the default value.

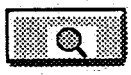
During the process of adding or editing a case record, the ***Abort*** key is always enabled. Click this key will disable all data fields and enable the four navigation keys and ***Add, Edit, Exit***.

This is the ***Top*** key. To understand the function of the navigation keys well, it is helpful to remember that, in the database table, records are arranged according to their values of *Order Number* in the descending order. The record with the largest *Order Number* value is placed at the top of the table and the record with the smallest *Order Number* is placed at the bottom of the table. Therefore, Clicking ***Top*** will bring the record with the largest *Order Number* to the screen. Normally, it is the last record registered. Navigating keys can be clicked several times. They do not disable after being clicked. The only two exceptions occur at the two ends of the table: when the present record is the first one, the ***Prior*** key will be disabled, and when the present record is the last one, the ***Next*** key will be disabled.



The ***Next*** key brings the record with the next smaller value of *Order Number* to the screen for editing. If the ***Next*** key is clicked at the bottom of the table, it will be disabled.

The ***Prior*** key brings the record with the next larger value of *Order Number* to the screen for editing. If the ***Prior*** key is clicked at the top of the table, it will be disabled.



The ***Locate*** key is designed for fast searching of the record you want to edit. When the ***Locate*** key is clicked, a pop-up list will appear at the left corner of the screen with *Order Number* values on it. You can select any one by mouse. If the pop-up list is too small to hold the *Order Number* of all records, you can click the up, down keys just beside the right edge of the list. The pop-up menu list will disappear when a choice is made. The ***Locate*** key will work efficiently when it is combined with ***Next*** and ***Prior***, because the pop-up list contains only one field, while the other two keys will bring a full screen information.

Add a new case record. Clicking ***Add*** key will set the form to the *adding mode* and enable ***Fox***, ***Abort***, ***Exit*** keys and all data fields, and at the same time, disable all the other function keys include ***Add*** itself .

Edit an existing case record. This key is initially disabled. Clicking this key will set the system to the *editing mode* and enable ***Top, Next, Prior, Locate, Abort*** and ***Exit*** keys and all data fields, and at the same time disable all other keys including ***Edit*** itself.

At any time, clicking ***Exit*** will stop the present adding or editing without saving and back to the system's main menu.

The ***Save*** key is enabled in both adding and editing mode only when the obligatory fields is filled with proper date. The bligatory fields for this form are *Case Identification Number, Abstraction State, Abstraction Hospital, Mother's Race, Baby's Birthday, Baby's Sex,* and *Reportable or Not.* Saving a reportable case record will enable the ***Commit*** key. Saving a not reportable case record will clear the screen, going to work on the next record. Clicking ***Save*** for a not reportable case record will disable all function keys except ***Abort, Exit*** and ***Fox*** for adding mode, or navigation keys for editing mode.

The ***Commit*** key (with the icon of a book) transfers the current case record in to the reportable case table, so you can continue work on this record at the following forms. Clicking ***Commit*** will disable all function keys except ***Abort, Exit*** and ***Fox*** for adding mode, or navigation keys for editing mode.

Operation Procedures

Adding a NewCase Record:

1, Click ***Add***. If ***Add*** is disabled, click ***Abort*** which is always enabled.

2, Click ***Fox***, to bring the default information set to the screen.

3, Enter the detail fields. For coded fields, you can enter the code directly if it is familiar to you. For example, the sex code is "1" for male, and "2" for female. More often, if you want make a choice from the pop-up list, press "q", and then press ***Tab***. The only reason we use "q" is it's the closest key near ***Tab***. Any other letter key does the same job.

4, If the case is reportable, *i.e.*, the patient is a case of birth defect in the Savannah River Region, select "Yes". Otherwise, select "No", and choose the reason for "not reportable" in the warranting conditions.

5, After all data fields are finished, click ***Save***. If the case is reportable, the ***Commit*** key, with the icon of a book, will be enabled. Click ***Commit***, to get a *Case ID* number of the case.

Edit an Old Case Record:

The editing function of the abstracting and case finding form is designed only for cases presently "not reportable". For reportable cases, editing functions are available in the other forms.

1, Sort the case records according to the values of a factor you know best about the target case. The factor can be the abstraction hospital, the mother's name, or social security number, the baby's name or social security number. Originally, cases are sorted by the *Order Number.*

2, Click the navigation keys to find the case record needed editing.

3, Click ***Edit***. If Edit is currently disabled when the target record is loaded on the screen, it means this case record is reportable and already committed, so can not be modified here.

4, Use the mouse to set the cursor to the data fields taht need editing, and enter the new values.

5, Click ***Save***.

6, Click ***Commit***, if the case is reportable.

Case Finding:

1, Set order to Hospital.

2, Click Locate, which has the icon of a magnifying glass. Select the target hospital name. If there is no case abstracted in this hospital, there will be a message display on the screen. If the computer does find some cases abstracted in this hospital, it will bring the first case to the screen, and enable the ***Case List*** and ***Print List*** enable.

3, Click ***Case List*** to view basic information of the cases on the browse screen. Click the t button on the up-right corner of the browse screen to close the browse screen.

4, Click ***Print List*** will send the case list to the printer.

Obligatory fields for this form are:

case order number
abstraction state
abstraction hospital
mother's last name
mother's race
baby's birthday
baby's sex

Chapter 4: Working on the Three Single Record Forms

For each reportable case, we have three single record forms and ten multiple record forms. The three single record forms are (1) demographic information form one, which contains fields about the mother and baby, (2) demographic information form two, which contains fields about the father and other contact, and (3) the birth information form, which contain fields about detailed information of the baby's birth. The operation procedure for these three forms are similar to each other. Although we are adding information to the database, we do not add a new record. The case record has already been added into the database when it was committed in the abstraction and case finding form, although most fields of the record are empty at that stage. What we do in the three single record forms is to edit these empty fields. The first thing to do is to find out the target case record.

When you open any of the three single record form, the case appears on the screen is the one we worked on previously at any other forms, including the abstraction and case finding form. Here we use the technique of default working record. When we save any work for a specific case record, the computer memorizes the *Case ID*. When we open any form, the record with this *Case ID* is shown. So, we do not need to find the target record for each form operation.

When the single record form is open, you will find that descriptions for all coded fields are empty. Click ***Fox*** will bring the corresponding descriptions for the coded fields that are not empty.

If the present record is not your target record, you can use navigation keys to search. The most convenient way is to search the target record at the abstraction and case finding form.

When you found the target record, all data fields are disabled. Click ***Fox*** will enable the data fields for editing. Some fields remain disabled because they are not editable.

After entering data in proper fields, you need to save your work. The function key ***Save*** is enabled only when a certain set of obligatory fields is filled with proper data. The following are specifics for different single record forms.

P1. Demographic Information (1)

When the state of the mother's resident is modified, the county will become empty, and when the county is changed, the city will become empty. This design is aimed at avoiding mismatch of the geographic regions. All counties are corespondent states respectively, and all cities are belong to individual counties.

Obligatory fields for this form are:

abstraction hospital
mother's last name
mother's race
baby's birthday
baby's sex

P2. Demographic Information (2)

If the father is living together with the mother, you can input "Y" in the field *Same Home As Mother*. It will bring the mother's state, county, city, home phone, hone zip, and home address to the father's.

At the bottom of the form there is an area designed for ***Abstract's Note.*** Here you can type notes, comments and any other messages. The length of the field is 1000 characters.

There is ***no obligatory field*** in this form. This means you can left all the fields empty.

P3. Birth Information

For the birth weight, length, head circumference, and chest circumference, both metric unit system and English unit system can be used. The program will translate the data form one system to the other.

The table for multiple birth information is designed for multiple birth only. For situation of singleton birth, all fields in this table will be passed.

If the patient died, the date, place(hospital), autopsy (yes or no) and autopsy result can be entered. Otherwise, these four fields will be passed.

Obligatory fields for this form are:

baby's birth hospital
delivery type of the birth
baby died or not

Chapter 5: Working on Multiple Record Forms

Multiple record forms are designed for adding and editing information that may have more than one record for the same case. For example, the mother may have had several previous pregnancies, or the patient may have several birth defect conditions. The operating procedure for a multiple record form contains three main steps: first, to find the associate single record; then, to find the multiple records; and finally, to add or edit the appropriate multiple record. The screen of multiple record forms are divided into two regions. The upper right region is used for the associate single record, and the lower left region is for multiple records. In the single record region, we have several fields as the identification of the case record. A set of navigation keys is located at the right side of the screen. They are used to search the single record. In the multiple record region, there is another set of navigation keysfor those.

As we click the single record navigation keys, information in the multiple record area, if there is any, will also change. Clicking ***Fox***, will fix the single record by disabling its navigation keys, and enable the ***Add*** key. If any multiple records for this single record already exist, the ***Edit*** and multiple record navigation keys will also be enabled. Instead of the ***Locate*** key, there is a ***Bottom*** key for multiple records, because for a specific case, the number of multiple records in a certain subject won't be too large, and there is no need to pop up a list. The ***Bottom*** key brings the first multiple record to the screen. Click ***Add*** or ***Edit*** will enable all data fields in the multiple record area, and at the same time disable the multiple record navigation keys. The ***Save*** key is enabled only when the obligatory fields are filled with data. After saving, the cursor goes back to the multiple record navigation key set. Click ***Home***, will move the cursor to the single record area, stop adding or editing and disable fields in multiple record area, and enable the single record navigation keys.

For each individual multiple record, an *Item No* is given by the program as an unique field. *Delmark* is used in case you want to logically delete the multiple record. The default value is NO, meaning "Not deleted.". When working on multiple record forms, all fields in the single record area are always disabled. The following are special features of different multiple record forms.

P4. Other Hospital Admissions

Obligatory fields: hospital, abstracter, delete mark.

P5. Medical and Family History

When *Condition Code* is "01", for conditions of congenital anomalies, the birth defect codes have to be indicated before the ***Save*** is enabled. For the other cases, the cursor will go directly to *Delmark*.

Obligatory fields: family member code, condition code, delete mark.

P6. Previous Pregnancies

There is an area for total previous pregnancy information. It is a part of the single record. When these numbers are changed, you need to save the work by clicking the ***Save*** key at the right side of the screen. Because some times we only know the number of the previous pregnancies, but do not know detail situation of each pregnancy, we can enter only the total numbers of the previous pregnancies and enter the data in multiple record area as much as we known.

Obligatory fields: outcome, delete mark.

P7. Prenatal Diagnostic Procedures

When the *Outcome* of the diagnostic is '3' or '4', it means "birth defect, syndrome-suspected or diagnosed", the free text field *Result* should indicate which. This message will be used in the birth defect form.

Obligatory fields: procedure code, hospital, outcome, result, delete mark.

P8. Prenatal Medication

If beginning and ending dates of the medication are unknown, enter the trimester.

Obligatory fields: medication code, delete mark.

P9. Prenatal Complications

Class is used to divide complications into several groups. When precise dates of onset and resolved are unknown, enter the trimester.

Obligatory fields: complication class, complication code, delete mark.

P10. Postnatal Complications

Obligatory fields: complication code, delete mark.

P11. Physical Examinations

The free text specific result of the examination is needed for each individual multiple record as well as its coded outcome.

Obligatory fields: specialty code, hospital, outcome, result, delete mark.

P12. Postnatal Diagnostic Procedures

Procedures are classified into several groups. The *Site* is the place of the body where the procedure was performed. When the coded field *Outcome* is '3' or '4', it means "birth defect, syndrome-

suspected or diagnosed", and the free text field *Specific Result* should indicate which. This message will be used in the last form: the birth defect form.

Obligatory fields: procedure class, procedure code, hospital, outcome, result, delete mark.

P13. Birth Defect Section Form

Birth defect codes are classified into a three level group system. This design provides users three pop-up lists with less than 50 items in each list instead one list with nearly 1000 items. The indexes of *Prenatal DX*, *Postnatal DX* and Physical Exam are used to indicate those medical procedures resulting the finding of the birth defect.

Obligatory fields: birth defect code1, code2, code3, delete mark.

Chapter 6: Case Report Generating Form

Case record information reports can be obtained in the report generator form. All information is divided into 13 pages. There are four sets of function keys and data fields:

Case record data fields includes demographic, mother's and baby's basic information. They are used to confirm which case record is currently being worked on. So, all fields in this set are always disabled, and modifications on these fields are forbidden.

The *Record select button* keys are used to select the case record, of which you need the detailed information reports. There are six buttons in this set: ***Top, Next, Prior, Bottom, Locate,*** and ***Fast Set***. Some thing new is the ***Fast Set*** button. When this button is clicked, the *Case ID* field is enabled allow you enter the case identification code. When the *Case ID* is set followed by [Enter], the record with this *Case ID* will be shown. If there is no record with this *Case ID,* the record at the top of the table will be brought to instead.

The *Report page select button* keys are designed to select the specific page you need to print out or browse. There is a field designed to indicate which report page is currently working on.

The *Report action button* keys are the most important part of this form. Functions of the six buttons in this set are:

Generate: to generate all report pages. If there is no records in some sections for the case, the small square field besides the corresponding page field will be empty. Otherwise, the square field will show "F". If we click a page button with a "F" besides it, we can obtain a report with information. If we click a page button with a empty square in front of it, we will obtain a empty report. When ***Generate*** is clicked, ***Print All, Abort*** and ***Exit*** are also enabled.

Abort: to stop the working on current case, and go to work on another case record. Enable all record navigation keys and disable page buttons and report action keys.

Preview: to browse the current report page, let you sure what you get.

Print: to send the report page to the printer connected to the computer.

Print All: to send all the 13 pages of the case report to the printer.

Exit: to exit the report generator form, and back to the main menu of the system.

Blank report papers are available before ***Generate*** is clicked.

Chapter 7: System Code Editing Forms

System Codes Table: Information about state, county, city, hospital, race, ethnicity, sex, birth defect type, etc., can be expressed by codes because for each piece of information the total possible data can be listed in a table with limited and definite items. Other kinds of information such as baby's name, birthday, address etc. are impossible to be replaced by any codes because the possible data for these kinds of information can not be listed in a limited table. System code tables are two dimensional tables with the codes and descriptions.

Single Level Code and Multiple Level Code: Some code tables have only one code and one description for each item, they are called single level codes. Some others may have two or more codes of deferent levels and one description for each item, they are called multiple level codes. The code of state is single level code, and code of county is two level code. For each county, state code, county code and county name are defined in the code table. A same county code can be used for different counties of different states. In some cases, when a single level code table holds too many items, it is a common strategy to define a multiple level code table to replace the large single code table.

System code editing forms are used to query, add, edit and delete information in the code tables. When work on these forms, two important rules should be kept in mind:

*. Each record in the code table should be complete. No empty fields allowed. For example, the city code table is of three levels. Each city is defined with the state code, the county code, the city code and the city name. None of them can be omitted.

*. Any change in the upper level code is subjected to that there no subsequent level code exits or they are changed at the same time. For example, if the code of a county is changed, the code of this county in the city code table should also be changed. When subsequent level code exits, the upper level code can not be deleted.

The above two principles have been taken into account in the system code editing form software.

1. Single Level Code Editing Form

There are four sets of keys and one edit area on the screen of the form.

At the left side of the screen there is a set of ***Table Select Buttons***. It is the only initially enabled key set. Clicking a key in this set brings the table, with its name on the key, to the edit area. During any action process, clicking a table key other than the present one will automatically stop the work

on present table and go to the table currently chosen. Clicking button in this set will enable the ***Record Navigation*** key set.

At the bottom of the screen, there is a set of ***Record Navigation*** keys. They are used to select the item in the table you want to edit. Clicking ***Top, Next, Prior,*** or ***Bottom*** will bring the item at the corresponding position in the table to the edit area. Clicking ***Locate*** key will draw a pop-up list to the up-left corner with all items on it, generally in the alphabetic order. Clicking a key in this set will enable the action buttons of ***Add***, ***Edit***, and ***Delete***.

At the right side there is a set of ***Action*** keys.

Add for adding a new item. Clicking ***Add*** will disable the ***Record Navigation*** key set and all action buttons except ***Abort*** and ***Exit***, and clear the edit area for input new record.

Edit for editing the present item. Clicking ***Edit*** will disable the ***Record Navigation*** key set and all action buttons except ***Delete***, ***Abort*** and ***Exit***, and bring the cursor to the edit area for modifying of the present record.
Delete for deleting the present item in the edit area. A confirm action is needed for the realization of the ***Delete*** action. Clicking ***Delete*** will disable the ***Record Navigation*** key set and all action keys except ***Cancel*** and ***Confirm***.

Save for save the present adding or editing. It is enabled only in the case of ***Add*** or ***Edit*** when both code and description is inputted correctly. Clicking ***Save*** will disable the ***Record Navigation*** key and all action buttons except ***Add***, ***Abort*** and ***Exit***.

Cancel and ***Confirm*** for recognizing of the ***Delete*** action. They are enabled only when the ***Delete*** is previously clicked. Clicking ***Cancel*** to cancel the ***Delete*** action Clicking either of the two keys enable ***Add***, ***Edit***, ***Delete***, ***Abort*** and ***Exit***.

Search enables the ***Record Navigation*** key set and disables all the action keys exception the ***Exit***. And then, brings the cursor to ***Top***.

Exit clears the screen without saving of the present adding or editing and turns back to the main menu. This key is always enabled when the form is open.

Directly beneath the edit area, there is a set of ***Font Setting*** keys.

Capital turns all letters into capital font.

Small turns all letters into small font,

Proper turns the first letter of each word into capital font and the others into small font,

Sentence turns the first letter of the item description into capital font and all other letters into small font.
The function setting action is applied on all items in the table.

2. Multiple Level Code Editing Form

Codes for state, county and city are related to each other. For example, the codes for county have two parts, first part is used to define the state to which the county belong, and the second part is used to define the county. Then, the structure code table for counties should be as follows:

stateIt	C2	state code
countynb	C3	county code
countynm	C30	county name

So, when we add or edit a code of county, we should first select the proper state. If we work on the city code, we have to define the state and county first. In this birth defect registry software system, we put relative multiple codes parameter in one form. All operation procedures are the same as the simple level code editing form, except the additional key for level selection.

APPENDIX E

Savannah River Region Health Information System

Incidence of Selected Birth Defects in Three Regions:
Pee Dee, Tricounty, and Savannah River Region
South Carolina 1981-1988

Technical Report

SAVANNAH RIVER REGION
HEALTH INFORMATION SYSTEM

INCIDENCE OF SELECTED BIRTH DEFECTS IN THREE REGIONS:

Pee Dee, Tricounty, and Savannah River Region

South Carolina
1981-1988

Technical Report
SRRHIS Series: 94:1

INCIDENCE OF SELECTED BIRTH DEFECTS IN THREE REGIONS:

PEE DEE, TRICOUNTY, AND SAVANNAH RIVER REGION

1981-1988

The Savannah River Region Health Information System

Medical University of South Carolina
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Table of Contents

I. Introduction

This technical report provides an overview of occurrence of selected birth defects in three regions in South Carolina (Savannah River, Pee Dee and Tri-County). Data are obtained from the public use birth certificate data files for the eight year period, 1981-1988. The birth defects evaluated in this report were chosen because they are relatively easily diagnosed at birth, and therefore, most likely to appear on the birth certificates.

The report attempts to address the concerns of the residents from the communities surrounding the Savannah River Site (SRS) about the effects of hazardous releases on their health, in particular, adverse birth outcomes. Therefore, the report contains data for the ten counties surrounding and down stream of SRS, which is referred to as the Savannah River Region. The data for the other two regions, Tri-County and Pee Dee, are compiled for the purpose of comparison with the Savannah River Region.

II. Background

In 1992, South Carolina ranked third highest among the states in infant mortality (12.3/1,000 live births). It ranked first in the proportion (9%) of live births with low birth weight (<2500 g). Congenital anomalies is the leading cause of infant mortality, and low birth weight is often observed in the newborns with birth defects.

A birth defect or a congenital malformation is a structural malformation present at birth. It may be the result of natural inheritance of a genetic component which causes the malformation,

or it may be due to teratogenic effects of an environmental element, such as infection, exposure to chemicals, drugs, or ionizing radiation.

Of considerable interest to the community surrounding the Savannah River Site is the potential teratogenic effect of radioactive materials released into the air and water. In an effort to address the concerns, the Savannah River Region Health Information System (SRRHIS) established an active surveillance system for birth defects in its catchment area, which includes ten South Carolina counties (Aiken, Allendale, Bamberg, Barnwell, Beaufort, Colleton, Edgefield, Hampton, Jasper, Orangeburg) along the Savannah River and within a 50 mile radius of the SRS. An active surveillance system for birth defects is based on an intensive case ascertainment and collection of case data from the primary sources, such as birthing hospitals. It requires the use of trained staff employed specifically for the purpose of visiting the hospitals and clinics to screen and ascertain cases from multiple sources, including medical records. In contrast, passive surveillance system relies on receiving limited reports from hospitals, physicians, and vital records offices. As such, a passive system provides information at a much reduced cost than an active system, and therefore, well-suited for exploratory research.

As a preliminary investigation into the occurrences of selected birth defects in South Carolina prior to the commencement of the active SRRHIS birth defects registry, data from the vital records were evaluated. This report summarizes the findings. The reader is cautioned that the major limitation of this report, namely lack of complete ascertainment due to limited resources, should be kept in mind when studying the figures in this report.

III. Data Source

The data for the report were obtained from the live births public use data file of the Office of Vital Records and Public Health Statistics, South Carolina Department of Health and Environmental Control. The period examined is restricted to the years 1981-1988 due to the limited availability of information from the public use data files.

The poor reliability of birth certificates as a source for enumerating birth defects is well-known [2]. The main reason for the shortcoming is the difficulty in ascertaining symptoms and characteristics of many birth defects at birth. Therefore, upon consultation with Dr. G. Shashidhar Pai, Associate Professor and Director of Genetics at the Medical University of South Carolina, the following 14 birth defects, which are easily identified by sight at birth, were selected for tabulation:

Birth Defect	ICD-9 Code
Anencephalus	740
Spina Bifida	741.0, 741.9
Encephalocele	742
Cleft Palate	749
Cleft Lip	749.1
Cleft Palate with Cleft Lip	749.2
Rectal or Intestinal Atresia	751.2
Hypospadias or Epispadias	752.6
Bladder Exstrophy	753.5
Clubfoot (congenital)	754.7
Reduction Deficiency-Upper	755.2
Reduction Deficiency-Lower	755.3
Gastroschisis or Omphalocele	756.7
Down's Syndrome	758

The description of each of these 14 defects are provided in the Appendix.

The data files for each year examined contain a variable, CONGENIT, which is entered as an International Classification of Diseases, Ninth Revision (ICD-9), code for the major birth defect observed. If the variable CONGENIT was blank, then no birth defect was assumed.

The counties included in the three regions for this report are as follows:

	Savannah River Region	Pee Dee Region	Tricounty Region
	Aiken	Chesterfield	Berkeley
	Allendale	Darlington	Charleston
	Barnwell	Dillon	Dorchester
	Bamberg	Florence	
	Beaufort	Horry	
	Colleton	Marion	
	Edgefield	Marlboro	
	Hampton	Williamsburg	
	Jasper		
	Orangeburg		
Total # of Live Births: (1981-1988)	55,947	59,547	71,321

IV. Data Summary

Tables 1-4 provide the baseline incidence counts for each year during the 1981-1988 period, the total frequencies, and incidence rates (cases per 10,000 live births) for the eight-year period for all three regions combined, the Savannah River region, the Pee Dee region, and the Tricounty region, respectively. Figures 1-14 present the eight-year trend of the incidence rates for each of the 14 selected birth defects.

Statistical significance of any differences in the eight-year incidence rates among the three regions was determined using the chi square test [3]. The null hypothesis, that no differences

exist in the rates among the three regions, is rejected at an α-level of 0.05 for all of the selected birth defects except Lower Reduction Deformity. The Savannah River Region's incidence rate for Lower Reduction Deformity is significantly higher than that in the Pee Dee region ($p<0.025$) and in the Tricounty region ($p<0.025$). No significant difference exists between the Pee Dee region and the Tricounty region.

V. Results of Other Surveillance Systems

Incidence rates from two surveillance systems, the North Carolina Birth Defects Registry (NCBDR) and the Metropolitan Atlanta Congenital Defects Program (MACDP), are presented for comparison. The NCBDR is a passive surveillance system which uses up to four supplementary sources to ensure accurate recording of birth defect occurrences. In addition to the birth certificate data, information from Medicaid, Children's Special Health Services (CSHS) data, newborn hospital discharge files, and infant death records are all incorporated to achieve better ascertainment [4].

The MACDP conducts active surveillance of five counties encompassing and surrounding Atlanta. Besides vital records data, this system uses maternal and infant medical records found in birth hospitals, pediatric referral hospitals, cytogenetic laboratories, and specialty clinics to produce near complete ascertainment [1].

The following table from the NCBDR highlights the limitation of our report in that use of a single source results in underestimation of incidence of birth defects.

Numbers and Percentages of Congenital Anomalies by Source of Data
North Carolina, 1984-1986*

SOURCE OF DATA	NUMBER OF RECORDS	PERCENT OF ALL BIRTHS
Birth Certificate	2,087	0.8
Newborn Medicaid Claim	882	0.3
Infant Death Record	743	0.3
Newborn Hospital Discharge Record	8,530	3.2
CSHS Record	2,784	1.0
All Sources Combined	12,581	4.7

*Reproduced from "North Carolina Surveillance Of Birth Defects" by Lee A. Sullivan. Table 2. [4]

Additionally, the following table presents the incidence rates (cases per 10,000 live births) from the three surveillance systems (SRRHIS, NCBDR, MACDP), for the selected birth defects. The NCBDR reports incidence rates from birth certificate data only and for registry data from 1984-1986. The MACDP reports incidence rates from 1981-1988. Careful attention to results presented is needed because of variations in definition of a birth defect among the different surveillance systems. Thus, ICD-9 codes, when available, are presented along with data from each system.

Incidence Rates per 10,000 Live Births for Selected Birth Defects For SRRHIS[1], NCBDR[2], and MACDP[3]

Condition	SRRHIS 1981-1988 ICD-9	SRRHIS 1981-1988 Rate	NCBDR 1984-1986 ICD-9	NCBDR 1984-1986 Birth Certificate Rate	NCBDR 1984-1986 Registry Rate	MACDP 1981-1988 ICD-9	MACDP 1981-1988 Rate
Anencephalus	740.0	0.89	740	1.09	1.66	740.00-740.08	3.2
Spina Bifida	741.0,.9	2.14	741	3.92	5.87	741.00-741.09 / 741.90-741.99	6.1
Other Anomalies of Nervous System	-	-	742	4.14	13.78	-	-
Encephalocele	742.0	0.36	742.0	-	1.51	742.00-742.09	2.1
Cleft Palate and Lip	749.0	1.25	749	8.70	13.44	-	-
Cleft Palate without Cleft Lip	749.1	1.79	749.00-749.04	-	5.23	749.00-749.09	4.6
Cleft Lip with & without Cleft Palate	749.2	1.79	749.1-749.2	-	8.85	749.10-749.19 / 749.20-749.29	9.8
Other Digestive System	-	-	751	2.67	10.43	-	-
Rectal and Intestinal Atresia	751.2	1.07	751.2	-	2.90	751.20-751.24	3.7
Genital Organ Anomalies	-	-	752	7.98	60.35	-	-
Hypospadias or Epispadias	752.6	5.72	-	-	-	752.60-752.627	30.5
Urinary System Anomalies	-	-	753	2.00	9.53	-	-
Bladder Exstrophy	753.5	0	753.5	-	0.41*	753.5	0.2
Musculoskeletal Deformities	-	-	754	6.81	101.28	-	-
Clubfoot	754.7	3.75	754.5,.51,.59,.6-.79	-	41.9	754.7	23.3
Other Limb Anomalies	-	-	755	20.29	94.16	-	-
Reduction Deformity Upper Limbs	755.2	1.07	755.2-755.28	-	1.02	755.20-755.29	3.7
Reduction Deformity Lower Limbs	755.3	1.07	755.3-755.38	-	0.60*	755.30-755.39	1.5
Other Musculoskeletal	-	-	756	3.28	20.71	-	-
Gastroschisis or Omphalocele	756.7	0.71	-	-	-	756.7-756.71	5.0
Chromosomal Anomalies	-	-	758	4.07	11.60	-	-
Down's Syndrome	758.0	2.32	758.0	-	7.08	758.00-758.09	10.0

Table reproduced from [4], [6], [7], and [8]

*Rate based on fewer than 20 events in the numerator may indicate serious random error and should be used very cautiously in making comparisons or assessing trends.[4]

- Data unavailable

[1]SRRHIS: Savannah River Region Health Information System
[2]NCBDR: North Carolina Birth Defects Registry
[3]MACDP: Metropolitan Atlanta Congenital Defects Program

VI. Conclusion

This technical report provides a compilation of the birth certificate data for the 14 birth defects including incidence rates and graphical presentations. The preliminary report is the first step in surveillance of birth defects in South Carolina. It tracks birth defects, analyzes geographical differences in rates, and assists researchers in their endeavors to increase our knowledge of the associations between birth defects and genetic and/or environmental factors.

VII. Tables

The following four tables list the 14 selected birth defects and corresponding ICD-9 code. Each table presents the baseline incidence counts for each year, total frequencies and incidence rates (cases per 10,000 live births) for each of the birth defects for the entire period, and total number of live births for the period 1981-1988. TABLE 1 combines the data for the Savannah River, Pee Dee, and Tricounty regions. TABLE 2-4 present the frequencies and rates for each of the regions separately. Incidence rates are computed by dividing the number of cases by the total number of live births during the observed time period.

TABLE 1. Incidence Frequencies and Rates per 10,000 Live Births
Savannah River, Pee Dee, and Tricounty Regions

BIRTH DEFECT	ICD-9	1981	1982	1983	1984	1985	1986	1987	1988	1981-1988	Rates
Anencephalus	740.0	0	6	1	3	1	2	5	1	19	1.02
Spina Bifida	741.0,.9	6	3	4	6	5	6	7	6	43	2.30
Encephalocele	742.0	1	3	2	1	0	0	0	0	7	0.37
Cleft Palate	749.0	3	8	3	3	6	5	0	7	35	1.87
Cleft Lip	749.1	6	1	1	5	3	2	2	6	26	1.39
Cleft Palate w/ Lip	749.2	3	8	10	4	1	7	5	3	41	2.19
Rectal/Intestinal Atresia	751.2	2	3	5	1	1	3	1	0	16	0.86
Hypospadias/Epispadias	752.6	15	12	15	20	9	10	6	13	100	5.35
Bladder Exstrophy	753.5	0	0	0	0	0	0	0	1	1	0.05
Clubfoot (congenital)	754.7	14	4	17	4	10	5	9	6	69	3.69
Reduction Deficiency-Upper	755.2	3	2	4	2	2	3	2	1	19	1.02
Reduction Deficiency-Lower	755.3	2	1	0	0	0	2	2	1	8	0.43
Gastroschisis/Omphalocele	756.7	4	2	3	3	7	0	2	2	23	1.23
Down's Syndrome	758.0	6	6	13	2	8	3	3	2	43	2.30
TOTAL		65	59	78	54	53	48	44	49	450	24.09
TOTAL NUMBER OF LIVE BIRTHS		23,055	23,059	22,963	22,810	23,525	23,417	23,589	24,393	186,811	

TABLE 2. Incidence Frequencies and Rates per 10,000 Live Births
Savannah River Region

BIRTH DEFECT	ICD-9	1981	1982	1983	1984	1985	1986	1987	1988	1981-1988	Rates
Anencephalus	740.0	0	1	0	1	0	0	2	1	5	0.89
Spina Bifida	741.0,.9	1	1	2	1	3	2	1	1	12	2.14
Encephalocele	742.0	1	1	0	0	0	0	0	0	2	0.36
Cleft Palate	749.0	1	2	1	0	2	1	0	0	7	1.25
Cleft Lip	749.1	1	0	0	2	1	0	1	5	10	1.79
Cleft Palate w/ Lip	749.2	1	1	3	0	1	1	1	2	10	1.79
Rectal/Intestinal Atresia	751.2	0	2	2	1	0	1	0	0	6	1.07
Hypospadias/Epispadias	752.6	4	3	8	8	2	2	1	4	32	5.72
Bladder Exstrophy	753.5	0	0	0	0	0	0	0	0	0	0.00
Clubfoot (congenital)	754.7	7	1	3	2	1	1	3	3	21	3.75
Reduction Deficiency-Upper	755.2	2	1	2	1	0	0	0	0	6	1.07
Reduction Deficiency-Lower	755.3	2	0	0	0	0	2	1	1	6	1.07
Gastroschisis/Omphalocele	756.7	0	1	1	0	1	0	0	1	4	0.71
Down's Syndrome	758.0	1	1	7	0	3	1	0	0	13	2.32
TOTAL		21	15	29	16	14	11	10	18	134	23.95
TOTAL NUMBER OF LIVE BIRTHS		7,199	6,967	6,888	6,655	6,941	6,917	7,039	7,341	55,947	

TABLE 3. Incidence Frequencies and Rates per 10,000 Live Births
Pee Dee Region

BIRTH DEFECT	ICD-9	1981	1982	1983	1984	1985	1986	1987	1988		1981-1988	Rates
Anencephalus	740.0	0	2	1	2	0	0	2	0		7	1.18
Spina Bifida	741.0,.9	2	1	1	4	0	2	3	4		17	2.86
Encephalocele	742.0	0	0	1	1	0	0	0	0		2	0.34
Cleft Palate	749.0	1	2	1	1	2	2	0	4		13	2.18
Cleft Lip	749.1	0	0	1	0	1	2	0	1		5	0.84
Cleft Palate w/ Lip	749.2	1	3	3	1	0	3	2	1		14	2.35
Rectal/Intestinal Atresia	751.2	2	0	1	0	0	2	0	0		5	0.84
Hypospadias/Epispadias	752.6	5	2	1	4	3	4	3	2		24	4.03
Bladder Exstrophy	753.5	0	0	0	0	0	0	0	1		1	0.17
Clubfoot (congenital)	754.7	5	1	5	0	5	3	6	3		28	4.70
Reduction Deficiency-Upper	755.2	0	0	1	1	1	2	0	1		6	1.01
Reduction Deficiency-Lower	755.3	0	1	0	0	0	0	0	0		1	0.17
Gastroschisis/Omphalocele	756.7	4	1	1	1	3	0	1	1		12	2.02
Down's Syndrome	758.0	4	4	1	0	2	0	1	1		13	2.18
TOTAL		24	17	18	15	17	20	18	19		148	24.86
TOTAL NUMBER OF LIVE BIRTHS		7,653	7,602	7,218	7,266	7,437	7,484	7,361	7,522		59,543	

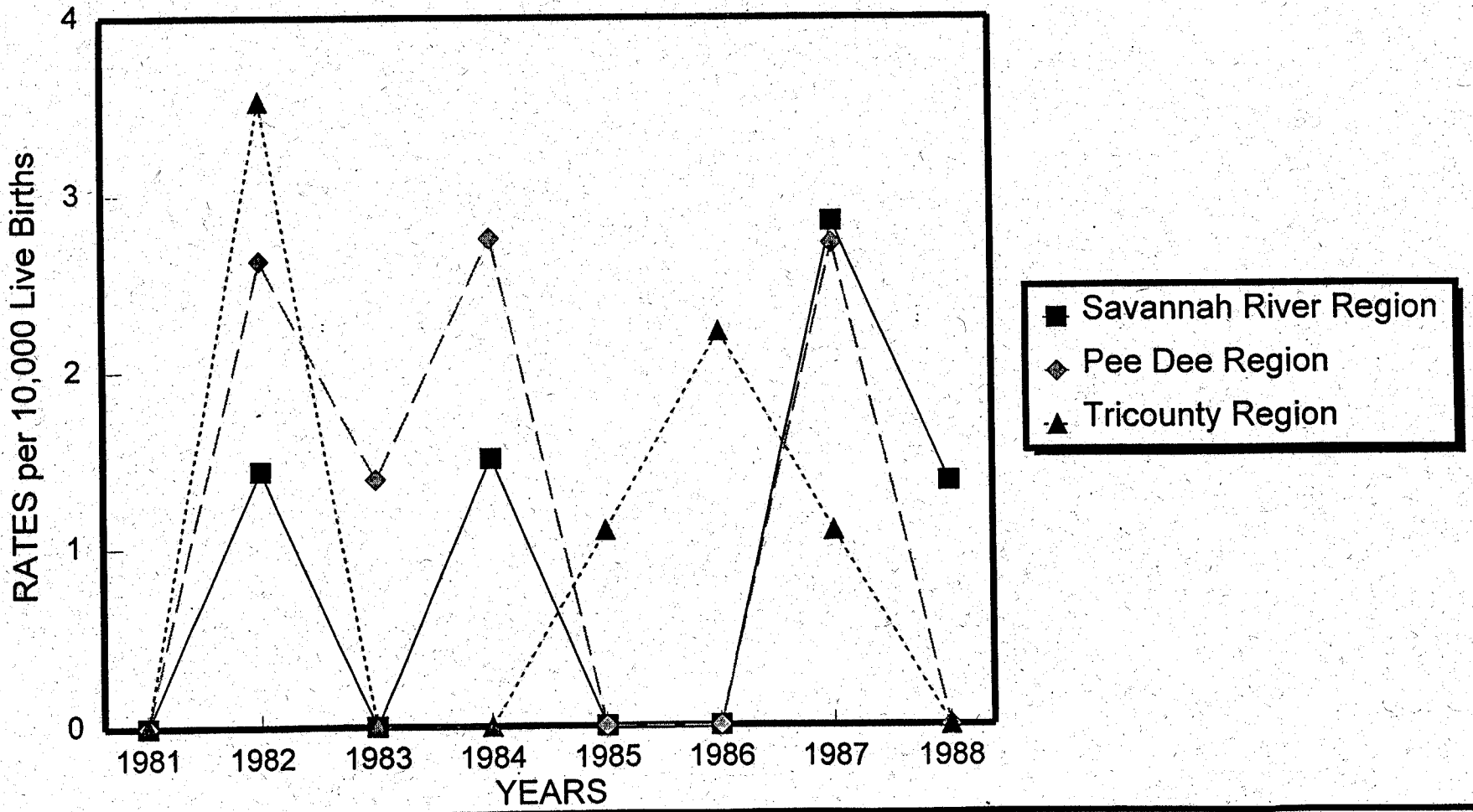
TABLE 4. Incidence Frequencies and Rates per 10,000 Live Births
Tricounty Region

BIRTH DEFECT	ICD-9	1981	1982	1983	1984	1985	1986	1987	1988		1981-1988	Rates
Anencephalus	740.0	0	3	0	0	1	2	1	0		7	0.98
Spina Bifida	741.0,.9	3	1	1	1	2	2	3	1		14	1.96
Encephalocele	742.0	0	2	1	0	0	0	0	0		3	0.42
Cleft Palate	749.0	1	4	1	2	2	2	0	3		15	2.10
Cleft Lip	749.1	5	1	0	3	1	0	1	0		11	1.54
Cleft Palate w/ Lip	749.2	1	4	4	3	0	3	2	0		17	2.38
Rectal/Intestinal Atresia	751.2	0	1	2	0	1	0	1	0		5	0.70
Hypospadias/Epispadias	752.6	6	7	6	8	4	4	2	7		44	6.17
Bladder Exstrophy	753.5	0	0	0	0	0	0	0	0		0	0.00
Clubfoot (congenital)	754.7	2	2	9	2	4	1	0	0		20	2.80
Reduction Deficiency-Upper	755.2	1	1	1	0	1	1	2	0		7	0.98
Reduction Deficiency-Lower	755.3	0	0	0	0	0	0	1	0		1	0.14
Gastroschisis/Omphalocele	756.7	0	0	1	2	3	0	1	0		7	0.98
Down's Syndrome	758.0	1	1	5	2	3	2	2	1		17	2.38
TOTAL		20	27	31	23	22	17	16	12		168	23.56
TOTAL NUMBER OF LIVE BIRTHS		8,203	8,490	8,857	8,889	9,147	9,016	9,189	9,530		71,321	

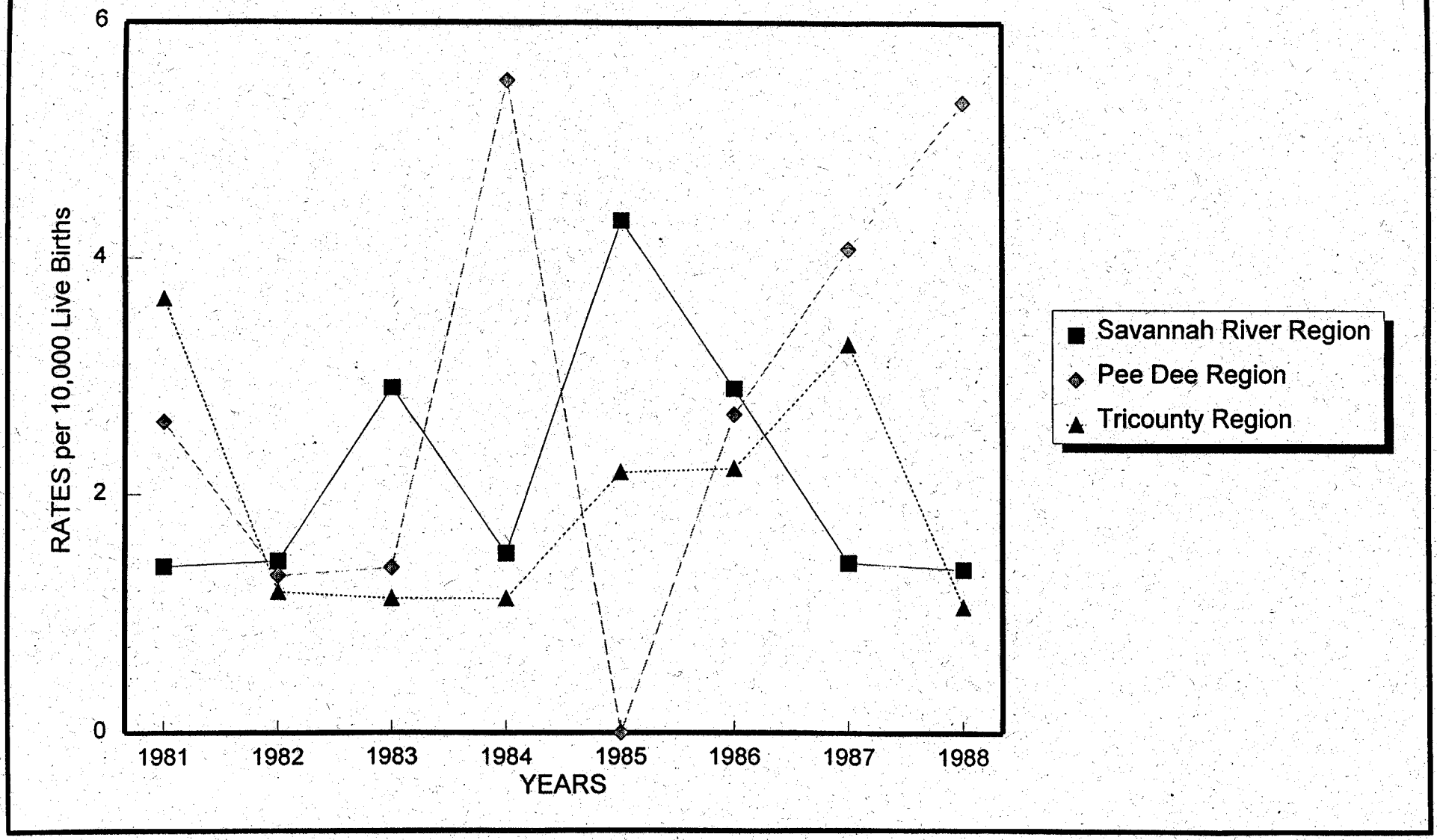
VIII. Graphs

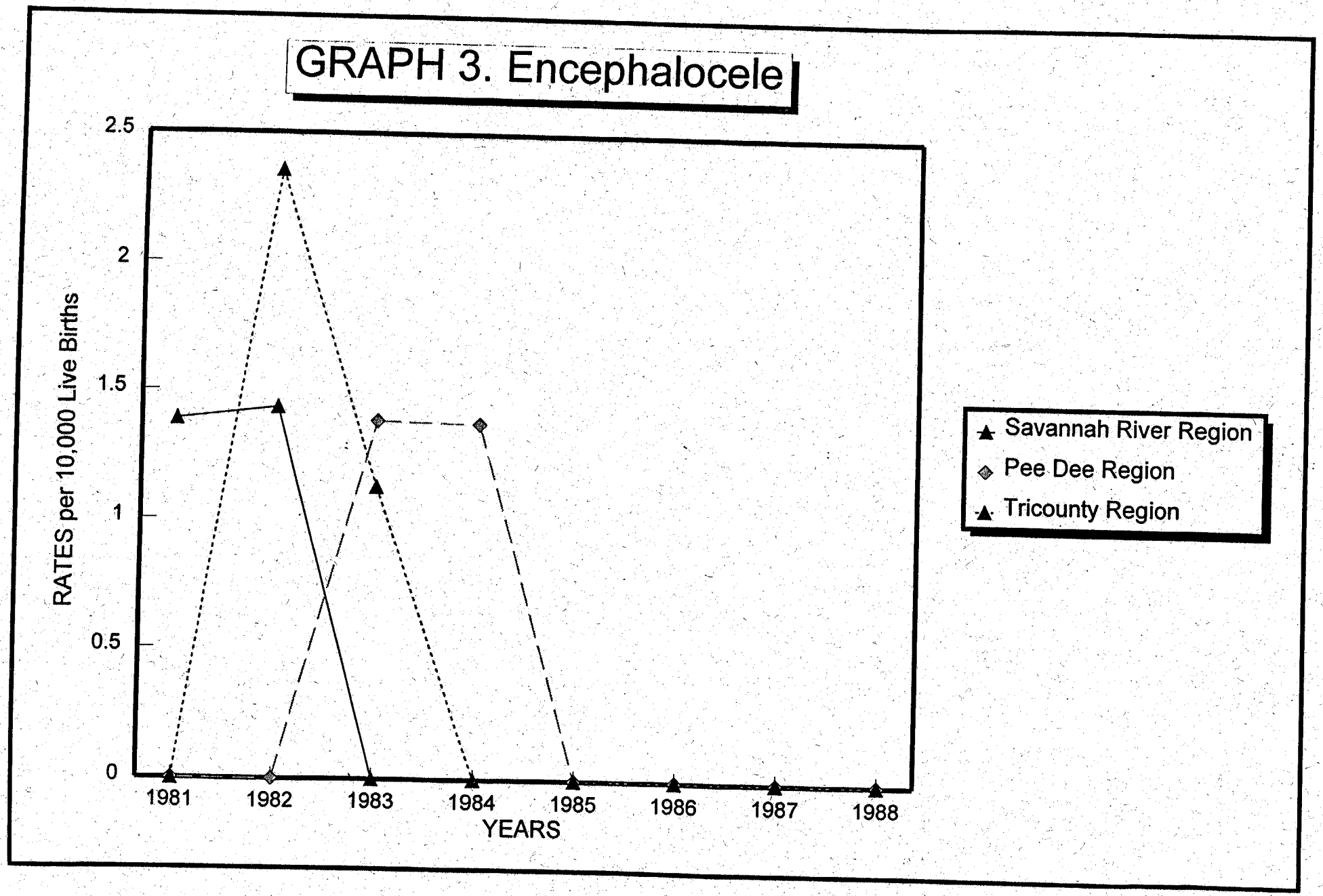
The following graphs are presented to show trends in birth defects during the time period, 1981-1988. For each year, the incidence rate (cases per 10,000 live births) for each of the three regions is plotted. The first 14 graphs show the trend of the incidence rates for each of the selected birth defects over the specified time period. The last graph shows the trend of the incidence rates for all of the selected birth defects combined for each of the three regions during the time period, 1981-1988.

GRAPH 1. Anencephalus

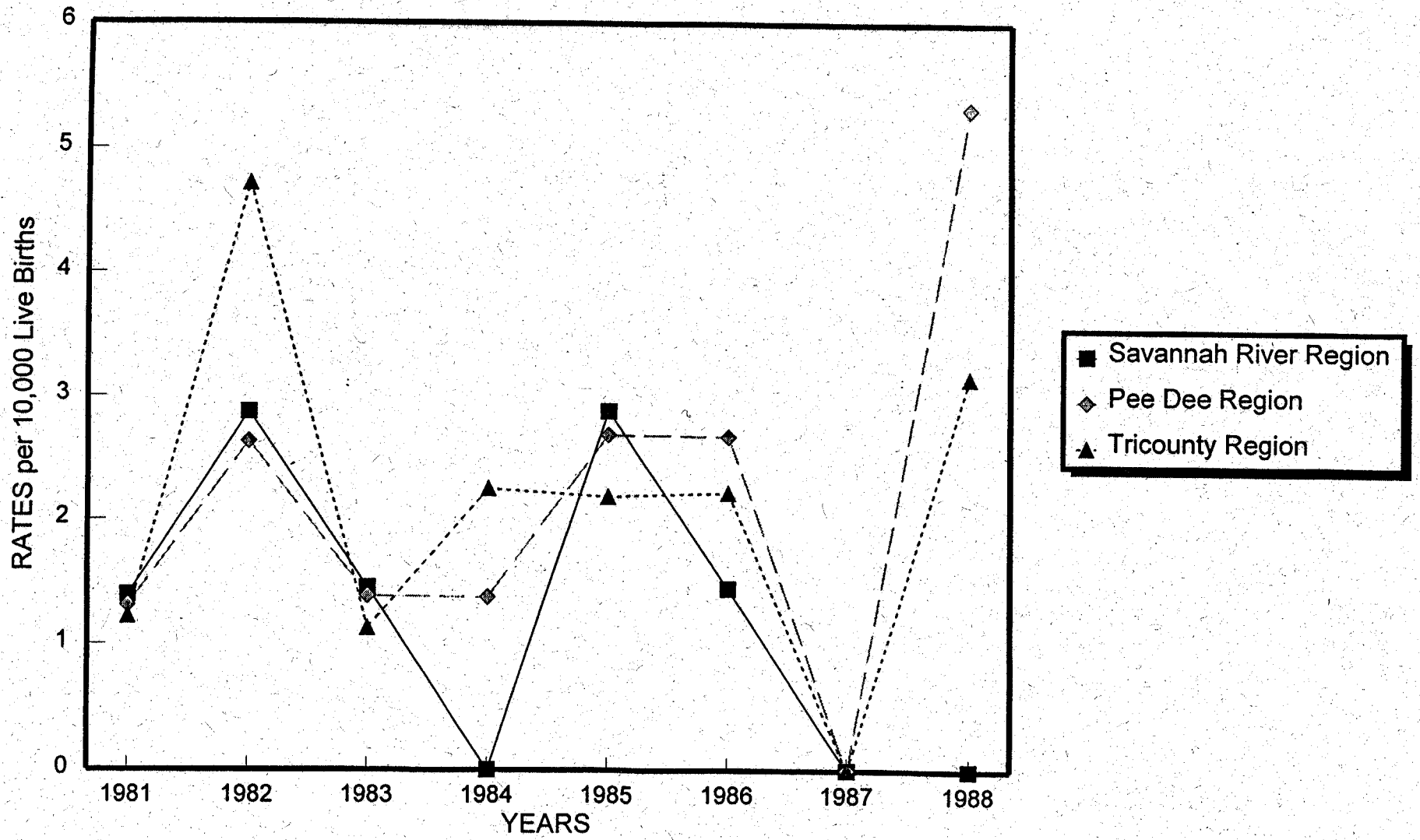


GRAPH 2. Spina Bifida

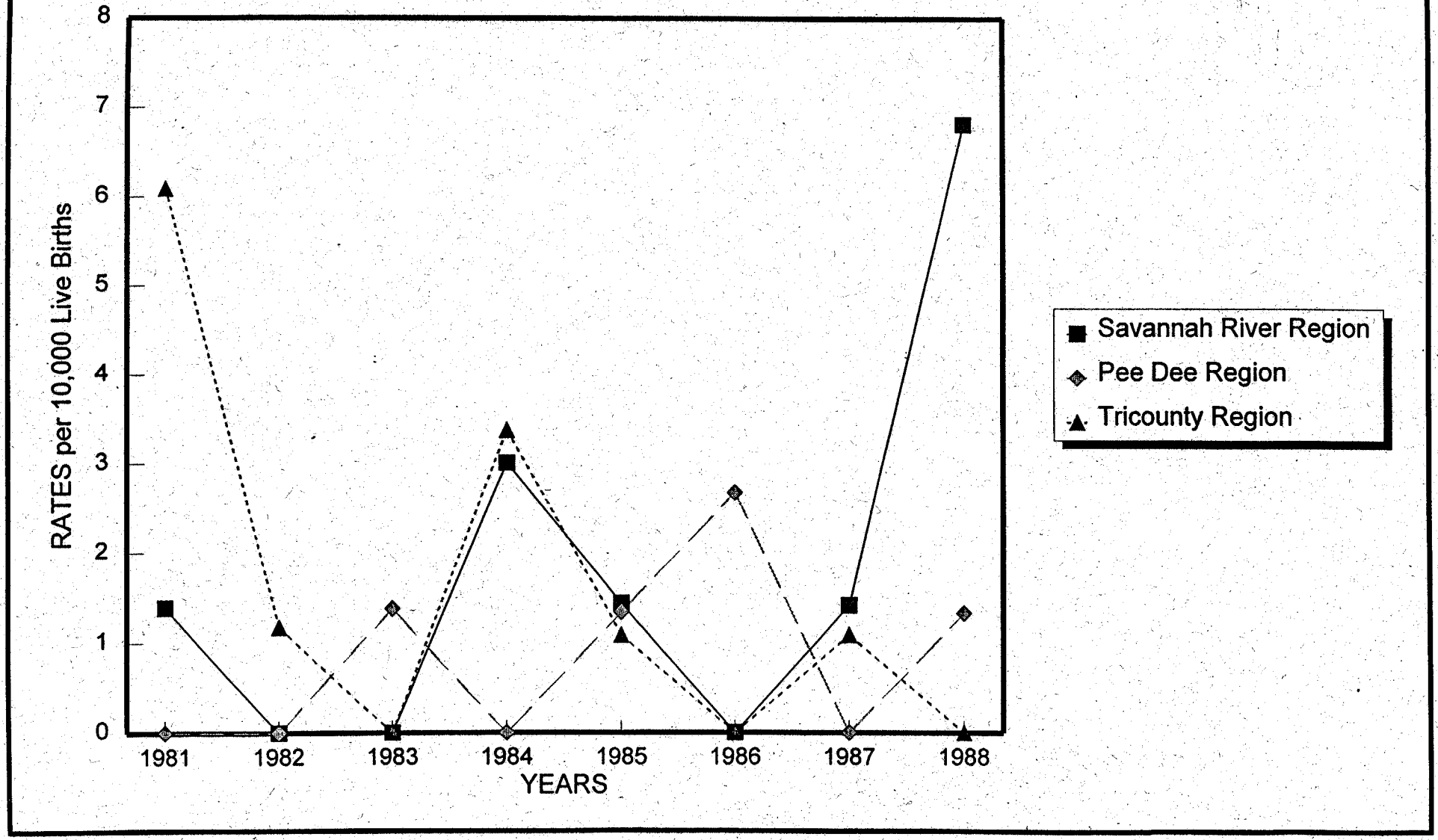



GRAPH 3. Encephalocele
2.5
2
1.5
1
0.5
0
RATES per 10,000 Live Births
1981
1982
1983
1984
1985
1986
1987
1988
YEARS
Savannah River Region
Pee Dee Region
Tricounty Region

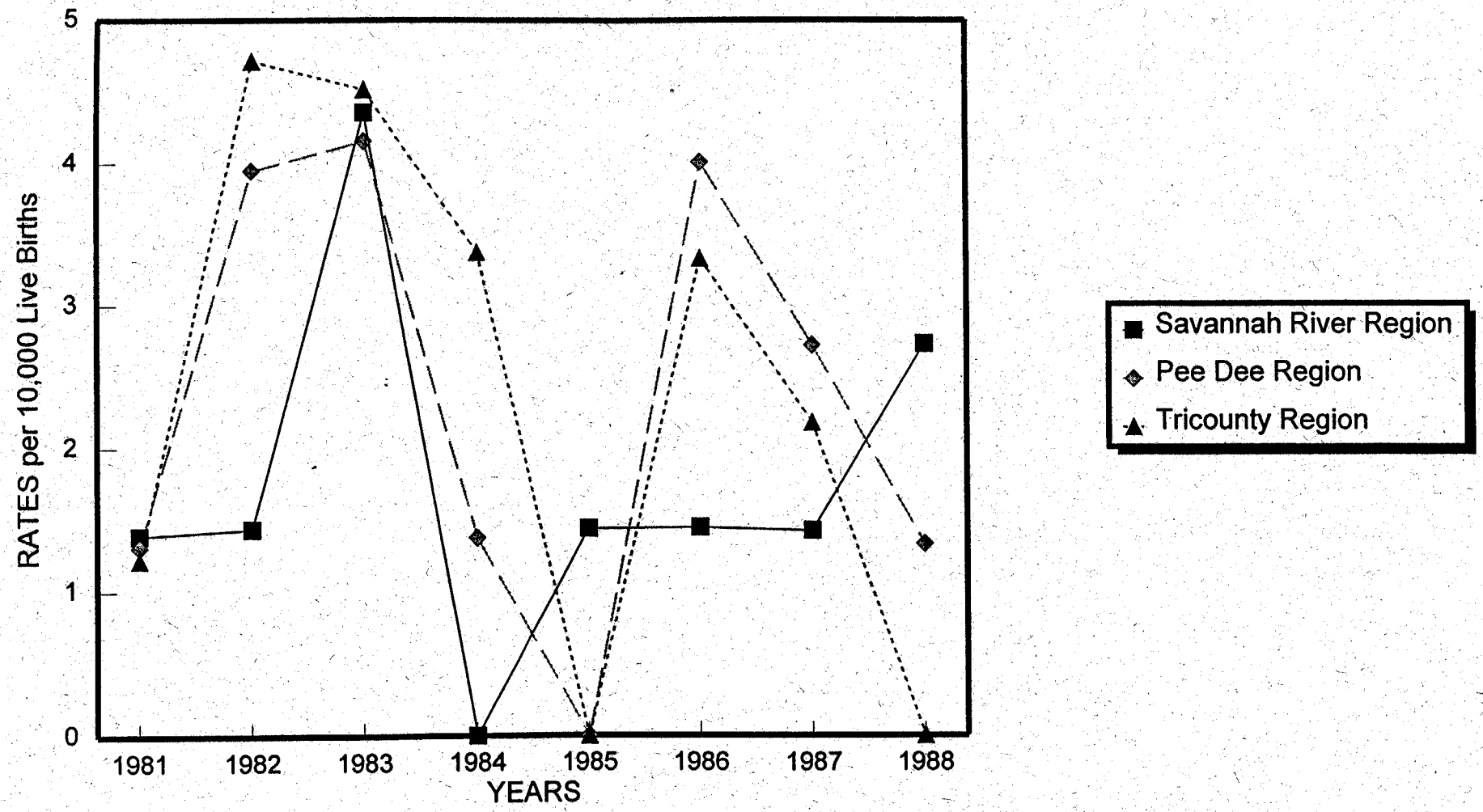
GRAPH 4. Cleft Palate



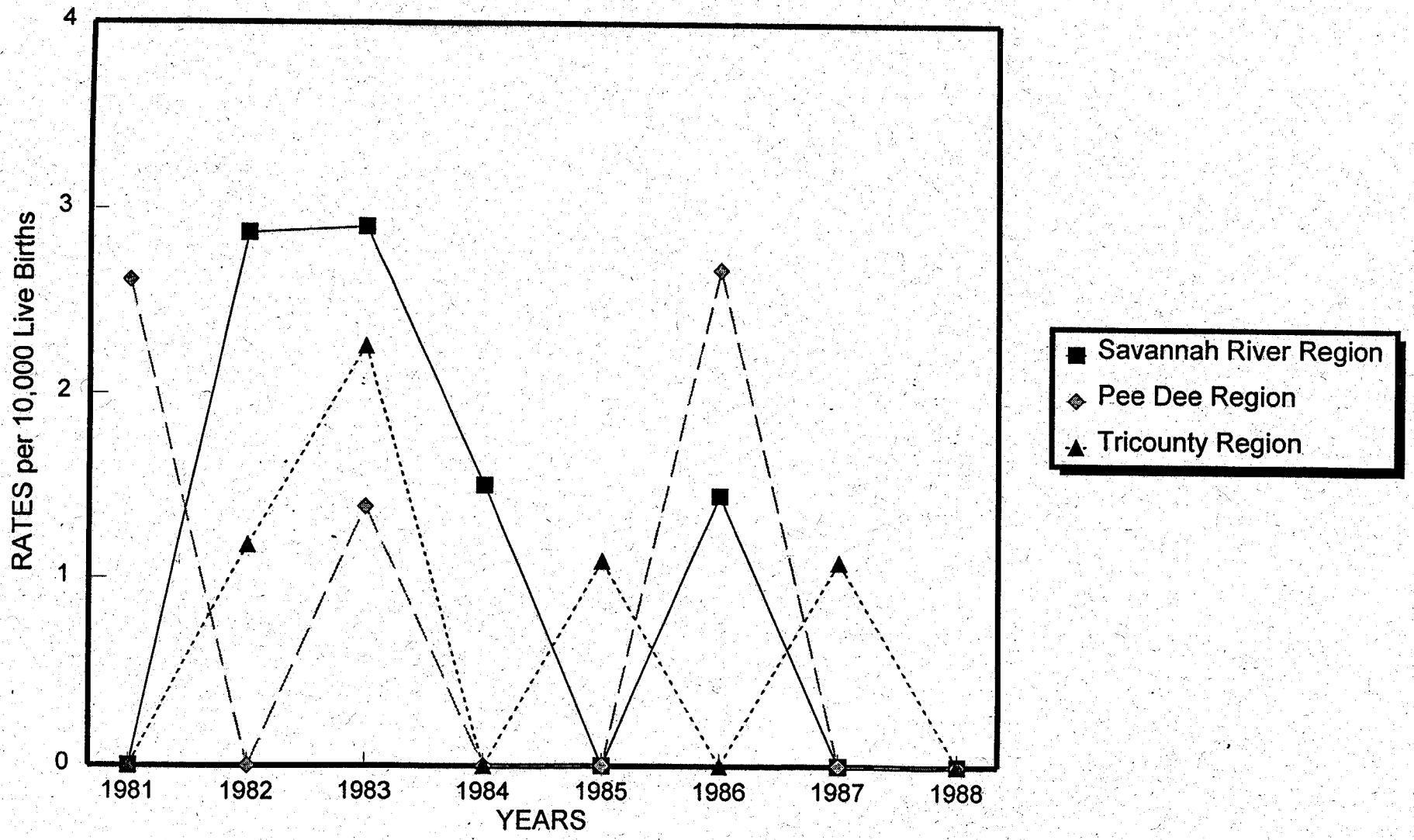
GRAPH 5. Cleft Lip



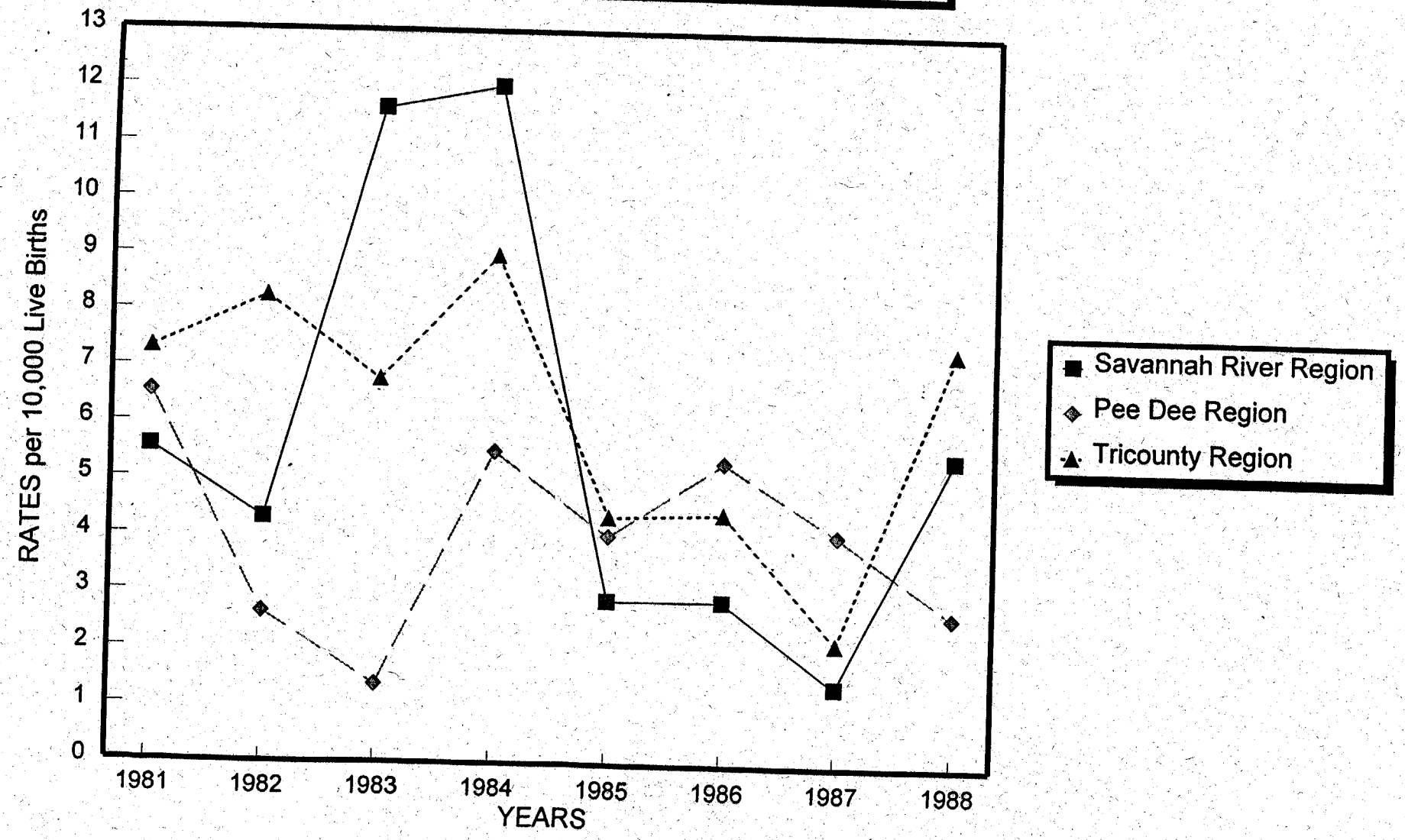
GRAPH 6. Cleft Palate w/ Lip



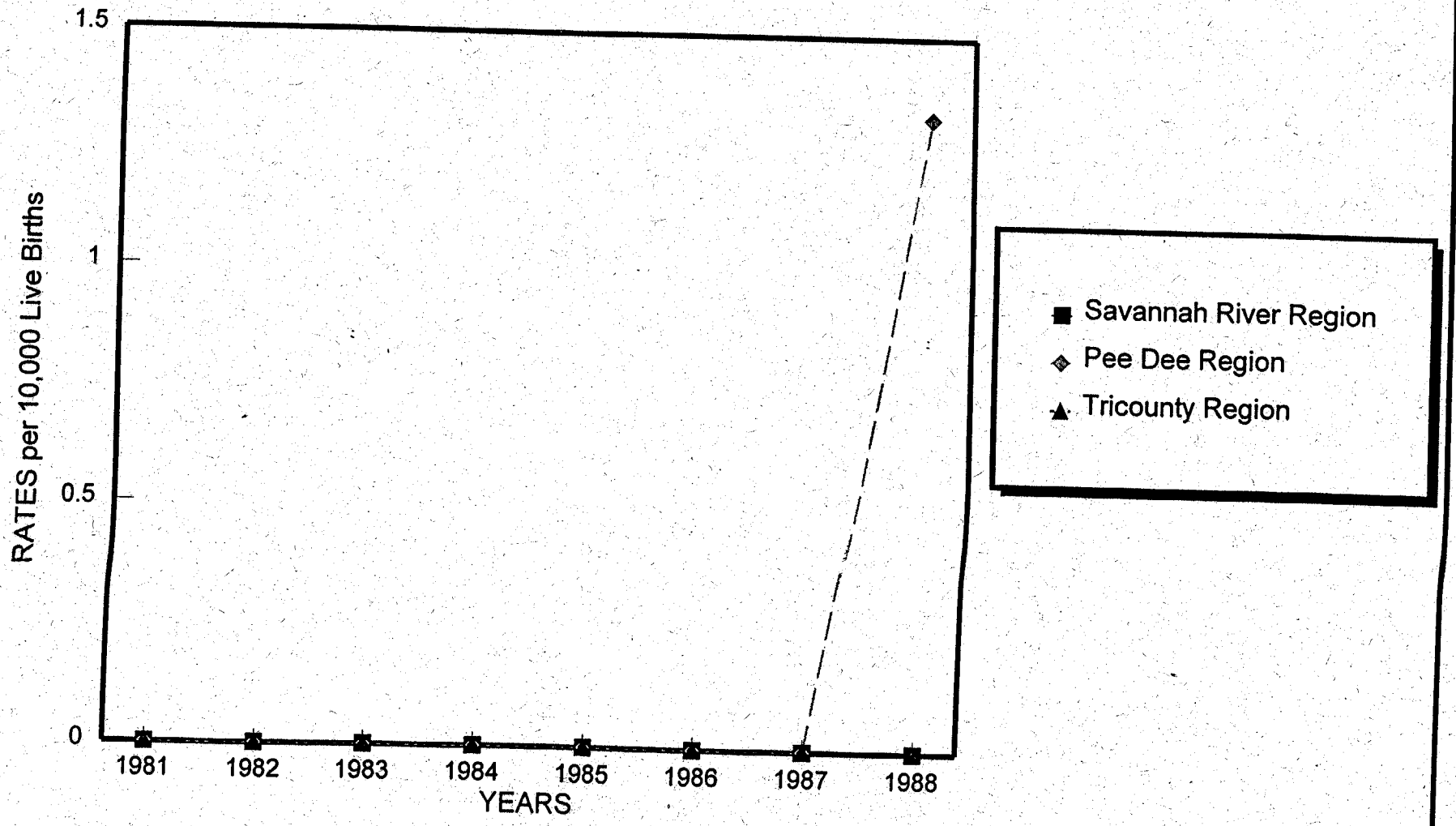
GRAPH 7. Rectal/Intestinal Atresia



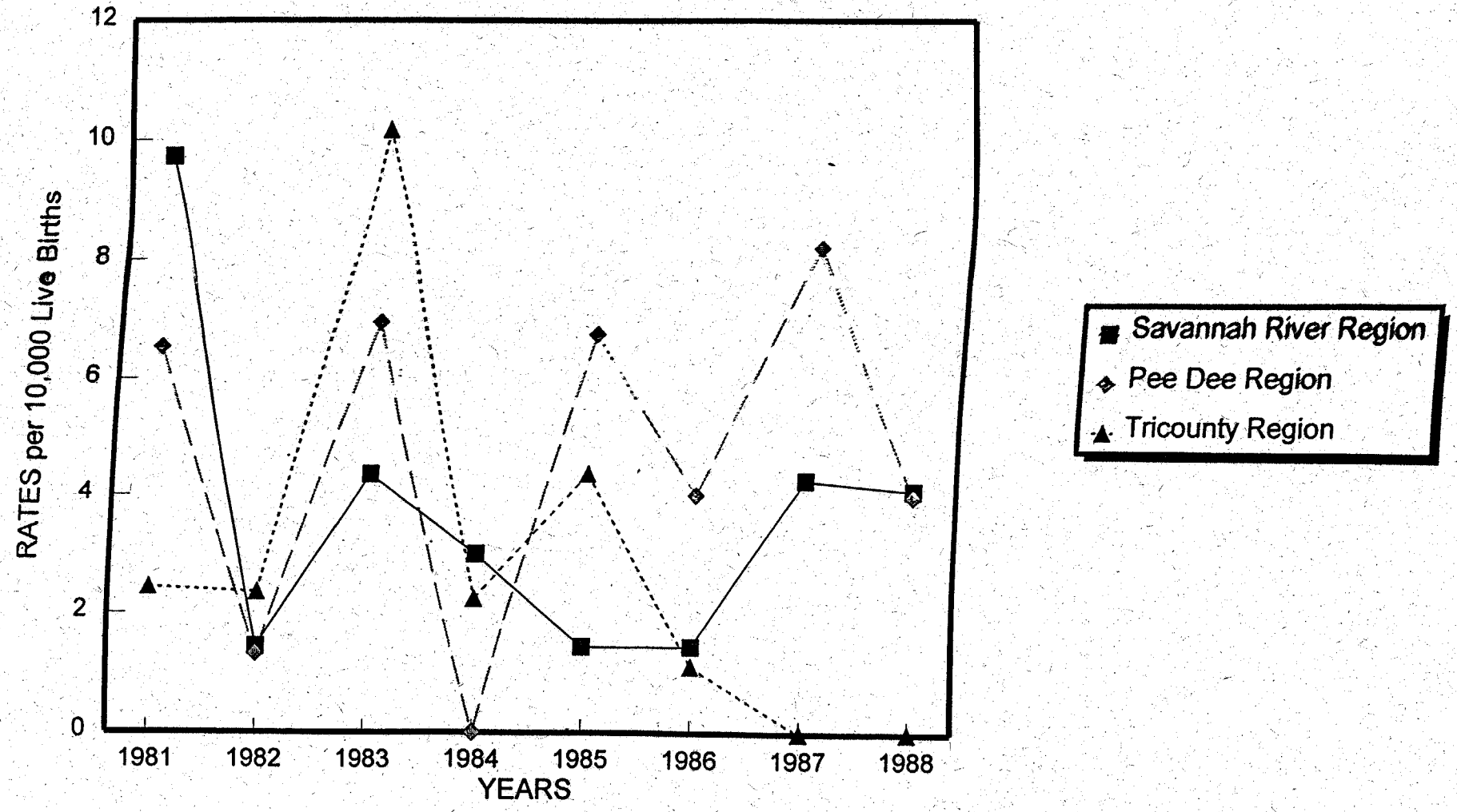
GRAPH 8. Hypospadias/Epispadias



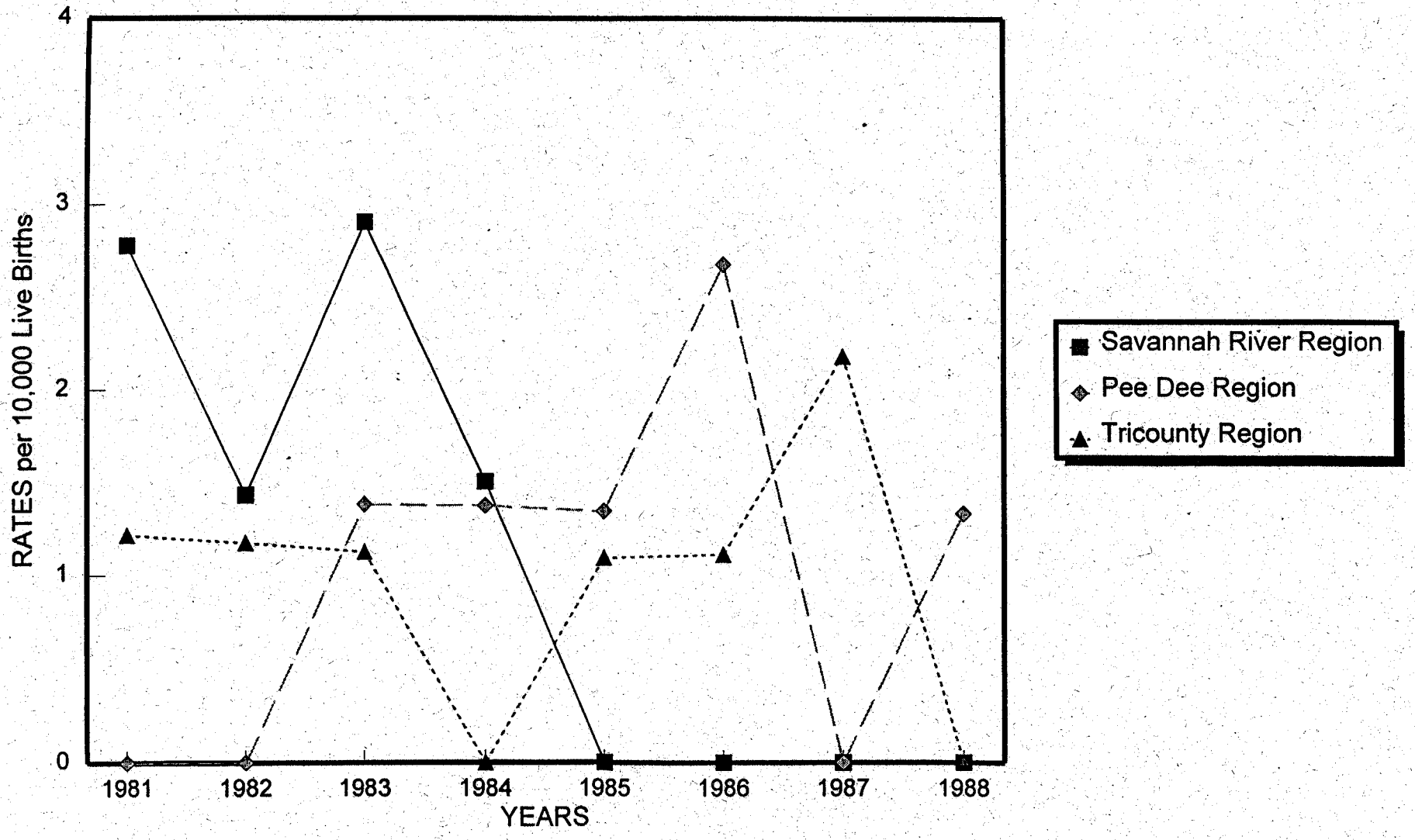
GRAPH 9. Bladder Exstrophy



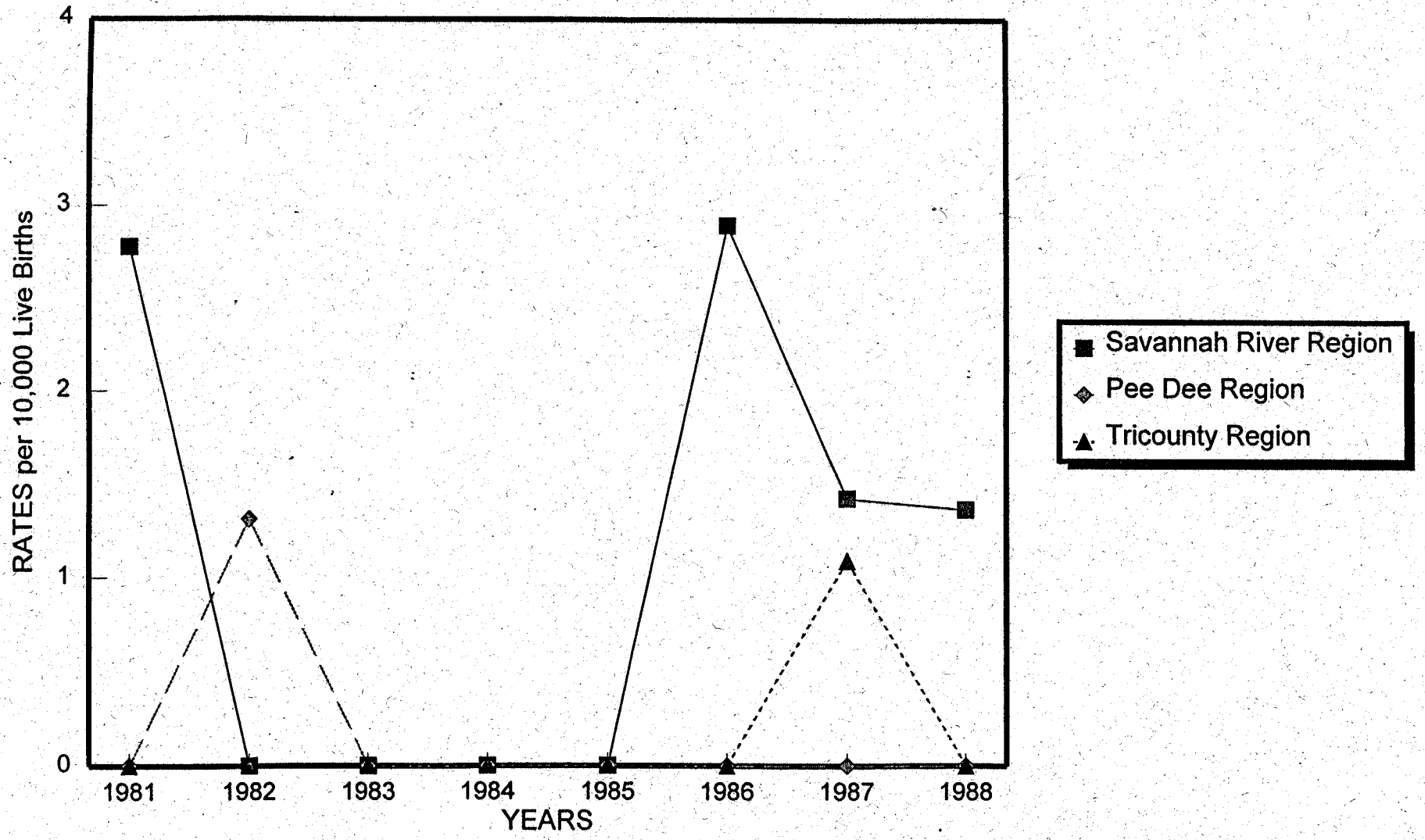
GRAPH 10. Clubfoot



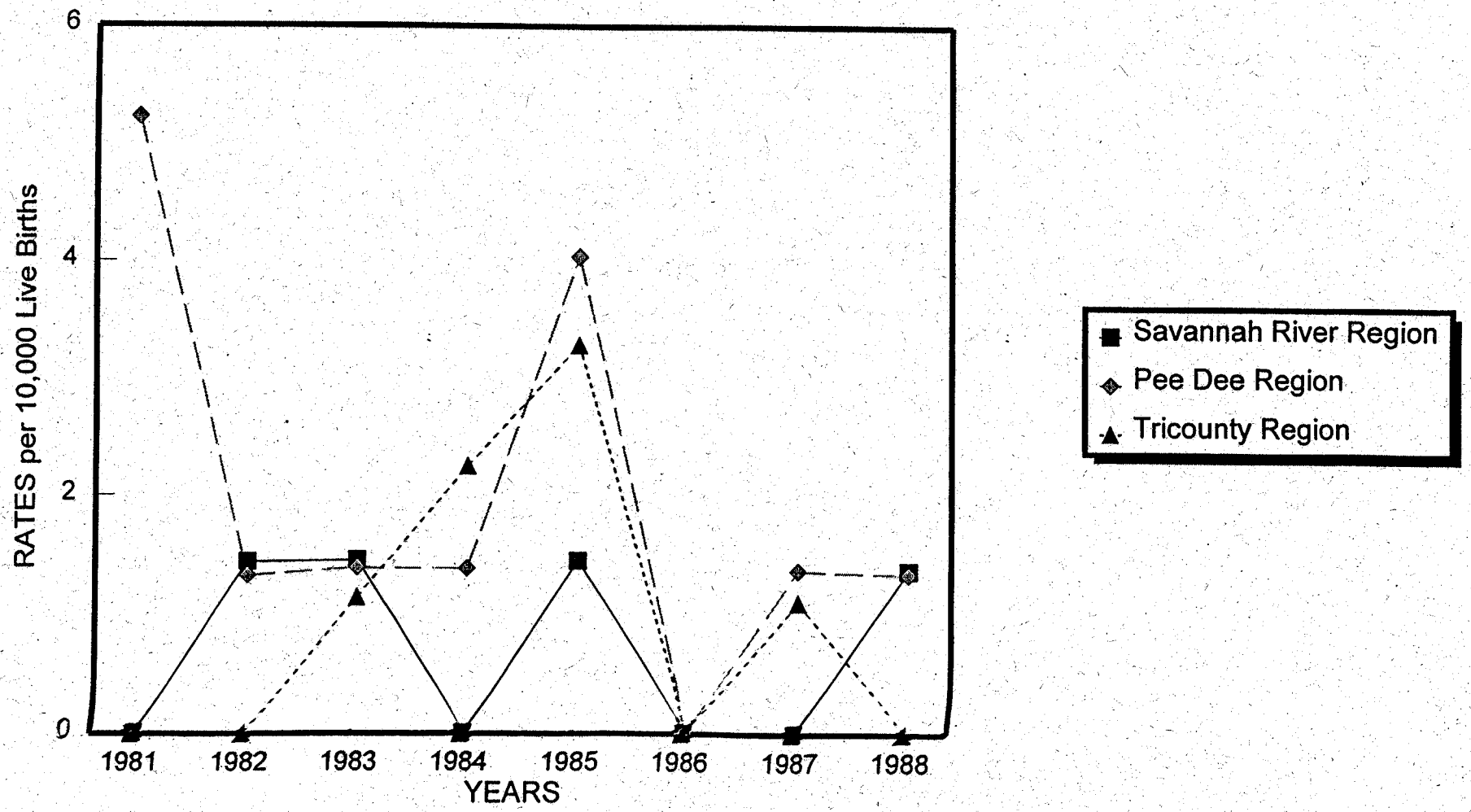
GRAPH 11. Reduction Deficiency-Upper



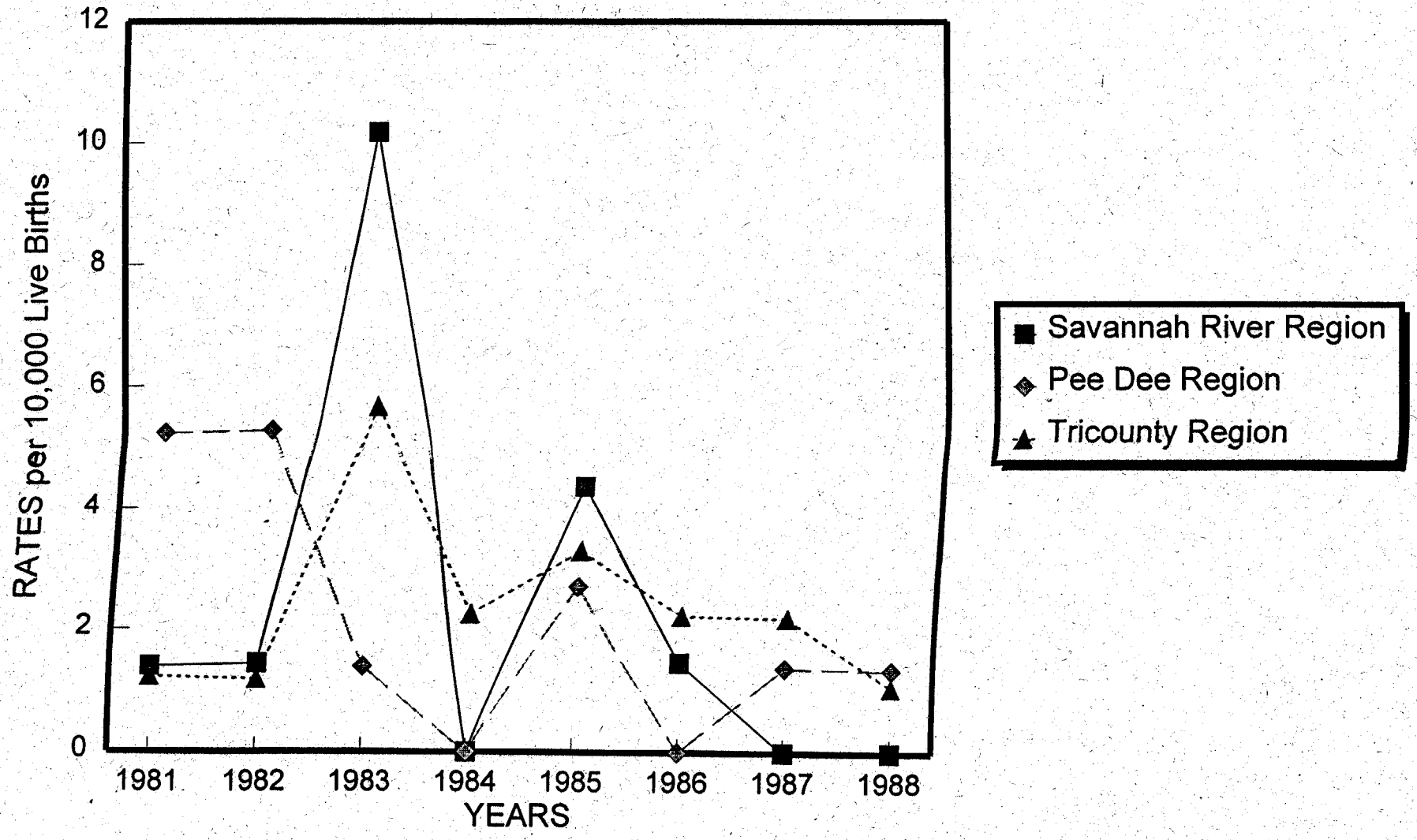
GRAPH 12. Reduction Deficiency-Lower



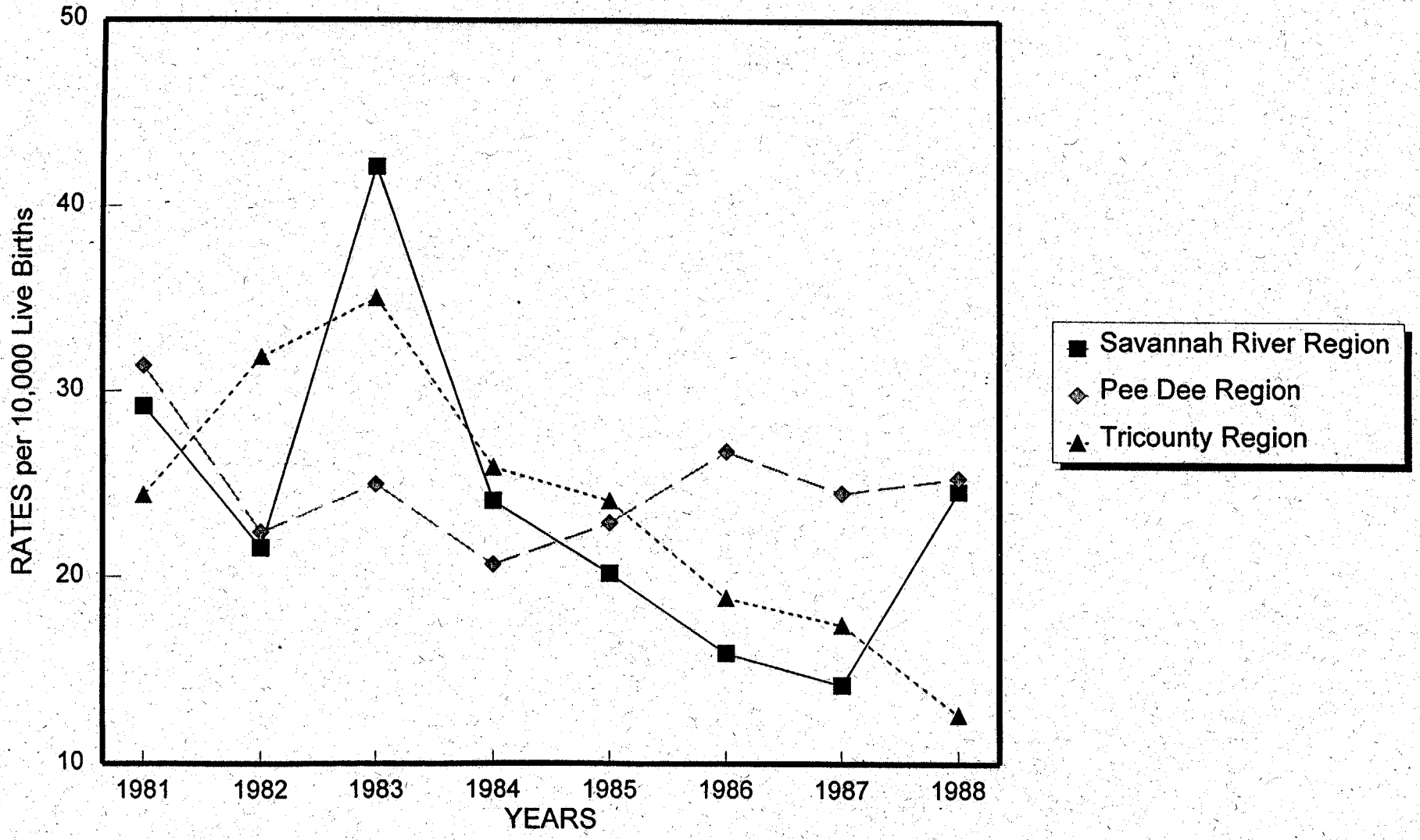
GRAPH 13. Gastroschisis/Omphalocele



GRAPH 14. Down's Syndrome



GRAPH 15. All 14 Birth Defects Combined



IX. Appendix

This appendix contains the definitions for the fourteen birth defects addressed in this technical report [10].

Anencephalus - absence or deficiency of a major portion of the cranial vault at birth.

Spina Bifida - a visible sac or epithelial defect over the spine, caudal to the level of the lesion which the nerve tissue can be seen, and associated with neurologic deficit.

Encephalocele - a mass in the midline of the parietal or occipital skull, that is usually skin covered; possibly containing major amounts of brain.

Cleft Palate - a partial or complete closure of the oral cavity and, in some cases, the nasopharynx is associated with different degrees of a cleft palate.

Cleft Lip - incomplete or complete clefts of the upper lip, which may be unilateral or bilateral and may extend posteriorly to include the maxillary alveolar process and hard and soft palates; the ala of the nose may be deficient on the cleft side.

Rectal Atresia - the presence of a lower intestinal obstruction.

Intestinal Atresia - the presence of an upper intestinal obstruction of the stomach, duodenum, and proximal jejunum.

Hypospadias - the presence of a urethral meatus at a location other than the tip of the glans penis in an otherwise normal male; foreskin is deficient on the ventral aspect of the penis.

Epispadias - the presence of an urethral meatus at a dorsal location proximal to the tip of the phallus.

Bladder Exstrophy - urinary tract is open anteriorally from the urethral meatus to the umbilicus; wide separation of the pubic symphysis and the rectus muscles is invariably present.

Clubfoot (congenital) - a collection of a variety of abnormalities which includes the following: forefoot is adducted and often supinated while the heel and ankle remain in normal position, dorsiflexed and everted foot, or forefoot adduction and supination, heel varus, and ankle equinus in which muscles of the posterior and medial aspects of the leg are relatively shortened, and the fibrous capsules of affected joints are often thickened in their lateral aspects.

Reduction Deficiency (Upper) - multiple, extensive, and variable reduction deformities of the upper limbs.

Reduction Deficiency (Lower) - multiple, extensive, and variable reduction deformities of the lower limbs.

Gastroschisis - a small abdominal wall defect in which the thickened small intestines are herniated without remnant of a covering sac.

Omphalocele - the occurrence of intra-abdominal viscera herniated into the amniotic sac surrounding the umbilical cord.

Down's Syndrome - the presence of an additional chromosome number 21 resulting from non-disjunction during meiosis in one of the parents, which correlates with advanced maternal age; characterized by moderate to severe mental deficiency, slanting eyes, broad short skull, and broad hands with short fingers.

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