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PERINATAL DATABASE

An Interactive Qualifying Project Report

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by

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Abstract

The objective of this project is to provide accurate and complete statistics to be used by medical management, nursing, and OBGYN departments at Memorial Hospital. Uses of the statistics will include justification of programs, research, and review by the Department of Public Health.

A database was created in MS Access that contains data pertaining to births gathered by the staff. By utilizing Access's features, statistics are automatically generated. As a result, the hospital can better utilize data and augment the efficiency in data collecting.

Acknowledgement

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1. Introduction

The primary objective of this IQP is to automate the process of collecting statistics for the Women and Children's Center at Memorial Hospital. The specific aims of this project include:

- improving the quality and completeness of data collected.
- expanding the usefulness of the data by creating statistics/information that can be utilized by medical management.
- providing accurate data for researchers and medical students at the hospital.
- providing statistics/numbers to justify various programs.
- allowing Memorial Hospital to look at their data in relation to the Department of Public Health's data set.

These results will bring many benefits to the hospital and aid in its ongoing goal to improve operations and better serve the public.

Currently, staff at Memorial Hospital manually collects statistics. This current process is, without doubt, time consuming and subject to many errors. A less error prone way of collecting these statistics is by automating the process. Furthermore, by using Microsoft Access to help calculate the statistics, a lot of time is saved. Instead of having a staff member spend hours tallying up numbers, she can spend her time more effectively, accomplishing more important tasks; hence, productivity of the staff is increased. This project will take fuller advantage of the hospitals QMI database by using it in conjunction with Microsoft Access to track various statistics that are important to the hospital.

A database is a collection of related data. It is organized in such a way that useful information may be extracted at any time. A database is effective because much of the information relevant to a variety of organizational purposes may be obtained from one single, comprehensive source.

In health care, the database is used by medical personnel for patient care recording, surveillance of patient status, and treatment of diseases. Researchers also use it for assessing the effectiveness of drugs and clinical procedures. As a teaching hospital, Memorial Hospital frequently uses statistics for research as well as justification for programs.

The database can also be used by administrative personnel for cost accounting and by management for the planning of service facilities. The advantages a database brings about are quite clear: it promotes the consistency of information for decision making, reduces duplicate data collection, provides an immediate check on the validity of each answer, and provides the immediate availability of information to users.

Like any other database, a perinatal database offers the same benefits and advantages as discussed above. In addition, there are three other specific reasons for developing a perinatal database. First, it gathers operational evidence on the value of antenatal* and intrapartum* care in relation to maternal and fetal outcome. Second, it gathers administrative information necessary for good management of health services. Third, it distributes information about the pregnancy to those professionals responsible for ongoing care of the mother and baby; in particular, the general practitioners, the district midwifes, and the health visitors. As a result, a woman's health status is constantly and carefully tracked. This then limits potential diseases that could occur in

association with reproduction. The database technology provides and improves not only the efficiency of personnel management, but also the women's reproductive health. Clearly, databases have many practical uses in administering a hospital effectively.

Once a year, the Department of Public Health publishes the statistics for infant mortality in newspapers such as the "Boston Globe" and "The Worcester Telegram and Gazette." Unfortunately, Worcester is ranked highest in the state in this category. The data collected by Memorial Hospital, however, differs from that collected by the Department of Public Health. By electronically gathering their statistics from data entered by doctors and nurses, Memorial may have a stronger case in pointing out the discrepancies between the data sets collected by the two sides. The hospital is also occasionally asked for trends or certain areas where these problems may be occurring (e.g., disproportionate number of neonatal mortality cases coming out of poorer neighborhoods). With the database developed as part of this project, this information can be easily determined and reported. Furthermore, the hospital might be asked for the total number of cesarean sections it has performed in the past. Similarly, the database can easily determine and provide this information.

The primary objective of the Interactive Qualifying Project at WPI is to help students become cognizant of the role their professional lives will play in society as a whole, and the ramifications that their actions will bear on other people in the community. This IQP, done in conjunction with Memorial Hospital, involves many aspects of relating technology to society. This project studies the process by which the hospital is currently collecting its statistics and recommends improvements upon their current process. It will use technology (in this case via computers and database software)

in carrying out the planned objectives. Once the system has been set up and statistics have been successfully gathered, analysis will be done on the data by the students in order to draw meaningful conclusions. The meaning of these conclusions may then be examined in the broader context of society as a whole. Research done for the literature review further aids in viewing the project from the perspective of the emerging role technology plays in patient care (women in particular) and how far public health has come since its inception.

2. Literature Review

2.1 Public Health

2.1.1 Introduction

What is public health? One possible answer offered by the Institute of Medicine (IOM) in their study is as follows:

> Public health is what we, as a society, do collectively to assure the conditions in which people can be healthy. This requires that continuing and merging threat to the health of the public be successfully countered. These threats include immediate crises, such as the AIDS epidemic; enduring problems, such as injuries and chronic illness; and impending crises foreshadowed by such developments as the toxic by-products of a modern economy (IOM, 1998, p225).

The true definition of public health cannot be carved in stone because of frequent changes in civilization, economy, demographics and technology (Paxman and Lee, 1997, p1-35). For the ancient Hebrews, it meant having sanitary regulations, especially for the preparation of food. These laws made certain that the followers used protocols that curtailed the spread of disease. In this century, public health defines itself by participating in other activities, such as collecting information about births and moralities, offering child services and informing the public about hazards such as AIDS and HIV. This list is by no means exhaustive, but it shows that significant public health benefits have been achieved from laws that do not give reasons behind protocols.

Current activities of public health departments range from collecting statistics pertaining to the general population to providing information and assistance on prenatal care. The range of information varies country to country, state to state, and city to city

(IOM, 1998, p180). The warnings we receive about smoking, eating, drinking and exercising comes from committees established by the states. These committees fund research that prevents diseases and informs the public of diseases such as AIDS and tuberculosis, along with administering policy changes and overall statistics.

The officials who administer such committees have one of the most prominent, yet unbolstered positions in society. Their positions change as society grows, which is frequently why they have no place to turn, except the mission statement developed by the IOM, which states "... [to] Assure the conditions in which people can be healthy."

2.1.2 History

We can be sure that evolution of public health occurs as long as we have two factors, as stated by the IOM (IOM, 1988, p56):

1) Growth of scientific knowledge about sources and means of disease control
2) Growth of public acceptance of disease control as both a possibility and public response

In India, during a recent archeological dig, a link between cleanliness and health was observed. Two canals thousands of years old were found; one carried fresh water to the bathrooms, and the other transferred waste out of the city. This tells us that a link between cleanliness and health occurred long before any established medical community existed (Rosen, 1958, p25).

The Roman Empire in the 6^{th} century B.C. had the same idea. They had water brought into Athens from hills up above the city. The water traveled through lead pipes, and connected to public fountains from which Romans received their drinking and

cooking water. Around 200 B.C., this idea was improved by the Pergamons' in Asia Minor who used hydraulic pumps to get their water (Rosen, 1958, p38).

A few thousand years later, the first signs of a public heath administration were on the horizon. A Roman named Sextus Julius Frontinus (40-104 AD) at the age of 97 was appointed as the water commissioner of Rome, under the Emperor Nerva. He wrote a book, "De aquis urbis Romae (The Aqueducts of Rome)", before his death at the age of 104. The first of its kind, the book contained information about water supply and informed Romans about a connection between cleanliness and health safety. The idea was not new since an observation between swamps and disease materialized around the first century B.C. by Marcis Terrentius Varro. " [He] warned against locating farms near marshy places, 'because there are bred certain minute creatures which cannot be seen by the eyes, which float in the air and enter the body through the mouth and nose and there cause serious diseases'." (Rosen, 1958, p39-43).

During the Medieval period (450 A.D.), councils were setup to take care of certain tasks including:

- Administration
- Disease prevention
- Protection of Community

This council was titled, "The Council of Public Health," and was run not by doctors or physicians but by common lay men (Rosen, 1958, p71).

The notion connecting God and disease was predominant during the Dark ages (5^{th}-16^{th} centuries), although Varro, Frontinus and others connected cleanliness to diseases. Christianity points out that sickness occurs only if the victim has sinned, and the only way to rid oneself of disease is by repenting. As Rosean points out, "Old pagan

customs and rites survived and were used for individual community health problems.... Disease was punishment for sin." (Rosen, 1958, p53). This period evolved into the Revolutionary Period, which put the public health field onto its feet.

In the 1500's, a relationship between the spread of disease and cleanliness was known and accepted. Around 1496, prostitutes around Bologna, Ferrara and others in Venice were rounded up and removed from towns. The places where prostitutes resided, or brothels were shut down; it had been discovered that these places aided in the spreading of syphilis (Rosen, 1958, p97).

The Revolutionary period (1700's) was the turning point in public health, since improvements were starting to be made to old beliefs and ideas. Paris for example, created a *cabinet d'aisance* at every home. This made sure that a canal connected to the main drainage in the city to every house. Those who did not have such a connection paid a severe price for not having one. Similar ideas made sure that trash was not dumped in the middle of the street so that diseases similar to the plague did not spread. Marketplaces where people met to trade foods had to be cleaned by vendors. Those carts that were not clean or those who discarded food close to their carts were fined for littering. Diseases were reduced once such measures were put into place (Rosen, 1958, p58).

Hospitals, which are places of quarantining sick people, were introduced during this period. This was nothing new since Venetians quarantined ships that transported people known to have the plague during the Middle Ages (Crolliers Encyclopedia). During this era, a new method of education was introduced in America and Mexico. "A Brief Rule To Guide The Common-People of New-England How To Order Themselves

and Theirs in The Small-Pocks or Measles", was written by Thomas Thacher in 1677 and published by John Foster.

Public health from the 15th to the early 19th century improved, but not at the same pace as before. Inoculation was proven and accepted as one of the most effective ways of preventing diseases. Bacteria were proven to be one of the major carriers of disease by Pasteur (Rosen, 1958, p305).

Communities around the world improved as industrialization spread throughout the world. This stirred economies around the world, which brought about changes in public health, and people's perception of it. After WWI when soldiers returned home, the economy started improving, but a new face was put on public health. It was realized that if another war took place, a plethora of healthy men would be necessary to fight the war. An information packet titled, "A Cursory Inquiry into some of the Principle Causes of Mortality among Children, with a View to Assist in Ameliorating the State of the Rising Generation in Health, Morals and Happiness," by John Bunnell Davis was being handed to parents of newborns in 1917. The goal was to ensure that children were treated and fed properly. The information in this packet contained ideas that were not new. Others such as Smellie, Armstrong, and Lettoms had earlier developed similar ideas; however, Davis condensed them.

Thus, public health now concentrated on making sure that newborns were healthy and strong. This was the origination of the first official office, which provided information and education for new parents about their new child. In 1908, a Division of Child Hygiene in New York City Health Department opened its doors. This office collected statistics on birth rates and compared them to the national averages. Information

about this office spread like wildfire and people from around the world came to see its work. The Federal Government saw the project's effectiveness and undertook it. Under the government's supervision, all states had such a center from which information and statistics were compared and distributed.

2.1.3 Current System

Public health has come a long way since its inception thousands of years ago. We now have people from the medical community, health industry, and the public and private sector binding together to achieve a common goal.

We will now explore the progression of the public health field since the 1900's and the future of this field. According to Lester Breslow in "Musings on Sixty Years of Public Health", the public health field has taken major strides since the 1930's and continues to do so. He stated, "Over these past six decades to enjoy a public health period which one could see tremendous progress" (Lester, 1998, p.3).

When Breslow was practicing public health, concentration was placed on collecting statistics on infant mortality and birth rates. He goes on to say that changes have occurred since his entry into the field. An example of this is the isolation chamber. Earlier in his career, he had heard of cases of patients who had TB, but were placed in an isolation chamber, as opposed to curing it with an antibiotic.

The Massachusetts Legislature, in 1929 was the first state to initiate a cancer research program. The program was going to proceed without the cooperation of the medical community. Positions like this opened doors to the public health industry which went on to link cancer and smoking, among other diseases.

Lung cancer, for example during the 1950s was linked to smoking, as stated by the Surgeon General. The link between lung cancer and smoking was just one of the many observations linked to habits that people had developed during the ages. Opportunities like these opened more doors to the public health sector and attention was then given to " achieve and extend 'physical, mental and social-well-being, not merely the absence of disease and infirmary'" (Lester, 1998,p3).

Until 1952, the primary function of public health was "concerned with assuring safe water, food, housing, and occupation rather than what people could do individually about their health." This seemed to be a provincial job for the field titled, "Public Health," so in 1952 the President's Commission on the Health Needs of the Nation shed new opportunities for the Department of Public Health by creating a new branch within this sector which looked at the care for individuals. The report stated:

> The individual effort of an informed person will do more for his health and that of his family than all the things, which can be done for them. In the past, measures for health maintenance demanded individual responsibility only to a limited degree, e.g., pure water supplies, pasteurization of milk and other sanitary accomplishments.... Future accomplishments, however, depend to an even greater degree upon the individual's responsibility for his own health. . .avoid[ing] obesity and alcoholism, and drive[ing] his automobile safely....
> Recognition of the significance of individual responsibility for health does not discharge the obligation of a society that is interested in the health of its citizenry. Such recognition, in fact, increases social responsibility for health. Heretofore, social effort on behalf of health has been limited largely to such measures as delivery of pure water to the individual's tap and the sanitary disposal of his sewage. Now it becomes necessary for a society that wishes to advance the health of its citizens to adopt measures, which guarantee to the individual an opportunity to make appropriate decisions in behalf of his health. Society must assure its citizens access to professional services, education concerning personal health practices, and a reasonably safe physical environment. Only then can individual responsibility for health exercised through personal action reach its full potential (Presidents Commission on Health, 1952).

According to Breslow, two types of "disease agents" had to be combated in order for the current Public Health system to prosper. To do this, public health could not be viewed from a provincial outlook; studies had been done to find out how diseases can be fought. Checking people for certain types of characteristics, which might lead to preventative medicine, is such an example. In order for these activities to take place, power has to be given to different divisions of the government so that each can concentrate on a given topic. Therefore, we will concentrate on the Public Health Departments in the United States.

Public health in the United States is handled at many levels. The goal at each level however, remains to ensure that appropriate care and information is given to each individual. Slowly, the trend is leading towards making the public aware of the information available to them. Each department, at every level, operates differently, offers different information and concentrates on different activities concerning public health. Public health is further broken down into agencies that concentrate on each activity listed under public health.

Public health in the United States incorporates many different responsibilities. Each of these responsibilities is spearheaded by a different department. The list given by the IOM is by no means exhaustive, but is a starting point:

> In the United States, government responsibility to protect the public's health is represented by public health agencies, state and local health departments, and by the federal Departments of Health and Human Services. The public health system in the United Sates includes a wide array of other public agencies, such as environmental, occupational safety, mental health, developmental disability, and social service agencies at national, state and local levels. It also includes national, state and local private organizations and providers, such as health professional associations, citizen advocacy groups, the media, community health

> centers, and research foundations. Together, these participants in the system fulfil the mission of public health. The public health agencies, as the governmental representative of public health, focus this mission (IOM, 1988, p73.)

As we have seen, public health is taken care of at many levels in the United States. These levels originate at the cabinet, and go on to individual counties, cities and towns throughout this country. An official is appointed by the President to oversee the Department of Public Health, which collects data from the state and grants funding for the research and analysis of data. The state collects the data from individual localities, which do most of the work. The people in these positions calculate, articulate and decipher data that is given to the head of the state, who then gives it to the cabinet member.

The job of the cabinet member, and even the federal department responsible for public heath and welfare, is more than just that of statisticians. As stated earlier, they appropriate funding to studies that they believe have an impact on society. Studies range from analyzing blood samples, which might yield a cure for diseases (e.g. AIDS), to collecting more statistics about the population. The department is mainly responsible for generating and lobbying for better policies so that bureaucracy can be decreased when states and local authorities try to attain better care for their citizens (IOM, 1988).

On the other hand, the states have a more humanistic approach to public health. Unlike the federal government, they do not emphasize on the data as much. They conduct some policy changes with the help of the state legislature, and plan activities so that local health communities can get together and share ideas and talk to others in their field. The activities range from data collection to screening for health problems, to epidemiology to

lab analysis. Some states even offer testing for radon and other gases for private homes. In other states, a separate committee is formed to handle certain epidemics, such as chicken pox, heart attacks, measles, etc (IOM, 1988, p89).

This Interactive Qualifying Project, for example, plays a role in the collection of data that is given to the state by Memorial Hospital. As stated by one of the nurses we spoke to, "We hope that we can gather better [statistics] numbers than other hospitals. Memorial is one of the worst hospitals when it comes to infant mortality rates, and I don't think that we are that bad. It seems that our method of data collection, (which is currently done by hand) is not a good way of giving numbers to the state."

The state, according the IOM study is supposed to assess, to develop policy, and to assure access to the public about public health to better the society. We will explore how each of these qualities plays a part in the current public health system.

Primarily, the IOM suggests assessing the current organization. They do so by asking the states to identify needs of local government and to see what should be fixed. Those needs should be analyzed, keeping in mind the future needs of the population. They also suggest (which is currently being done in most states) analyzing and interpreting data that are sent to them by local towns, hospitals, and the public. The IOM discourages outsourcing of such studies to the private sector because a company or individual might sway the numbers to suit their needs.

The people living in a state, who pay taxes to support public health activities, want to be assured that their tax dollars are helping them in an effective manner. Implementing legislative changes at the state or town level and informing the public of the outcomes of important projects are two ways that this can be achieved. An important

liaison between the state and the public at large is the local health department. They provide the personal health that is a vital part of public health.

2.1.4 Future

The future of public health in the United States depends on the American people. What good is the public health of a nation, when they do not participate in it? This has been the conclusion drawn by the IOM.

When they wrote the study, interviews were conducted which included people in the public health sector; they were asked for changes that they would like to see implemented in the future. Some suggested a pay raise since they say the pay is better working in the private sector than that in the public sector. Others want to see a new light shone on them by the media.

2.1.5 Conclusion

Public health has come a long way since its infancy thousands of years ago. If we expect improvements to continue, support must be given to the workers in the field. They need to be reminded that they play an important role in society. Committees such as WHO (World Health Organization) play an important role in public health since they worked in association with the IOM on developing the Alma-Ata Declaration of 1978, in which "the member countries of WHO committed themselves to 'Health for All'." The guiding principle of all health departments—local, state, provincial, regional, and national—is to achieve this goal as fully and rapidly as possible. (Microsoft Encarta, 1994).

2.2 Women and Health

2.2.1 An Overview of Women's Health

Women have been preferred, granted, and entrusted by nature with the most critical function of the survival of the human species – giving birth. This function undoubtedly exposes women to more potential health risks and diseases than men. Also, the female reproductive system is much more elaborate and complex than that of men. As a result, it is subject to more diseases and disorders, which continue even beyond the reproductive years. Apart from reproductive diseases, women also are vulnerable to breast cancer and other related disorders. The genetic and hormonal differences between men and women may also account for the differences in the disease burden.

A woman is different from a man not simply because of her body as a whole, but also because of the way society defines her role. Differences in lifestyles, which evolve from the difference in gender, are powerful determinants of a woman's health. They account for major differences in the disease burden between males and females more than genetic or hormonal factors (Waldron, 1986, p. 59).

Not surprisingly, women have gained neither societal awards nor praises for their role in the continuation of the human species. On the contrary, this task may even lead to domestication, subordination, and gender discrimination. These consequences in addition to many other factors greatly impact a woman's health. For instance, a majority of women and girls in the world live under conditions that limit educational attainment, restrict economic participation, and fail to guarantee them equal rights and freedoms as compared with men. In countries where resources are scarce, women often become undervalued. These societies do not adequately allocate the necessary resources needed

for the amelioration of women's health. As a result, women will more or less be susceptible to morbidity and diseases.

It is important to realize that a woman's health is not determined or justified on the basis of how much worth or value she is thought to bear on society. Her value or "worthiness" is often undervalued and is not a correct standard for justification of women's health. It should be understood that men and women are equal and that both should have the same standards in society.

Furthermore, women bear the critical function of the survival of our species and are therefore more susceptible to diseases than men. This understanding should be justification enough to give special attention with regards to the subject of women's health. Laws, science, and technology are forms that can be used to ensure and support this promotion. In America and many other countries, women's health has greatly gained public attention. There is a noticeable pace in the women's health movement; the subject is now among the top national economic and political issues.

2.2.2 Reproductive Health

Reproductive health is often the major topic in women's health issues. For the past few decades, women's health has been focused only on maternal-fetal-obstetric issues (Wentz, 1989, p. 1.) Perhaps, it was because reproductive health is far more important than other related health aspects of women, e.g., physical and mental health. It could also be that the reproductive health was the major driving force that pushed the notion of the women's health movement. The magnitude of the problems related to reproductive health and the morbidity and mortality associated with it has been only recently realized. By a concise definition adopted by World Health Organization

(WHO), reproductive morbidity includes any morbidity or dysfunction of the reproductive tract, any morbidity which is a consequence of reproductive behavior, including pregnancy, abortion, childbirth or sexual behavior (Curlin and Tinker, 1995, p. 340-342).

Each year, pregnancy related complications or diseases account for 3.5% of all death among females. About 200,000 maternal deaths each year are caused by pregnancy termination under unsafe conditions (World Health Organization, 1987). A quarter of all deaths in developing countries is due to obstetric causes, resulting directly from pregnancy, labor, or the puerperium. Worldwide, the incidence of maternal mortality is estimated at more than 500,000 per year. Every twelve hours, approximately 800 families lose their mothers. The mother's death disrupts the life of the entire family. Death of a mother in childbirth is often fatal to the newborn. The infant she leaves behind has a 95% chance of dying in the first year (Chen et al., 1974, p. 334-341).

Reproductive morbidity also includes diseases or dysfunction of the reproductive systems related to sexual behavior. As defined by WHO, direct gynecological morbidity includes the reproductive cancers, endocrinal disorders, bacterial or viral sexually transmitted diseases (STDs), their sequelae (PID, secondary sterility, and AIDS), and reproductive tract infections (STI). In addition, contraceptive morbidity is also included in the classification of reproductive-health-related morbidity and mortality. Clearly, reproductive health itself comprises a vast number of health aspects and issues in view of disorders and diseases.

Among the reproductive-health-related diseases, the ones of most concern are sexually transmitted diseases (STDs), tuberculosis, and the Human Immunodeficiency

Virus (HIV). Worldwide, WHO estimates that more than eight million people in 1991 were infected with HIV and that a little over one third (i.e., 3 million) were women. By the end of 1992, a cumulative total of more than 600,000 cases of AIDS would have occurred among women. By the year 2000, the annual number of AIDS cases in women would begin to equal that of men (Petro-Barvazian, 1990.)

Confronted with an increasing magnitude of reproductive morbidity and mortality, government and academic institutions around the world started to take action. Many strategies were suggested to improve women's health. Strategies included the improved access to contraception and safe abortions, the use of health professionals efficiently, the application on "safe motherhood", and the prevention of infectious diseases (Curlin and Tinker, 1995, p. 340-342). This can only be possible, however, if there is interactive or intersectional collaboration between the various sectors involved, i.e., education (including science and technology), agriculture, industry, and government. Only then, can women's health be awarded the importance it deserves.

2.3 Technology and the Health Care System

2.3.1 Evolution of Technology in Health Care

Before 1900, only basic technology was available for treatment of diseases. Both the scientific base for medicine and effective medical treatments were limited. Whether a patient recovered from an illness usually depended on the patient's own health and the degree of seriousness of the disease rather than the treatment offered by doctors. To make matters worse, physicians during this period were poorly trained. They mainly obtained their skills from apprenticeships and spent little time in hospitals. This lack of expertise also applied to nurses, who were usually voluntary members of religious

groups, who had a little or no scientific knowledge. For the most part, their work consisted of assisting patients with their bodily functions in any way possible.

Hospitals were usually dirty and crowded places. Sick people, who could not be cared for at home, usually stayed in the hospitals. Infectious diseases frequently spread rapidly among hospitalized patients and staffs of the hospitals as a result of overcrowding and uncleanliness (Williams and Torrens, 1993, p. 8).

These conditions began to change after the turn of the twentieth century. Many major scientific advances were achieved in the medical schools and hospitals. These advances contributed to easier and safer diagnosis and treatment of acutely ill patients. They also helped reduce the spread of infectious diseases among patients in the hospitals. Medical education began to undergo radical changes. The training of physicians was made a university function and based entirely on a firm scientific foundation. As a result, physicians began to be trained as scientists as well as practitioners. They began to spend most of their time in hospitals and to look to the hospital for the care of their severely ill patients. Hospitals in the 1900's began to play an important role in health care and became places where technology would become almost ubiquitous. As a result, more and more patients and physicians began to go to hospitals, which solely offered services and skills that were not available anywhere else (Williams and Torrens, 1993, p. 9.).

During World War II, large efforts in research began under the direction and support of the federal government. More technology was adapted and applied to medical education and practices. The development of antibiotics accelerated quickly in a relatively short period of time. Many new surgical techniques for different diseases were discovered, including techniques for the treatment of trauma and burns. After World War

II, hospitals were further improved. They took more roles and tasks besides the care of patients, became extensions of research laboratories, and were places where medical science was practiced. That hospitals were captured by technology was proven by a sudden increase in the number of new procedures, new equipment, and new techniques that were constantly discovered and introduced into medical practices. The technology itself was the motivating force for hospitals, and most major decisions were based on that technology (Williams and Torrens, 1993, p. 10.).

2.3.2 Technology and the Future

Within the last century or so, technology has grown tremendously in terms of enabling medical practitioners to better treat patients. In 1895, x-rays were discovered, enabling doctors to see the insides of patients. The operating microscope made its way into various surgical procedures (e.g., ophthalmology, otorhinolaryngology, neuro-surgery, and peripheral nerve surgery) in the 1960's (Jennet, 1986, p. 17-19). In addition, organ transplantation, gene therapies, laser beam surgical techniques, and many others are accepted as expected developments of the technological age. The merging of technologies from fields other than medicine, such as the development of computerized axial tomographic (CAT) systems and magnetic resonance imaging (MRI) systems, has further added to the plethora of technology available to the health care providers.

The role of technology continues to broaden in the medical establishment and technologies goal of providing care for people. More than ever, computers are playing a key role in facilitating patient care, especially in the information age that is currently underway in our society.

Expert systems are already being developed to read EKG's of patients who have had recent heart attacks. The system would be able to tell from the EKG whether the patient will have a high chance of another heart attack. In tests done, the expert system beat top cardiologists by 20% in predicting heart attacks. Digital mammograms (as opposed the traditional x-ray mammograms) will soon allow doctors to view much sharper mammograms in the future. This can be critical for women with dense or lumpy breast tissue. The images produced can be easily transmitted to another doctor for a second opinion (Gawande, 1998, p.75). Computers will also play a role in surgery in the future as robots are currently being developed which are programmed to remove tissue from patients. Testing is already underway at Guy's Hospital in London and within years, machines may be on the brink of operating on people.

2.3.3 Effects of Technology on the Health Care System

The explosion of technology in the medical field has many effects on the health care system. One of the effects of medical technology is its ability to insinuate itself into the values of not just the system but also of the people who work in the system. Medical students learn that scientific technology offers them both academic success and professional success. Students entering the health profession begin to view and realize that excellence can only be obtained through technical achievements and that non-technical aspects of diseases are not important anymore. By the time students become members of the profession, a value system has been established that views illness as a series of technical problems, which are solved by application of specific technical solutions (Williams and Torrens, 1993, p. 10-11).

Studies have shown that technology helps improve the health care system by providing alternatives to limited resources and by ensuring the adequate distribution of available resources. Moreover, technology also lends a hand in improving the medical and financial management in many medical fields, including hospitals. For instance, medical information systems, that are used in almost every hospital today, help increase efficiency by allowing physicians to be able to use resources wisely, be more productive, and increase revenues. These systems also help improve patient care by providing support for clinical decision making and enhanced prospective quality assurance. Benefits of medical information systems are numerous and significant. Thus, the next section will be devoted to the medical information systems.

In summary, virtually no technology was available to treat diseases before the 1900s. Technology began to appear and grow rapidly after the turn of the century. World War II fostered an incredible surge of research endeavors with the result that the health care systems began to be overwhelmed by the range and diversity of available technology. By the 1990s, the American health care system had been captured by its technology and the challenge was to regain mastering over the giant that had been created. Benefits of technology in the health care systems were clear and significant. The pace of technological development in the health care system is of necessity and great use.

2.4 Medical informatics

2.4.1 Introduction

Decades ago, computers were deemed valuable for processing medical data, information, and knowledge. Computer systems developed in the 1960s addressed specific problems: acquiring patient histories, processing medical images, and analyzing

electrocardiograms, just to mention a few. In administrative areas, mainframe computers addressed financial and management needs as bill generation, operational support for patient care, and personnel management. As information technology became less expensive and more accessible, computers improved the operational efficiencies of individual hospital departments, e.g., clinical laboratory, pharmacy, medical records, etc.

Access and effective management of medical information have become increasingly important in the practice of medicine today. Computer technology is developing to achieve this goal. This had led to the emergence of a new specialty, medical informatics, the basic science of the use of computers in medicine.

2.4.2 Definition

Medical informatics has been defined as the basic science of computers in medicine, dealing with the exchange of information through computer-based systems (Beck, 1986, pg. C-10). It arose from the need for better information management in medicine, and the development of computer technology to fulfill that need. The foundation of medical informatics is information technology, which typically include computers and computer systems. A typical example of medical informatics is the medical information system, which is used in almost every hospital in the U.S. today.

2.4.3 Areas of Applications of Medical Information Systems

Areas of patient care to which medical informatics has been applied include, but are not limited to, medical records, medical data base information retrieval, test performance, patient monitoring, medical education, and medical office and financial management. Each will be discussed as follows:

i. *Medical Records*: The traditional paper-based medical record is the major source of medical information on a person. Its disorganization and non-standard format however make it a poor source of continually changing information. Because of its limitations, the paper system has been held directly responsible for many failures in the quality of medical care delivered, especially in the area of medication administration (Korpman, 1987, pg. 637-645). Computerized medical record systems have the advantages of not being held to the sequence and organization used in recording the data, and not being contained in one fixed physical form. Therefore, computerized medical information can be organized in any sequence or format to fit the needs of the users (Barnett, 1984, pg. 1643-1650). Several studies have suggested that by resolving these problems, the quality of medical care can be significantly improved by computerized medical record systems (Whiting, 1985, pg. 1185-1192).

ii. *Medical Database Information Retrieval*: Computerized retrieval of information from large databases, especially the medical literature, is an area of medical informatics that has been rapidly expanding. It is currently changing the way in which the medical community accesses information (Zylke, 1987, pg. 3216). The National Library of Medicine's data base of more than five million citations and abstracts can be accessed with a microcomputer, a modem, a printer, and the appropriate software (Haynes, 1986, pg. 810-824). Services are also available in which full text of articles, rather then just the abstract, are retrievable. With these

databases, the number of journals in the database is not as great as that available from the National Library of Medicine (Collen, 1985, pg. 2768-2774). Besides these databases of the medical literatures, there are other specific medical databases available that can be searched by computer. These include information on Acquired Immunodeficiency Syndrome (AIDS), drug evaluations, epidemiology, Medicare, and other topics (Ridgway, 1987, pg. 30-40).

iii. *Test Performance*: Prior to the 1950s, most laboratory procedures were performed manually. By the 1960s, automated processes were being coupled with computers to increase efficiency in production and data reporting. The sophistication of computerized laboratory medicine has continued to increase and incorporate new areas of testing such as immunology and medical genetics (McLendon, 1987, pg. 581-583). Furthermore, computerization is expanding into other areas of test performance, especially diagnostic imaging. In diagnostic imaging, the first major step came with the advent of computerized tomographic scanning (CTS). This trend has continued such that computers are now used routinely in imaging, most significantly in cardiovascular imaging including digital angiography, radionuclide, echocardiography, positron emission tomography (PET), and nuclear magnetic resonance (NMR) imaging (Collins, 1987, pg. 669-677).

iv. *Patient Monitoring*: Computers can be used to monitor direct patient information in acutely ill patients. Intensive care units utilize monitoring

equipment that can be connected to computers that monitor, store, and display physiologic data such as arrhythmia* and hemodynamic* parameters. Further, through telecommunications, these monitoring computers can be linked with laboratory retrieval systems, data bases of clinical and pharmacological information, and decision support systems to consolidate information and assist in patient management (Gardner, 1982, 823-830).

v. *Medical Education*: Medical information systems can be applied to medical education on several levels. Computer-based training can be a useful tool in undergraduate medical education because it combines audiovisuals with programmed logic and user interactions to individualize the educational experience. Also, computers can be used for more sophisticated testing by tracing decision-making. Computers are also being seen as an integral part of continuing medical education for practicing physicians. Relevant, practice-linked continuing medical education programs can be developed by allowing better analysis of the educational needs of practitioners as well as increasing access to educational material and introducing new formats of instruction (Manning, 1987, pg. 3543-3546).

vi. *Medical Office and Financial Management*: The computer can function as more of a general business tool than as a specific medical tool by using it in a medical setting but in such areas as financial management, office management, word processing, and electronic mail. Such applications are

becoming very commonplace in patient care setting such as hospitals and physicians' offices (Meyer, 1987, pg. 10).

2.4.4 Benefits of Medical Information Systems

Benefits of medical information systems can be viewed from two perspectives: efficiency and patient care. Many studies have shown that medical information systems can increase efficiency because they can help physician use resources more wisely, be more productive, and thus, increase revenues (Bleich, 1989, pg. 756-758). They can also improve patient care by providing support for clinical decision-making and by enhancing prospective quality assurance (McDonald, 1992, pg. 304-312). Each perspective will be discussed as follows:

i. *Medical Information Systems Can Increase Efficiency*: Medical information systems can be more accessible than paper records. They can increase clinician's efficiency by reducing inappropriate use of resource, enhancing productivity, and increasing revenues. Automated medical record systems can be more complete and accurate then paper records. They can increase staff productivity, and may reduce operating costs (U.S. General Accounting Office, 1991).

   a. *Decreased resource utilization.* The ordering of medical services is a technically inefficient process. Because most resource over-utilization is a consequence of medical ordering, cost reductions can be achieved if a computer-based system increases efficiency and decreases inappropriate utilization. Computerized alerting, reminding, and monitoring systems can also decrease health care costs. In many

studies, it has shown that automatic monitoring and reminding of appropriate prophylactic antibiotic administration for abdominal surgery patients reduced a hospital-acquired infection rate from 36% to 17% while decreasing inappropriate antibiotic usage by nearly $60,000 annually (Evan, 1987, pg. 241-245).

b. *Increased productivity*. On line reporting of results can provide health professionals with quick and seamless access to patient data. Improved access can save time, reduce errors in patient charts, and facilitate the integration of geographically separated health care delivery sites into a single delivery system (Sternburg, 1987, pg. 625-630).

c. *Improved revenues*. Many studies have shown that through the use of a pioneering integrated hospital information system, the time required to collect unpaid bills decreased 40% and the revenues collected from outpatients increased by 45% over the three-year period following the installation of the outpatient billing system (Bleich, 1989, pg. 149-55).

ii. *Medical Information Systems Can Improve Patient Care*. Medical information systems can improve clinical care by providing support for clinical decision making and by ensuring appropriate follow-up care and monitoring of patients' condition. A data collected from one study showed that computerized record summaries could improve medical care and patient outcomes. This study also showed that clinical errors could be reduced and that preventive medicine programs could be improved by

computer systems that remind physicians to do necessary follow-ups or disease preventive procedures (McDonald, 1992, pg. 304-12).

2.4.5 Conclusion

A well-designed and well-implemented medical information system can provide the help that physicians and clinicians need. Medical information systems can help clinicians provide high-quality, cost-effective care to patients, facilitate clinical research, and reduce costs. They can also help improve the efficiency in medical and financial management, decrease resource utilization, increase productivity, and increase the revenues. Thus, medical informatics should be supported for further development in the future.

3. Current Process

At the end of each month, Nancy Hajec, the Perinatal Data Specialist/QMI Systems Manager at Memorial hospital, tallies up specific data in order to generate a "Productivity Report" (See appendix V). Hajec is currently using data that is recorded on paper in order to obtain the statistics. However, this data is just as easily retrieved from the QMI system. The data is tallied up and recorded onto the "Nursing Staff Workload Summary Worksheet" (See appendix IV). Once that data is totaled, the results are entered into a table in MS Excel in order to generate graphs of the computed data. The primary goal of this IQP will be to automate this process, which for the most part is currently being done manually. The desired effect will be a reduction in the processing time as well as any human error that is introduced in the complicated and tedious process of tallying up statistics by hand. The current process is as follows.

Data is retrieved from the "Delivery" sheet (Appendix V), which has been recorded manually. On the worksheet, there is a column marked "Gr/Par," or Gravita/Parita. Gravita represents the number of times that the woman has been pregnant and parita represents the number of children the woman has carried over twenty weeks. If Gravita has a value of 1, a tally mark is added to the Primip (i.e., this is the woman's first pregnancy) column in the "NS Workload Summary Worksheet." If the value is "2/0," the woman has been pregnant twice, but has never carried the baby for twenty weeks. This would imply that her first pregnancy was probably a miscarriage and this would be her first baby. Therefore, she would be marked down as a "Primip." With the exception of the case previously described, gravita values greater than one indicate that the woman is a Multip (i.e., this is not her first child) and gravita values of 1 indicate that she is a Primip.

Each day, a count is done of how many mothers on the floor have recently given birth. Furthermore, a count of the number of babies on the floor is also done. Due to various reasons, some babies may be kept in the hospital, while the mothers go home. These babies are also tracked on a daily basis. The preceding information just described are classified as "Mothers," "Babies," and "Boarders" on the "NS Workload Summary Worksheet," respectively. The data is simply gathered by having a staff member do a manual count each day and having the totals recorded on a datasheet. This datasheet is eventually used by Nancy to fill out the "NS Workload Summary Worksheet" at the end of the month.

Two types of deliveries exist – vaginal and cesarean sections. This information is currently being read off the "Delivery" worksheet. Vaginal deliveries can be of three types – primip, multip or VBAC. Primip indicates that this was the woman's first child; multip means that the woman has given birth before; and VBAC indicates that the patient has had a previous cesarean section. Women who give birth via cesarean section can be of two types – elective or scheduled and nonelective or nonscheduled. Again, this information is read off the "Delivery" worksheet. A special case exists if a woman has twins, triplets, etc. in which the first child is born vaginally and the latter are born via cesarean section. In such cases, the birth is recorded as a cesarean section. Also note that multiple births are always counted as only one delivery. The "number of live births," however, is dependent upon how many children are born upon that delivery. This distinction will be important in keeping accurate statistics.

Statistics have to be generated on a monthly basis. Currently, the following items must be tallied up: False Labor, Observed Patients, Premature labor/antepart comp,

Multip, VBAC, Elec, NonElec, Tubal Lig, NonStress Test, D&C or Cervix Suture, OCT, PP MgS04, Mothers, Babies, and Boarders. Many women are admitted to the Family Center on any given day of a month and are logged onto the "Delivery" worksheet. Information pertaining to all the fields previously mentioned are recorded manually onto the "Delivery" worksheet for each woman who is admitted.

Nancy fills in the "NS Workload Summary Worksheet" (see appendix IV) by tallying up the "count" for each of the sixteen items for each day of the month. The final result is a table whose rows represent days of the month and whose columns represent the 16 fields tracked for each patient. Next, the totals for each of the items are summed up for the entire month and entered at the bottom of the worksheet. The totals for each item is then multiplied by some constant (i.e., standard hours) in order to determine the family center's labor utilization for that month.

4. Procedure

4.1. Exporting from QMI

Hajec has provided us with a list of all the items needed to generate the information that is needed by the hospital staff (see appendixes IV & V.) She has also noted that extra information has been included in case they become needed in the future.

Quantitative Sentinel or QMI is the software package used by Memorial hospital as a documentation package for the prenatal care unit. A terminal is placed in every room so that patients' information can be updated instantaneously. According to Marquette, the developer of QMI, "Data entered during the prenatal period is available at any patient location that has the system; ultrasound, genetic work-ups, consults, and Labor and Delivery.[1]"

The first step in undertaking this project is to create an export chart in QMI. Essentially, the chart will identify the data items from QMI that will be exported to MS Access. The next step involves setting up a schedule (i.e., PtD Job) specifying the time intervals at which data from the Export chart will be exported. Once this step is completed, QMI will automatically generate a text file (i.e., ExportChart.txt) containing all the various data pertaining to patients on a regular basis. The job is scheduled during the nighttime in order to minimize any effects on other users of the system (i.e., the hospital staff).

[1] http://www.mei.com/products/prodline.qmi_mdoffice.html

4.2 Design of Access Database

The primary goal of the database was to generate various statistics pertaining to infant births. The most straightforward approach was to import all the patient data from QMI into one single table (i.e., TestTable) in Access. Three Make Table and Append queries are used to filter the data in order to be processed by the queries.

In order to perform various calculations on the fields all the pertinent information (e.g., laceration types, induction methods, total births, etc.) were gathered through queries in Access. Users may view the reports with the "Reports..." option on the switchboard. In addition, a user-friendly interface was created to facilitate the use of the database.

4.3 Importing Into Access

Ideally, MS Access would be "linked" to QMI and the data can be directly exported from QMI and imported into Access without having to first store the data onto a disk. Currently, there are at least 160 data items per patient for more than 500 patients that will be imported into Access. Once the text file has been generated, it will then be imported into MS Access. The data items will be stored in a "TestTable" table, where each row will store the information for one patient, the primary key will consist of the patient ID number.

4.4 Statistical Reports from Access

In addition to the statistics mentioned previously, Nancy would also like to see a breakdown of the types of deliveries done by each doctor. With this data, she can keep track of how many vaginal, primary cesarean, repeat caesarian, and elective repeat caesarians that each doctor being tracked has done in the last month, year, etc. If the

delivery is of type cesarean, the reason should also be recorded. Finally, this data will be used to determine how many total primary and repeat cesareans the hospital has done each month. This data is what is considered a "patient's right to know." Patients may occasionally ask for this information and the hospital must have some way of retrieving it.

To organize this data, a query will be written in MS Access which will create a table, listing the individual doctors and the number of each of the deliveries that he or she has done. An additional query will be written to tally up the total number of primary and repeat cesarean sections that were done by the hospital.

In general, after all the data has been imported into Access and stored into tables, queries will be written in order to tally up the data. A final report summarizing all the important statistics will also be created in Access. Furthermore, the data from MS Access may potentially be imported into MS Excel in order to generate graphs.

The New Process

5. New Process

The goal of this project was to make collecting and manipulating data easier for users. This goal was achieved by importing data collected by the QMI system into Microsoft Access 95 and manipulating it in order to generate reports on various statistics desired by the hospital staff (see Figure 1.)

Each night at 3:45 am, the QMI system exports patient data and appends it to a text file, called ExportChart.txt on the archive server. This text file accumulates patient data from the QMI system throughout the month. The file has been estimated to grow to approximately ***1.5 megabytes*** in an average month.

When users open up the Prenatal database at the beginning of each month, they will see the switchboard (i.e., main menu). At this point, users will select the "Retrieve and Process Data" option (see Figure 2.) This will essentially retrieve the local copy of the data from QMI and import it into Access. This is required in order for the data to be processed by the various queries. The file containing the exported data from QMI will be stored at the location: "C:\database\ExportChart.txt" on the local PC.

The retrieved data is initially stored in a table named, "TestTable" in the Prenatal.mdb database. Data imported into Microsoft Access are of type text since data from QMI is only exported as text. Because the fields are all of type *text*, two queries - CreateModifiedProperty and InsertIntoModifiedProperty are used to alter the types of some fields to type *number*. This is required to do various calculations in generating the statistics within the database.

Next the CreateSortTable and InsertAndSortIntoSortTable are used to create the SortTable and sort patient records by export time respectively. The result is stored in the

"SortTable" table. When a patient has more than one record in the TestTable, only the latest patient record is used and the others are discarded. The final set of data is stored in the "FineTable." The data in this table will contain only the latest record for patients having more than one record.

Finally, the "PriorMonth" query filters this data set further by taking only patients that have given birth in the prior month. The query accomplishes this by examining the baby's birth date and time to ensure that the birth occurred in the previous month. All other queries used to generate the statistics will be derived from the patient records contained in the "PriorMonth" query.

Users may view and print the reports via the "Reports..." option on the switchboard. Once all statistics have been successfully gathered, the ExportChart.txt file needs to be deleted from the archive server in order to preclude the possibility of filling up disk space. This is done via the "Clean Up Archive Server" option on the switchboard.

This new process more effectively uses the patient data stored within the QMI system. The underlying idea is that Microsoft Access can much more quickly and accurately process data and calculate the pertinent statistics than a manual system.

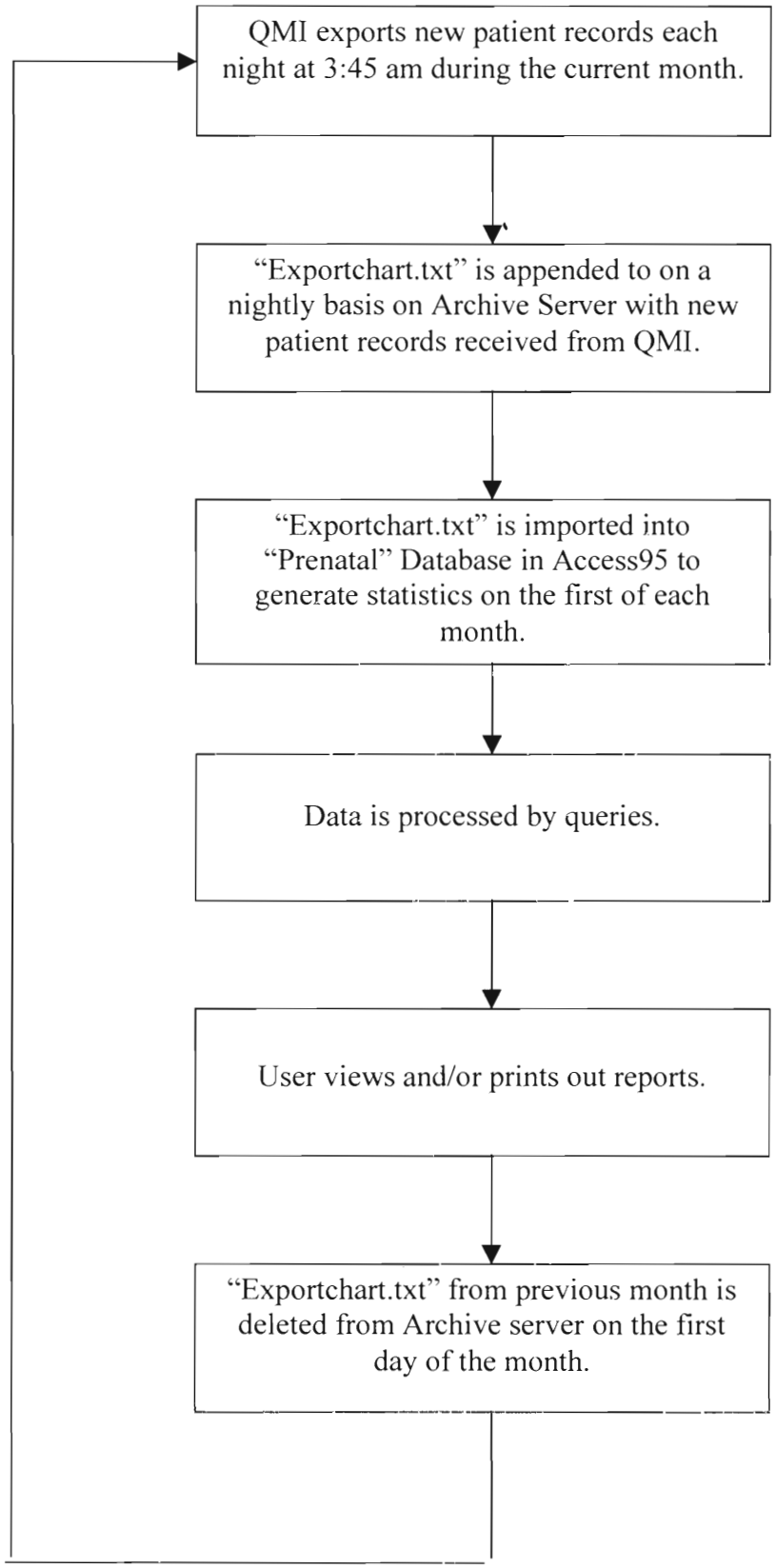
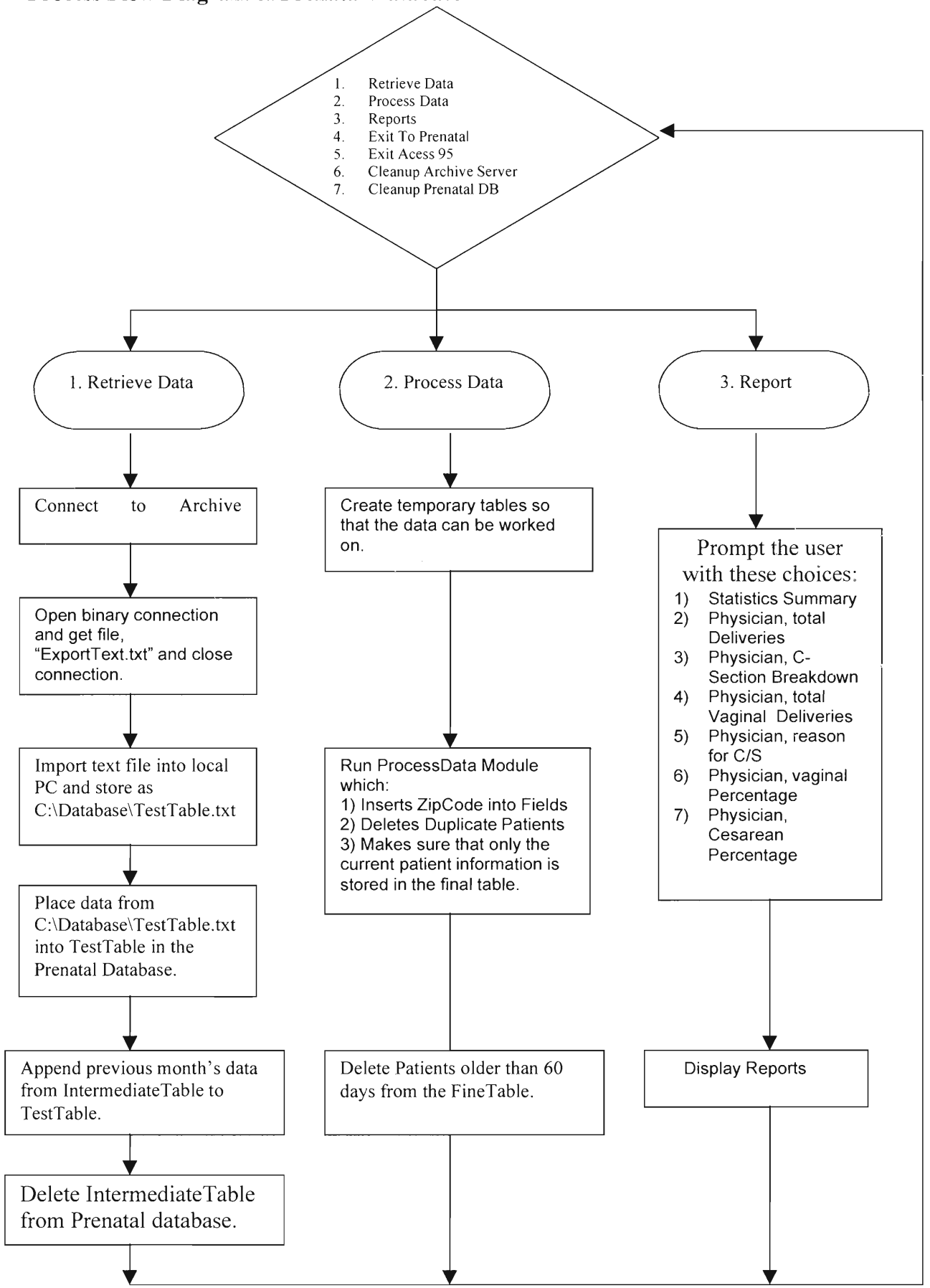
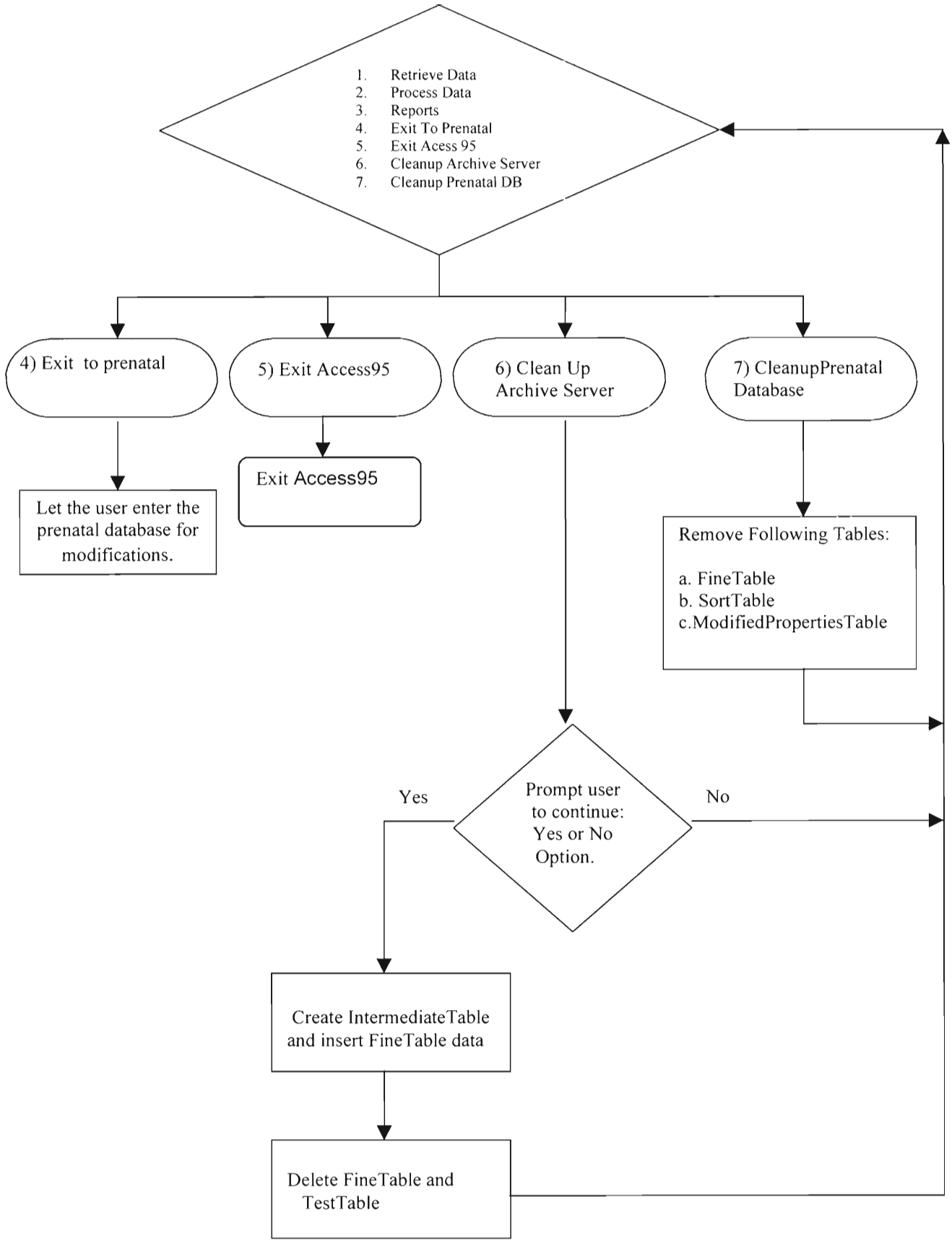


Figure 1: Overall Process diagram

Process Flow Diagram of Prenatal Database




1. Retrieve Data
2. Process Data
3. Reports
4. Exit To Prenatal
5. Exit Acess 95
6. Cleanup Archive Server
7. Cleanup Prenatal DB
4) Exit to prenatal
5) Exit Access95
6) Clean Up Archive Server
7) CleanupPrenatal Database
Let the user enter the prenatal database for modifications.
Exit Access95
Remove Following Tables:
a. FineTable
b. SortTable
c.ModifiedPropertiesTable
Prompt user to continue: Yes or No Option.
Yes
No
Create IntermediateTable and insert FineTable data
Delete FineTable and TestTable

User's Manual

6. User's manual

6.1 Introduction

This database was specifically developed to work in conjunction with the QMI system at Memorial Hospital. The primary purpose of the database is to produce reports of prenatal statistics. To begin, open the "Prenatal" database in Access95. A screen, containing the switchboard will be displayed (see Figure 3.) The switchboard will offer the user various options from which to choose:

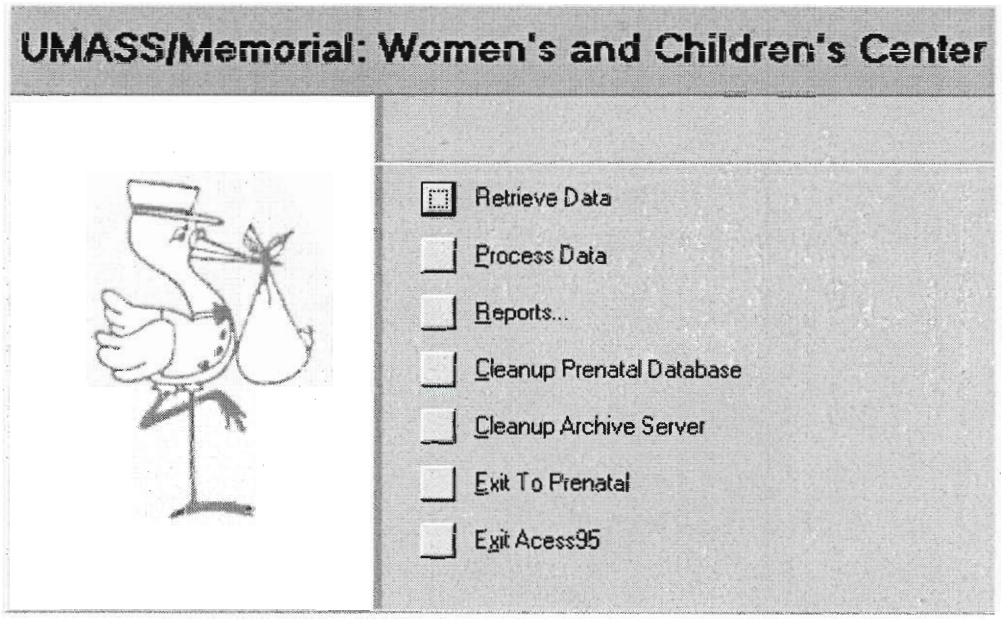


Figure 1: Opening Screen for Prenatal database

As the screen above shows, the options include:

1. *Retrieve Data*
2. *Process Data*
3. *Reports...*
4. *Cleanup Prenatal Database*
5. *Cleanup Archive Server*
6. *Exit To Prenatal*
7. *Exit Access95*

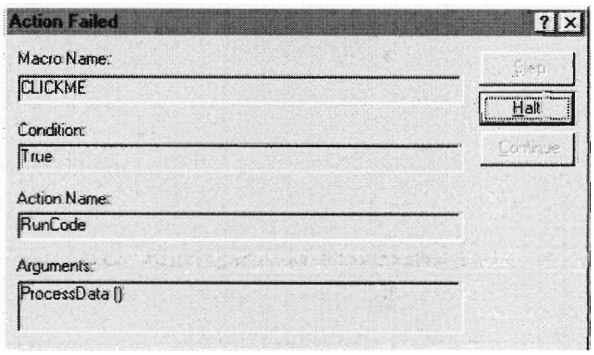
6.2 Retrieve Data

This button retrieves all the data from QMI in order to generate the relevant statistics. When this option is selected, Access95 will import data from QMI. Specifically, it will import the text file, "Exportchart.txt" from the Archive server and create a table called "TestTable" in the Access database. "TestTable" will contain all the data gathered from QMI.

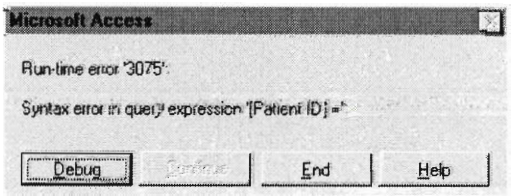
6.3 Process Data

This button is the most important option in the sense that it processes all the data retrieved from QMI (stored in "TestTable" within the Access database) in order to generate the relevant statistics. When this option is selected, the data will be processed and statistics will be generated from the data.

The process data function requires that the patient id field contain only valid patient id's (i.e., numbers). In certain cases, the patient ID field will contain characters as a result of manual entry of patient information. In that case, the following screens will pop up when the Process Data button is selected. Screen (a) will pop up first, followed by screen (b).



(a)



(b)

In such a situation, select "Halt" for the screen (a) and "End" for the screen (b). Next, return to the switchboard (i.e., main menu) and select the "Cleanup Prenatal Database" option to remove any temporary tables that have been created thus far. The only remaining table remaining in the database should now be "TestTable." At this point, the user must open up the table "TestTable" and delete the fields that contain the invalid patient ids.

The user can do this by first selecting "Exit To Prenatal Database" from the switchboard. Next, select the "Tables" tab and double click on the table named "TestTable." Once the table opens up, the user will need to manually delete the rows that contain the invalid patient id numbers. Finally, save the table before closing it.

Next, select the "Forms" tab and double click on "Switchboard" to open it. At this point, the user may select "Process Data" to generate the statistics.

6.4 Reports…

The "Reports…" button displays the list of reports available for display to the user after all the statistics have been generated *(see figure 4)*.

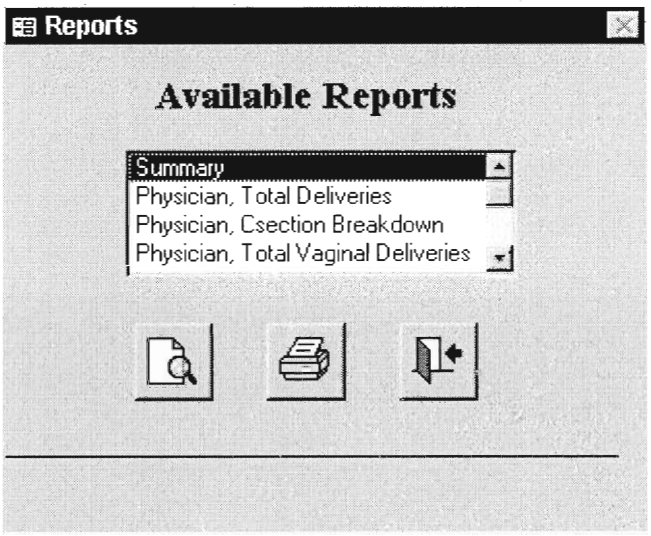


Figure 3: Reports Selection Screen

The Reports box includes three options from which the user may select. The first option (i.e., magnifying glass icon) displays the highlighted report for viewing purposes. The second option (i.e., printer icon) prints out the highlighted report. The third option (i.e., door and arrow icon) closes the report box and brings the user back to the switchboard.

There seven reports included in the "Reports…" section include:

I. Statistics Summary
II. Physician, Total Deliveries
III. Physician, C-section breakdown
IV. Physician, Total Vaginal Deliveries
V. Physician, Reason For C/S
VI. Physician, Vaginal Percentage
VII. Physician, Cesarean Percentage

Sample Reports

I. Statistics Summary: This will include the total occurrences of various events within the past month

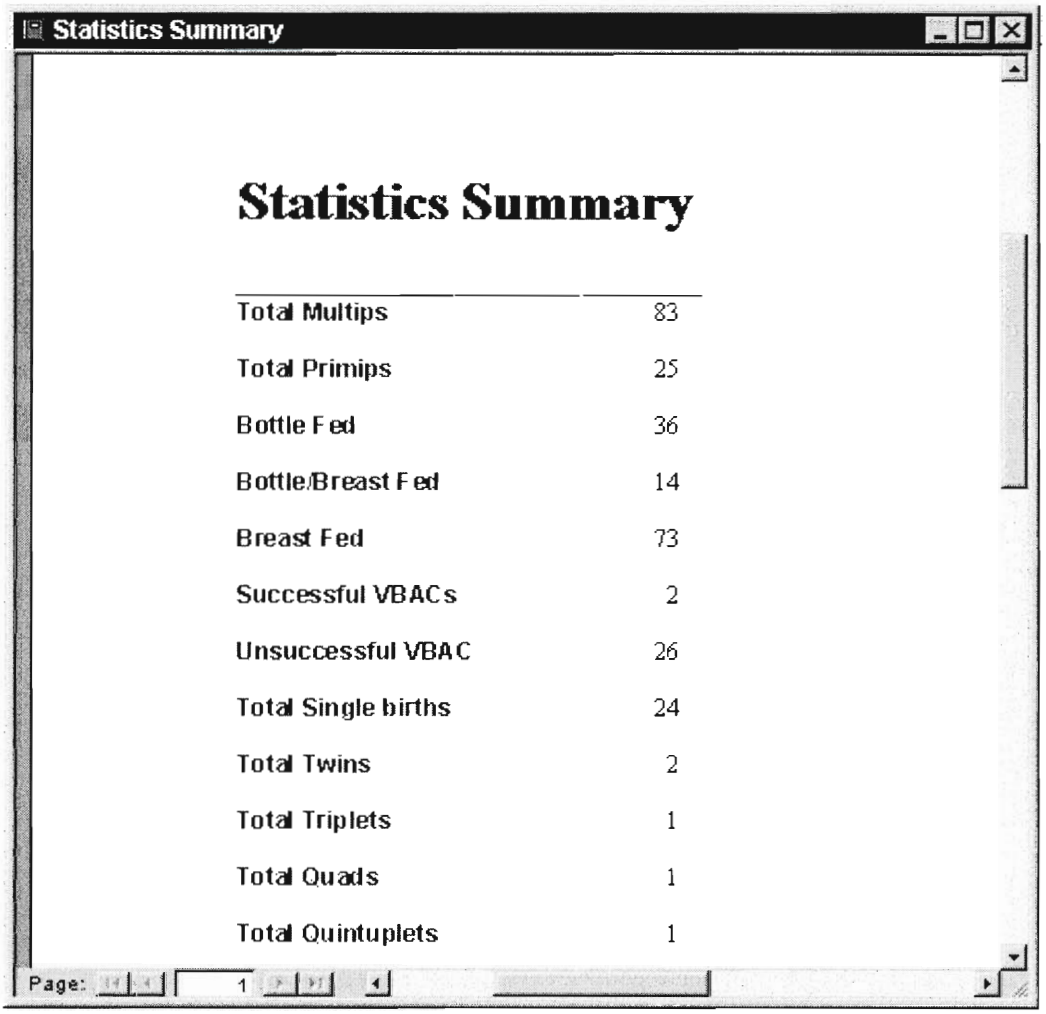


Figure 4: Statistics Summary

II. Physician, Total Deliveries: Displays the total number of deliveries done by each delivering physician.

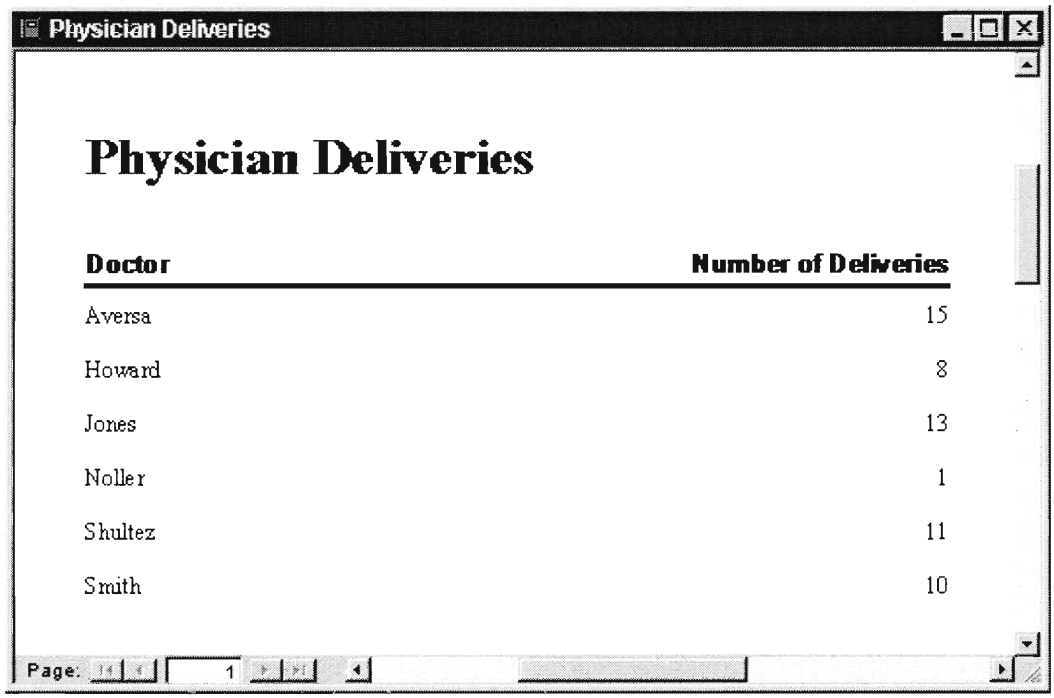


Figure 5: Physician Deliveries

III. Physician, Csection breakdown: Displays the total number of repeat and primary cesarean sections done by each delivering physician.

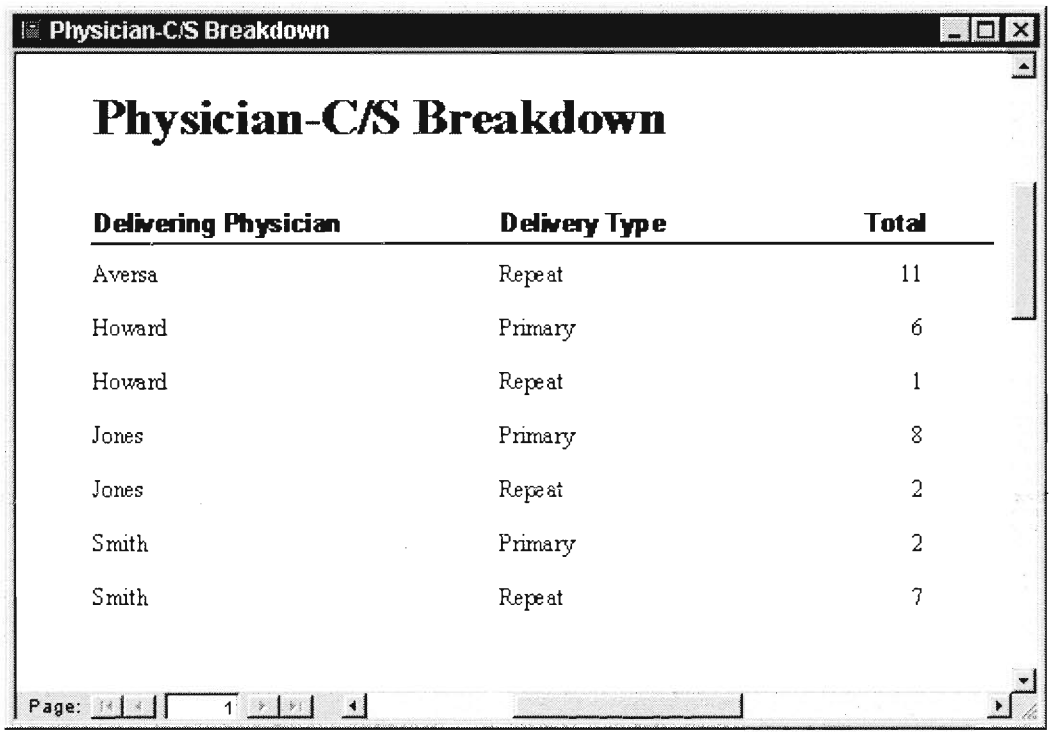


Figure 6: Physician- C/S Breakdown

IV. Physician, Total Vaginal deliveries: Displays the total number of vaginal deliveries done by each delivering physician.

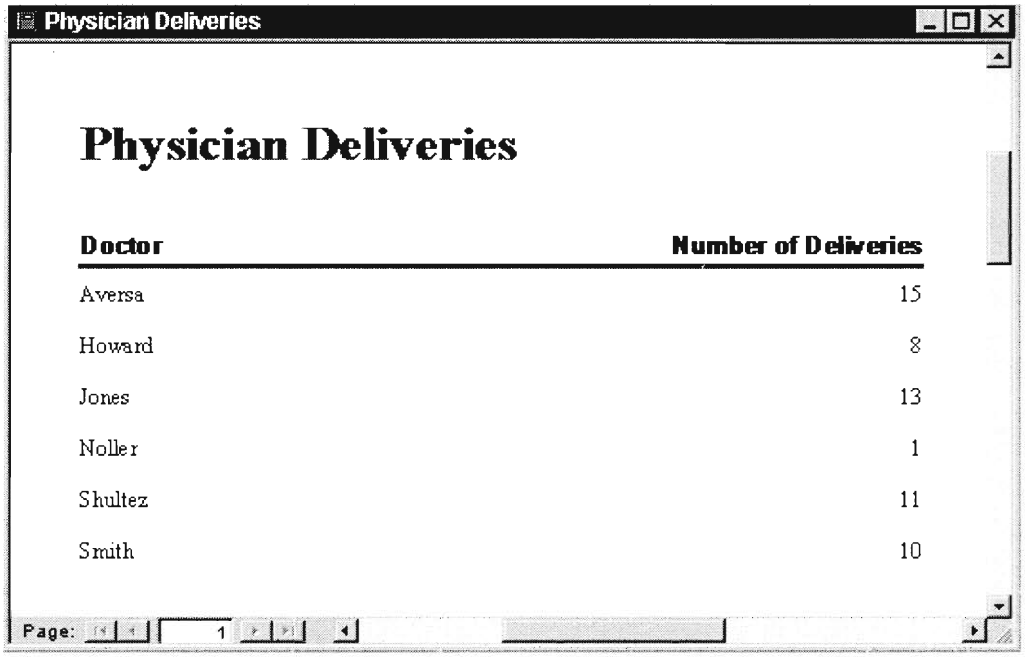


Figure 7:Physician Deliveries

V. Physician, Reason For C/S: Displays the reasons why a delivering physician has performed a cesarean section and a count for each reason.

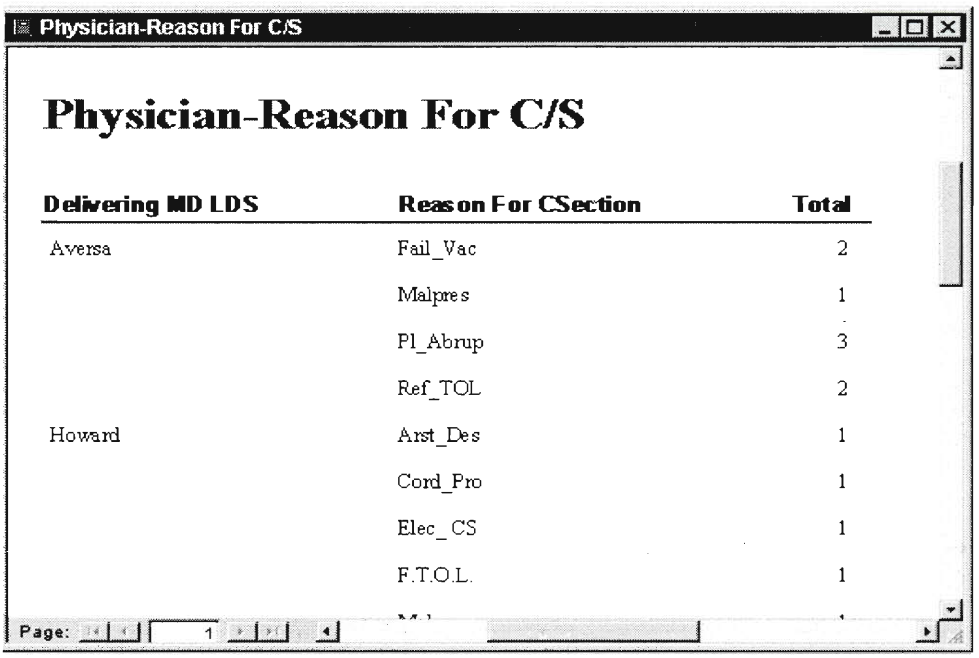


Figure 8: Physician-Reason for C/S

VI. Physician, Vaginal Percentage: Displays the percentage of vaginal deliveries done by each delivering physician.

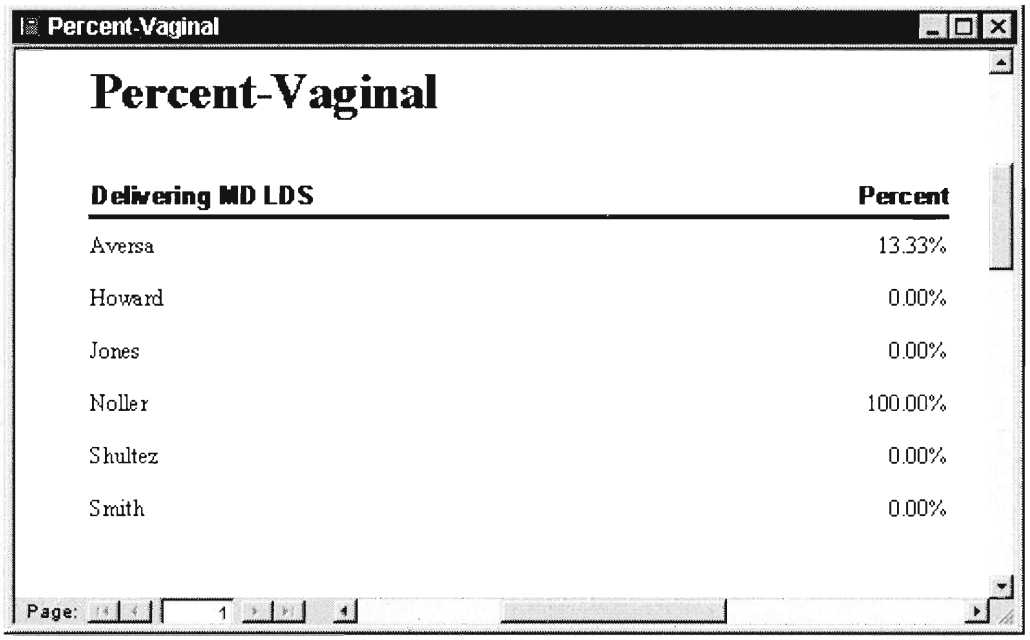


Figure 9: Percentage-Vaginal

VII. Physician, Cesarean Percentage: Displays the percentage of cesarean section deliveries done by each delivering physician.

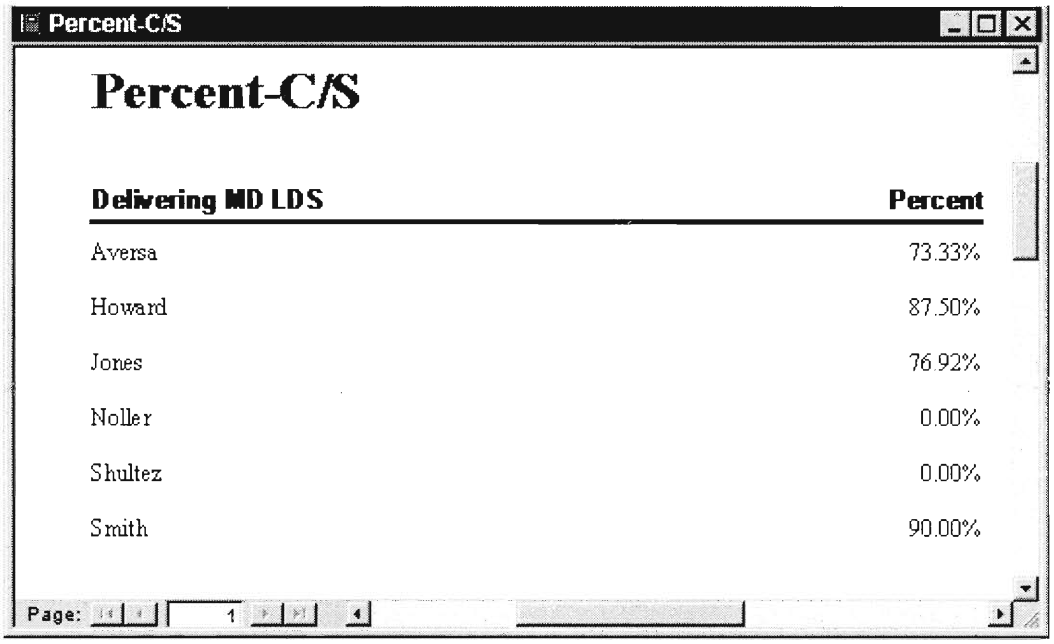


Figure 10: Percent-C/S

Summary can be further broken down, in terms of what information contains. The outline below describes the content of the Summary Report.

I. Summary
A. Statistics Summary:
1. Multips
2. Primips
3. Bottle fed
4. Breast fed
5. Bottle and breast fed
6. VBAC successful
7. VBAC unsuccessful
8. Single births
9. Twins
10. Triplets
11. Quadruplets
12. Quintuplets
13. Total live births
14. Total stillborn older than 28 weeks
15. Total stillborn younger than 28 weeks
16. Total mothers that delivered
17. Total nurse midwives use

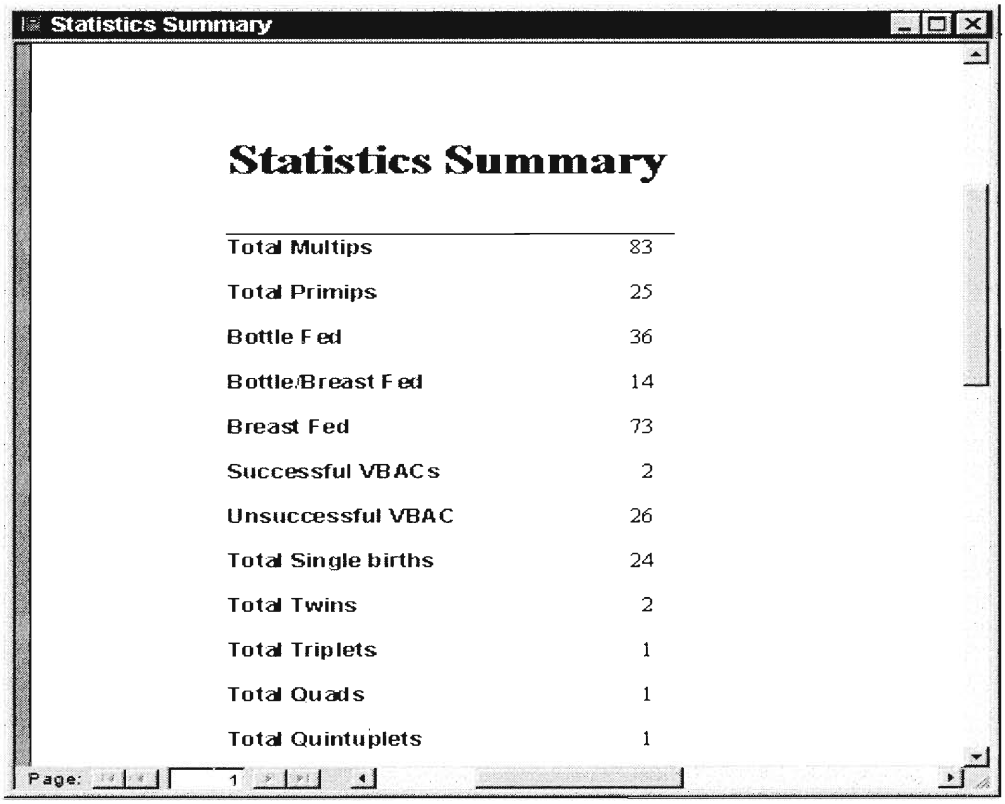


Figure 11: Statistics Summary

B. Augmentation of labor

1. Artificial rupture of membrane
2. Oxytocin
3. None

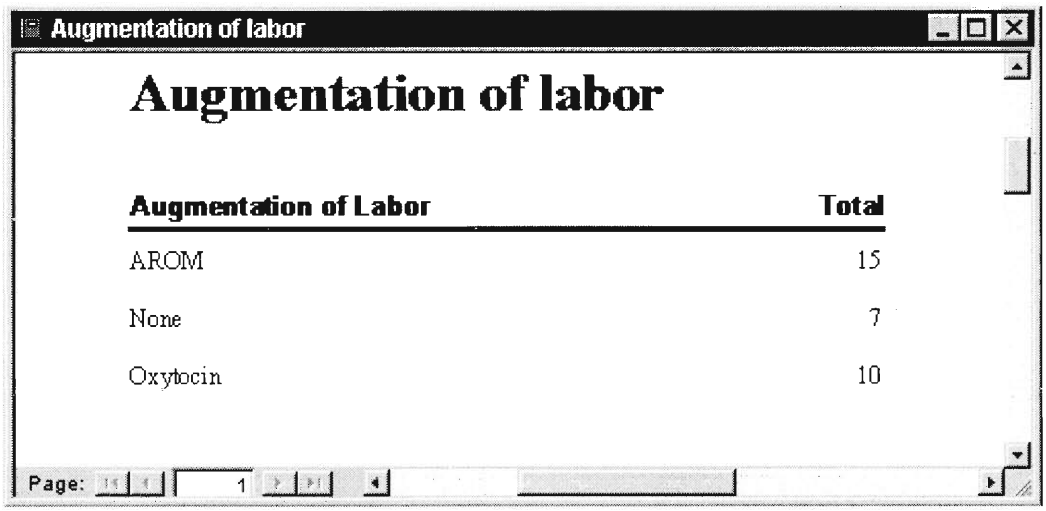


Figure 12: Augmentation of labor

C. Cesarean Section Incidence

1. Primary
2. Repeat

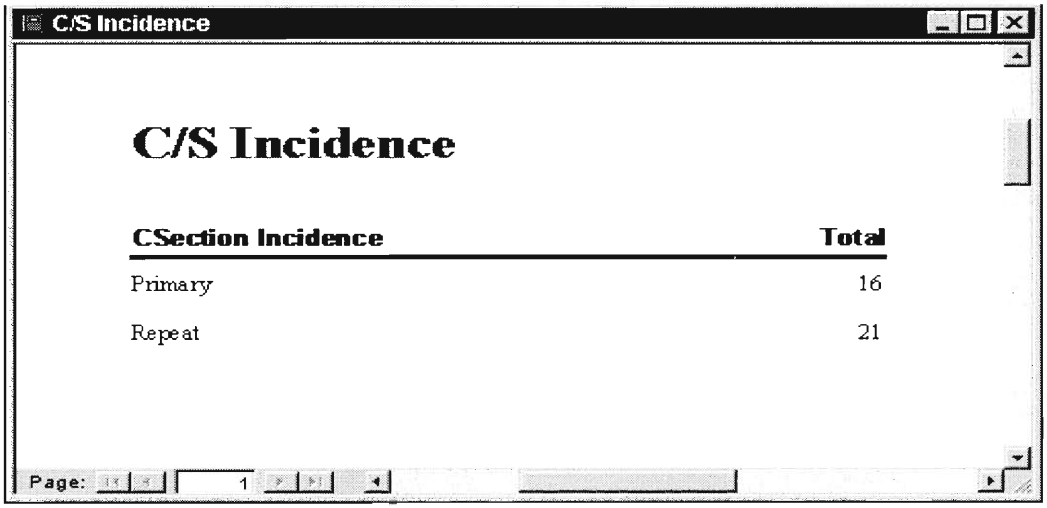


Figure 13: C/S Incidence

D. Cesarean Section Urgency

1. Scheduled
2. Not scheduled

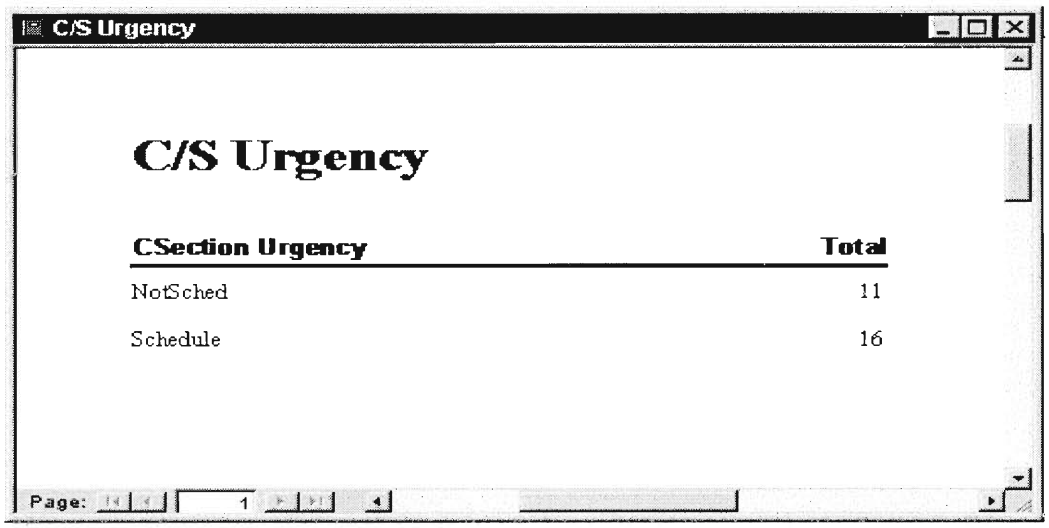


Figure 14: C/S Urgency

E. Delivery Anesthesia

1. Local
2. Epdural
3. Spinal
4. General
5. Pudental
6. None

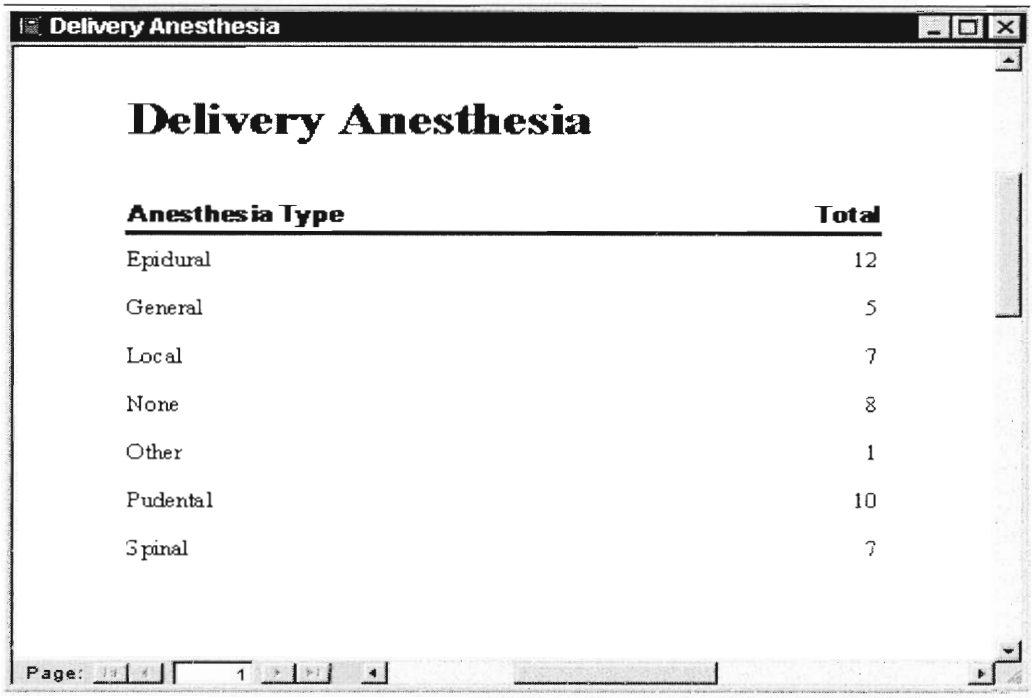


Figure 15: Delivery Anesthesia

F. Episiotomy

1. None
2. Median
3. Right mediolateral
4. Left mediolateral
5. Other

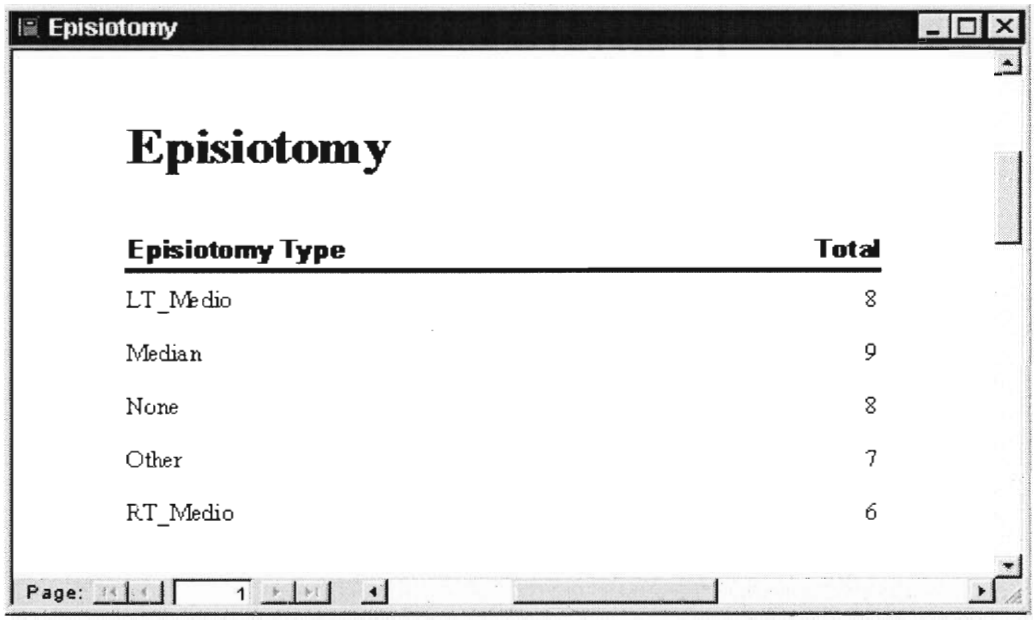


Figure 16: Episiotomy

G. Induction of Labor

1. Yes
2. No

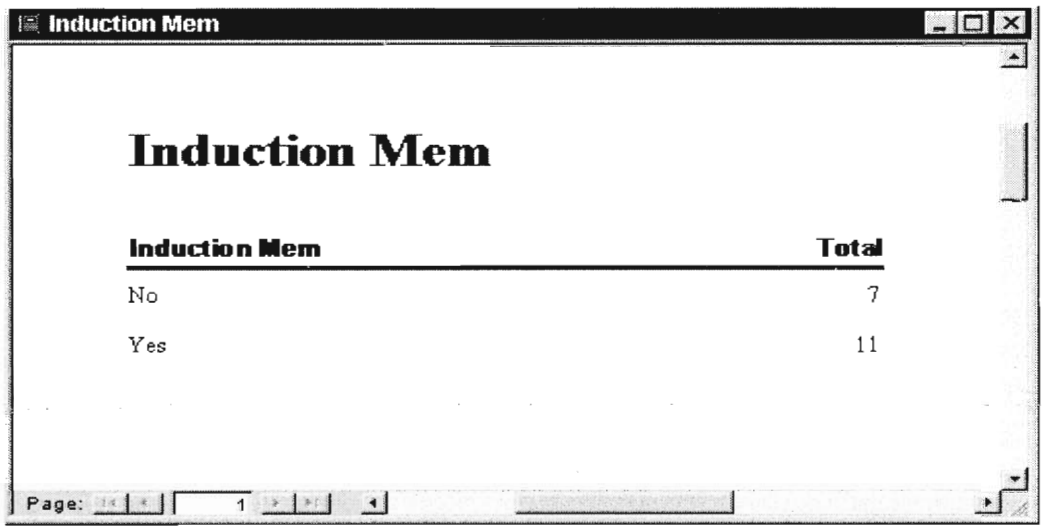


Figure 17:Induction Mem

H. Induction Method

1. None
2. Artificial rupture of membrane
3. Oxytocin
4. Cervical ripening
5. Other

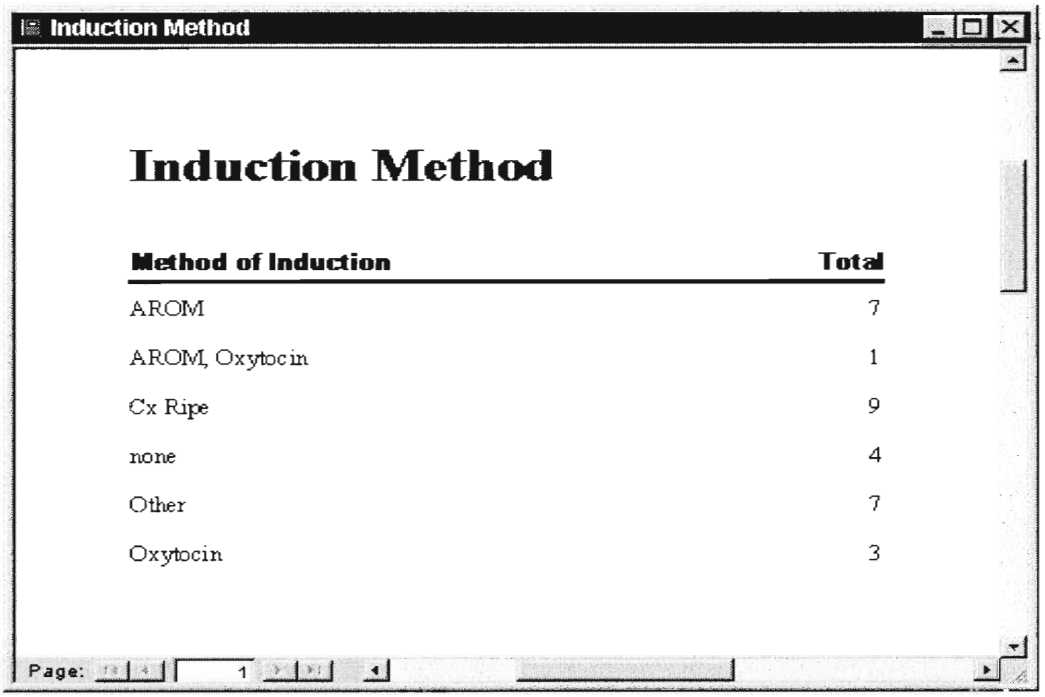


Figure 18: Induction Method

I. Induction reason, medical

1. PIH: Pregnancy Induced Hypertension
2. POSTERM: More than 42 weeks gestation
3. FET_DEM: Fetal Demise
4. HX_DIAB: HX Maternal Diabetes
5. PROM: Premature rupture of membranes
6. Rh_ISOIM: Rh Isoimmunization
7. CHORIOAM: Chorioamnionitis
8. Decr_AFI: Decreased AFI
9. Other

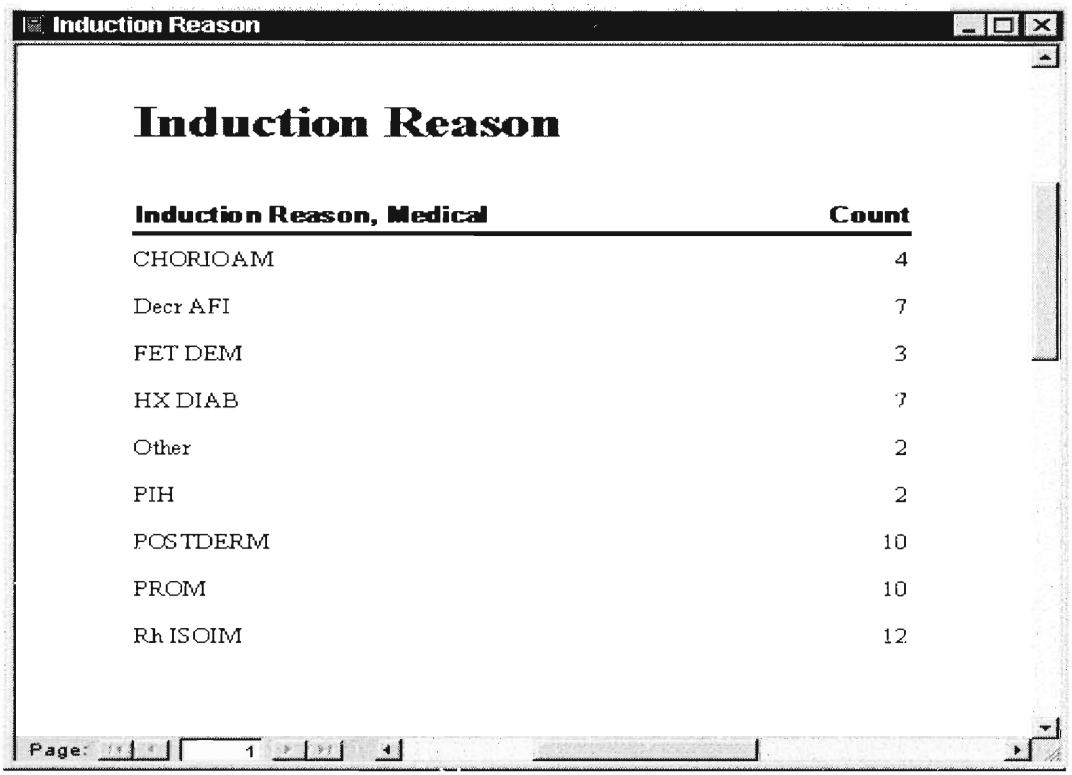


Figure 19: Induction Reason

J. Laceration type

1. None
2. Perineal
3. Vaginal
4. Cervical
5. Uterine
6. Other

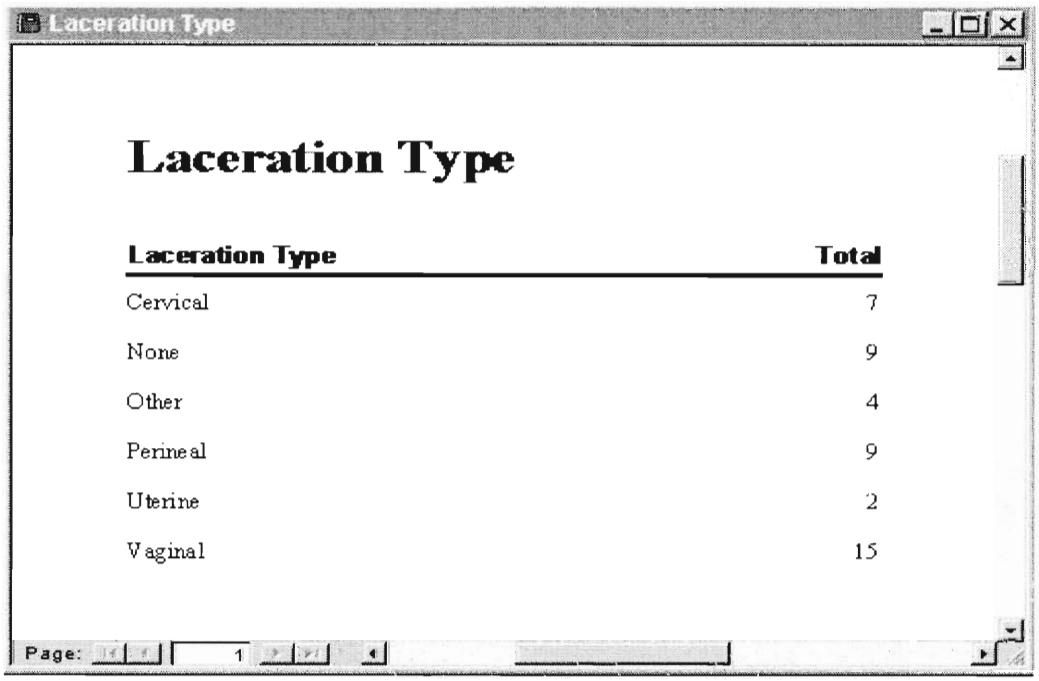


Figure 20: Laceration Type

6.5 Cleanup Prenatal Database

This option deletes the temporary tables that were generated during the processing of the data (e.g., FineTable, ModifiedPropertyTable, SortTable, TestTable) from the Prenatal database. This option should only be used when an error is encountered during the processing of data as described in section 6.3. Once this option is selected, the user may modify the "TestTable" and continue to process the data with the Process Data option.

6.6 Cleanup Archive Server

Please note that this button should not be pressed until all the data has been processed and the reports have been successfully generated and printed. This button will first delete the "Exportchart.txt" file on the Archive server. This step is important in order to prevent the Archive server from becoming cluttered. Next, the "FineTable," which contains all the imported data will be archived into the directory "C:\Database\Achivedata" on the local PC. Finally, the temporary tables that were generated when the data was processed will be deleted (e.g., FineTable, ModifiedPropertyTable, SortTable, TestTable) from the database.

Finally, note that it is very important that this option be run only after the "Retrieve Data" option has been run. Furthermore, both should be run on the first day of each month in order to ensure that the previous month's data is retrieved and the deleted from the Archive server. This will enable a creation of a new export chart on the Archive server.

6.7 Exit To Prenatal

The switchboard will first be closed and the user will be inside the database itself (see figure below). This option should generally not be used unless changes need to be made to the functionality or tables of the database. Use of this option requires general knowledge of MS/Access.

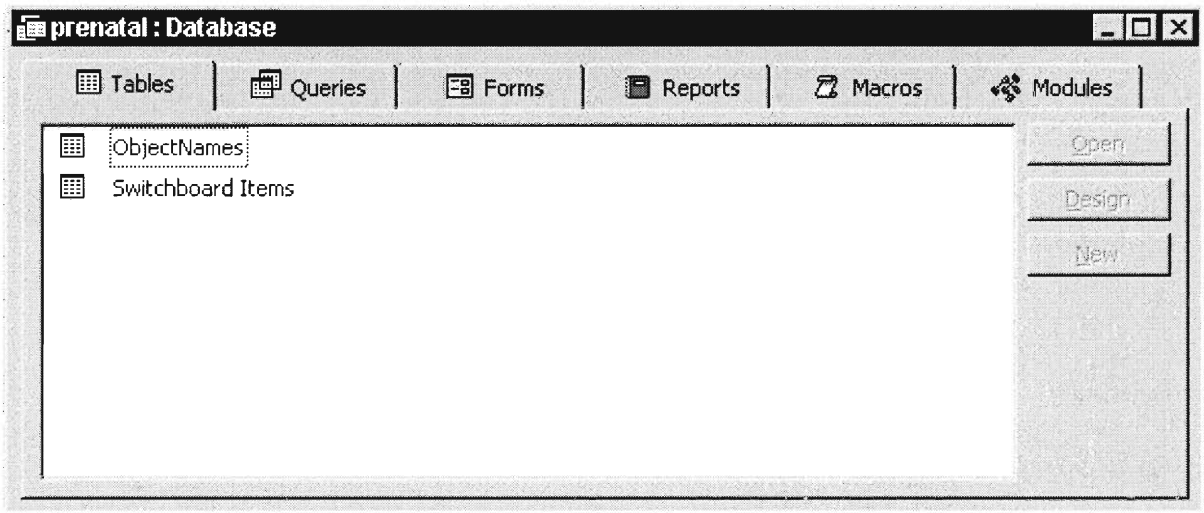


Figure 21: Screen shot when of Exit to Prenatal

6.8 Exit Access95

The switchboard will first be closed and the user will subsequently be exited from Access 95. Select this option once everything has been completed.

Queries

7. Queries

7.1 Baby A Stillborn<28 Weeks

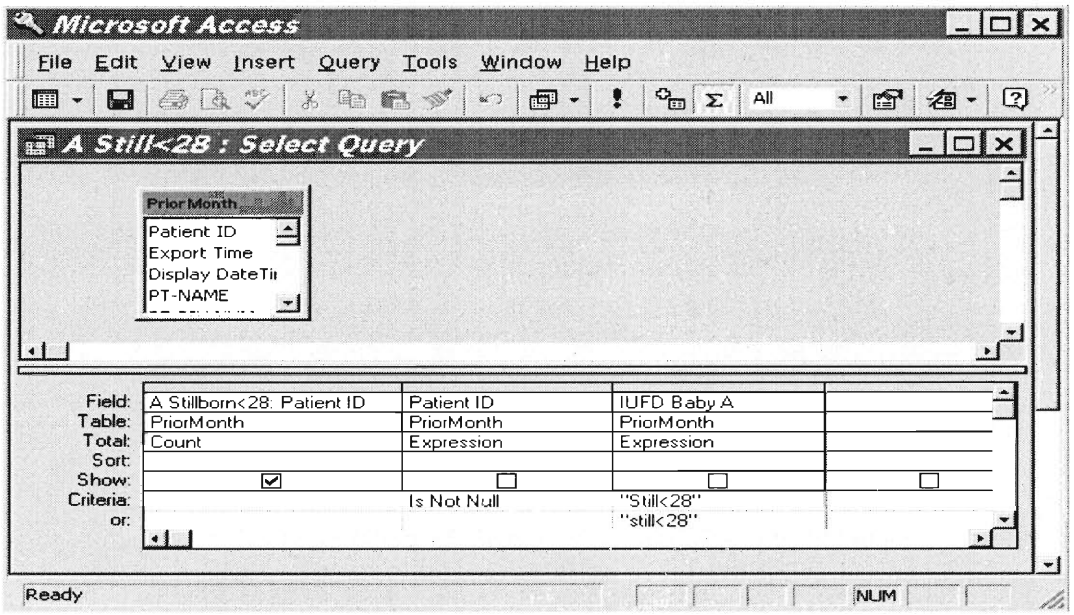


Figure 22: Design Baby A Stillborn<28 Weeks Query

SQL Code 1:

```
SELECT Count(PriorMonth.[Patient ID]) AS [A Stillborn<28]
FROM PriorMonth
HAVING (((PriorMonth.[Patient ID]) Is Not Null) AND ((PriorMonth.[IUFD Baby A])="Still<28")) OR
(((PriorMonth.[IUFD Baby A])="still<28"));
```

Description: The label "Stillborn<28" is attached to any baby that is a stillborn and less than 28 weeks old. This query tallies up all the baby A's that have this label and calculates a total. The same information is calculated for the other babies - B, C, D, and E. All the data is then added together to arrive at a final total for stillborn babies that were less than 28 weeks old. :

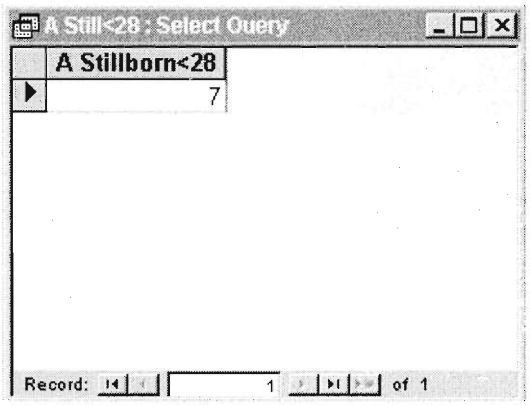


Figure 23 A still query

7.2 Baby A Stillborn>28 Weeks

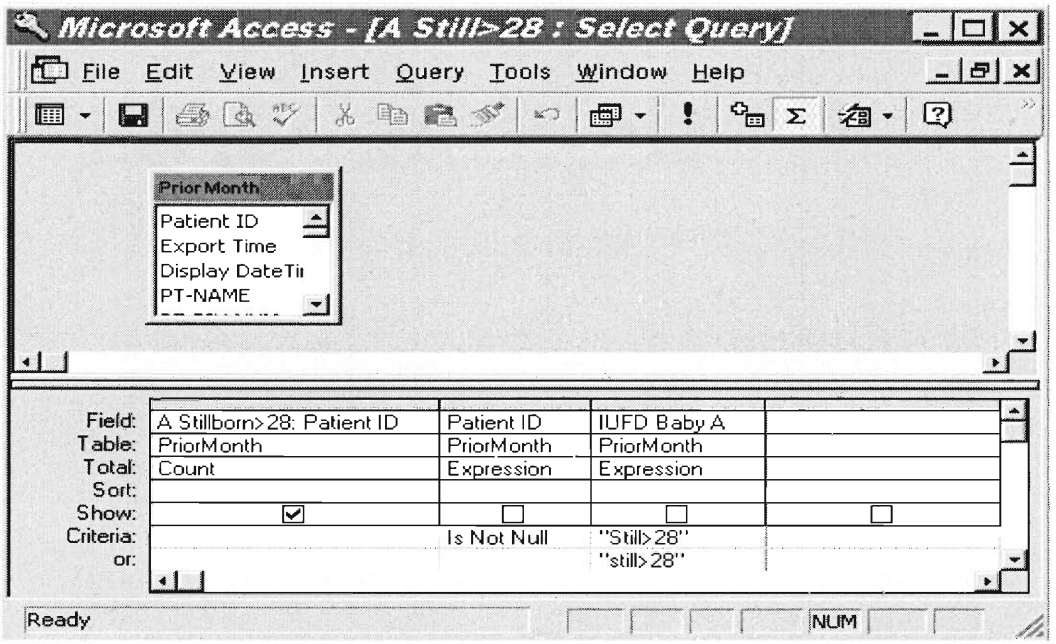


Figure 25: Select query for still born > 28 weeks

SQL Code 2:

```
SELECT Count(PriorMonth.[Patient ID]) AS [A Stillborn>28]
FROM PriorMonth
HAVING (((PriorMonth.[Patient ID]) Is Not Null) AND ((PriorMonth.[IUFD Baby
A])="Still>28")) OR (((PriorMonth.[IUFD Baby A])="still>28"));
```

Description: The label "Stillborn>28" is attached to any baby that is a stillborn and greater than 28 weeks old. This query tallies up all the baby A's that have this label and calculates a total. The same information is calculated for the other babies - B, C, D, and E. All the data is then added together to arrive at a final total for stillborn babies that were greater than 28 weeks old.

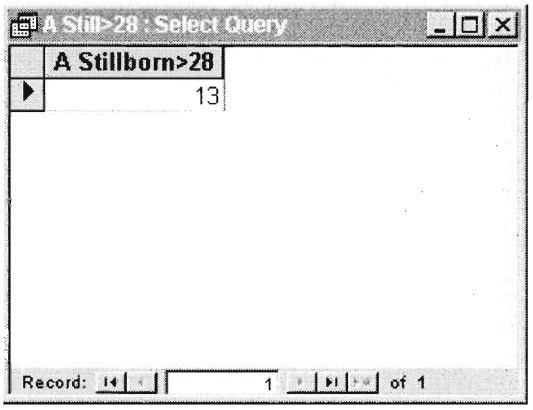


Figure 24: A still query

7.3 Augmentation Of Labor Query

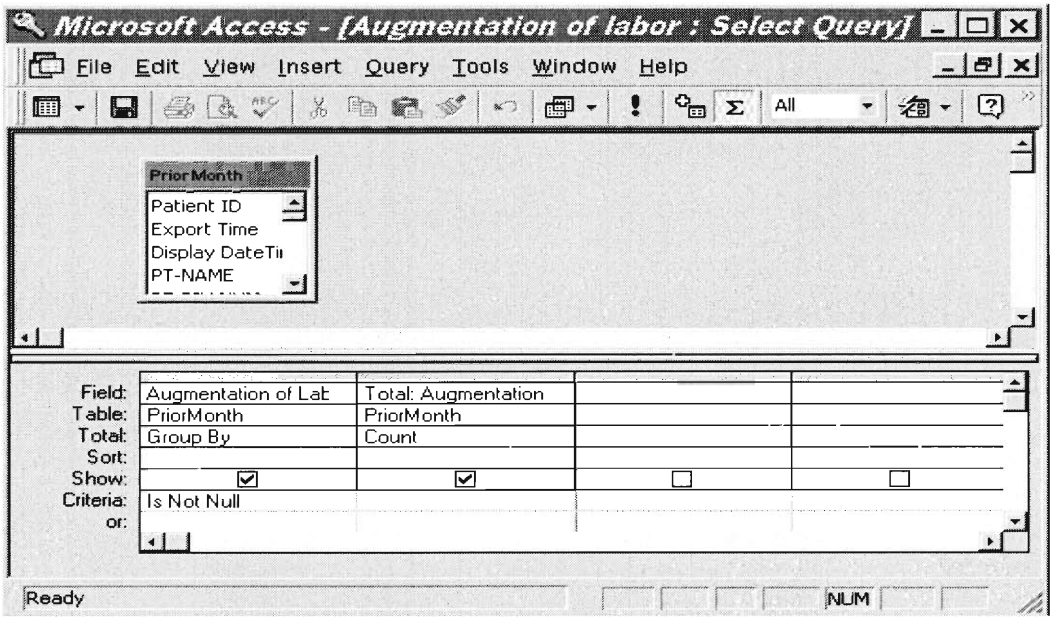


Figure 26: Design View of Augmentation of Labor

SQL Code :

```
SELECT PriorMonth[Augmentation of Labor], Count(PriorMonth.[Augmentation of Labor]) AS FROM
Prior Month
GROUP BY PriorMonth[Augmentation of Labor]
HAVING (PriorMonth.[Augmentation of Labor]) Is Not NULL;
```

Description: This query uses the Group By Function to arrange the types of augmentations into subgroups, including AROM, Oxytocin, and None. Next, it uses the count function to tally up how many of each subgroups exist.

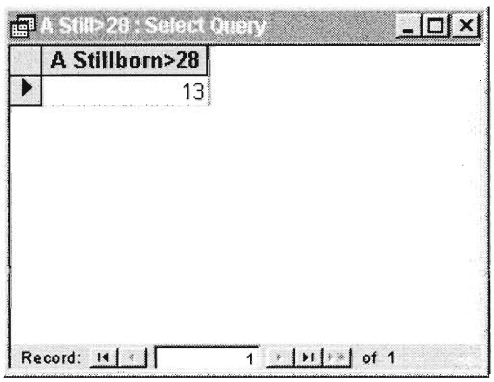


Figure 27:A still query

7.4 Bottle Fed Query

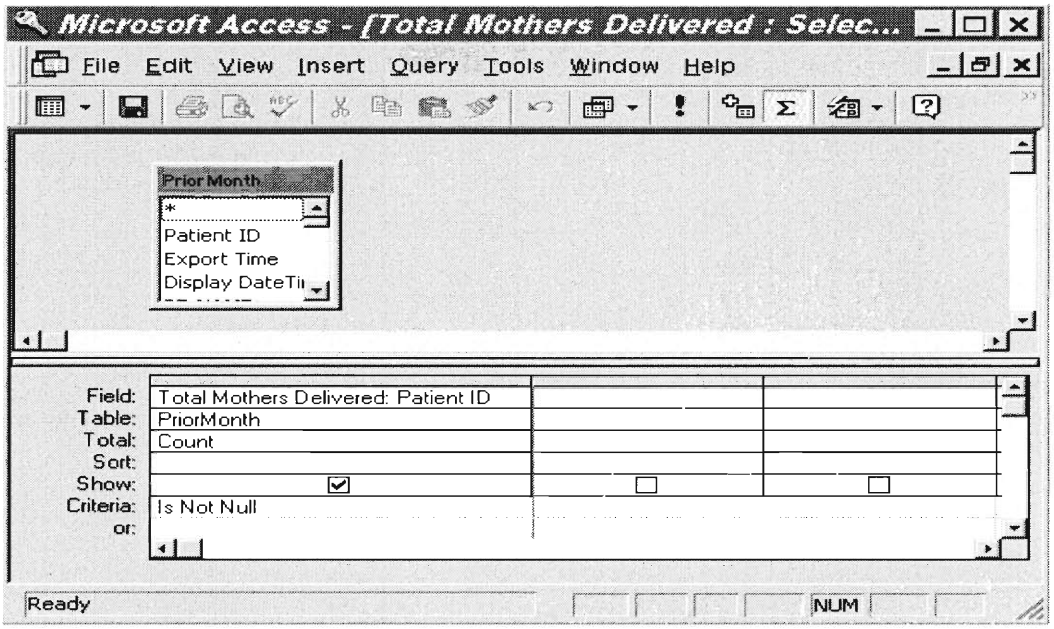


Figure 28: Design View of Bottle Fed Query

SQL Code 3:

```
SELECT Count(PriorMonth.[Patient ID]) AS [Bottle Fed]
FROM PriorMonth
HAVING (((PriorMonth.[Feeding Preference])="Bottle" Or
(PriorMonth.[Feeding Preference])="bottle"));
```

Description: This query counts how many patients have a feeding preference of type "Bottle" or "bottle" by checking the "Feeding Preference" field for each patient. The queries for Breast fed and Breast and Bottle fed are achieved in a similar manner. In those cases,"Bottle/bottle" is replaced with "Breast/breast" and "Both/both," depending on what is being checked.

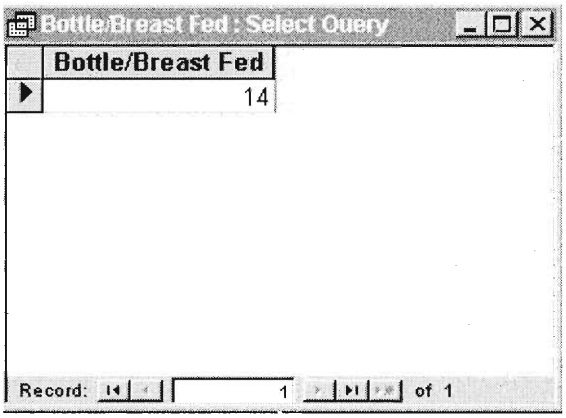


Figure 29: Bottle Breast Fed Query

7.5 C/S (Cesarean Section) Incidence Query

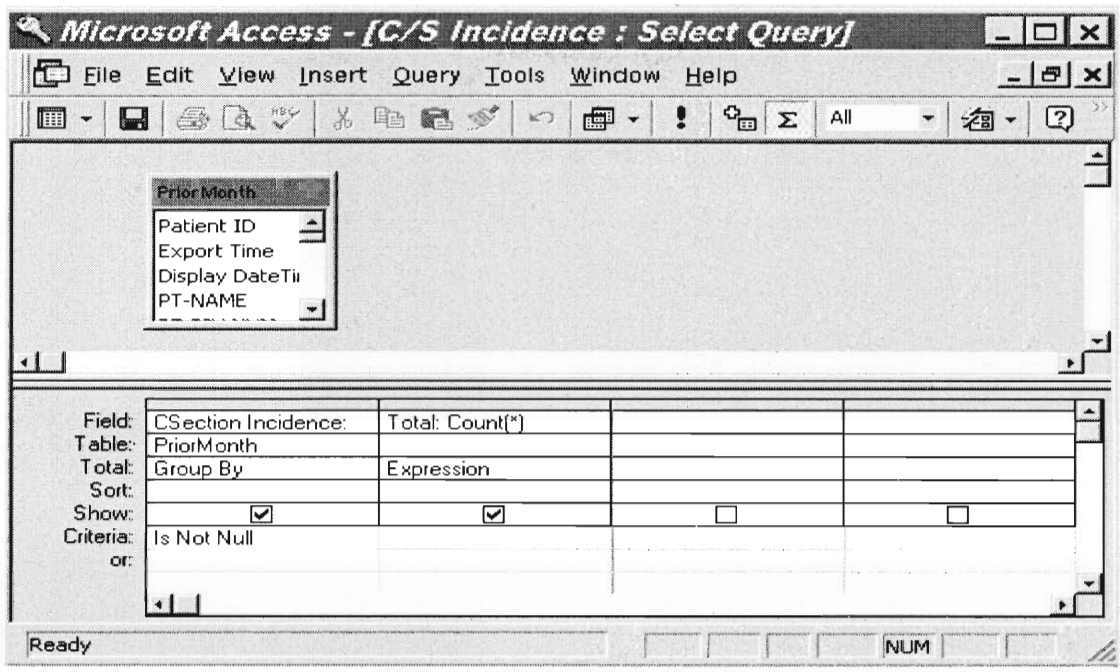


Figure 30: Design View of C/S Incidence Query

SQL Code 4:

```
SELECT PriorMonth.[CSection Incidence] AS [CSection Incidence], Count(*) AS Total
FROM PriorMonth
GROUP BY PriorMonth.[CSection Incidence]
HAVING (((PriorMonth.[CSection Incidence]) Is Not Null));
```

Description: This query uses the Group By function to group cesarean section incidence into two different subgroups - "Primary" and "Repeat." It then uses the Count function to tally up the instances of each case. Furthermore, it checks to see if that the cesarean section field is not null.

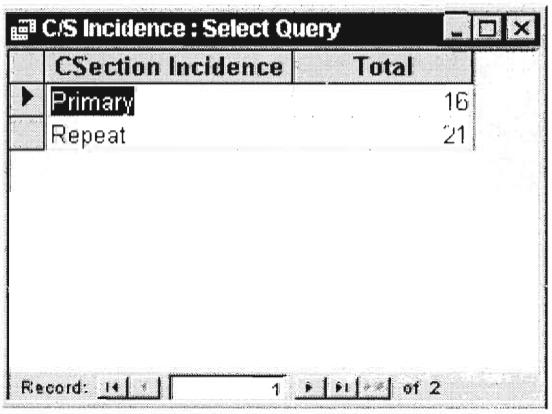


Figure 31: C/S Incidence Query

7.6 C/S (Cesarean Section) Urgency

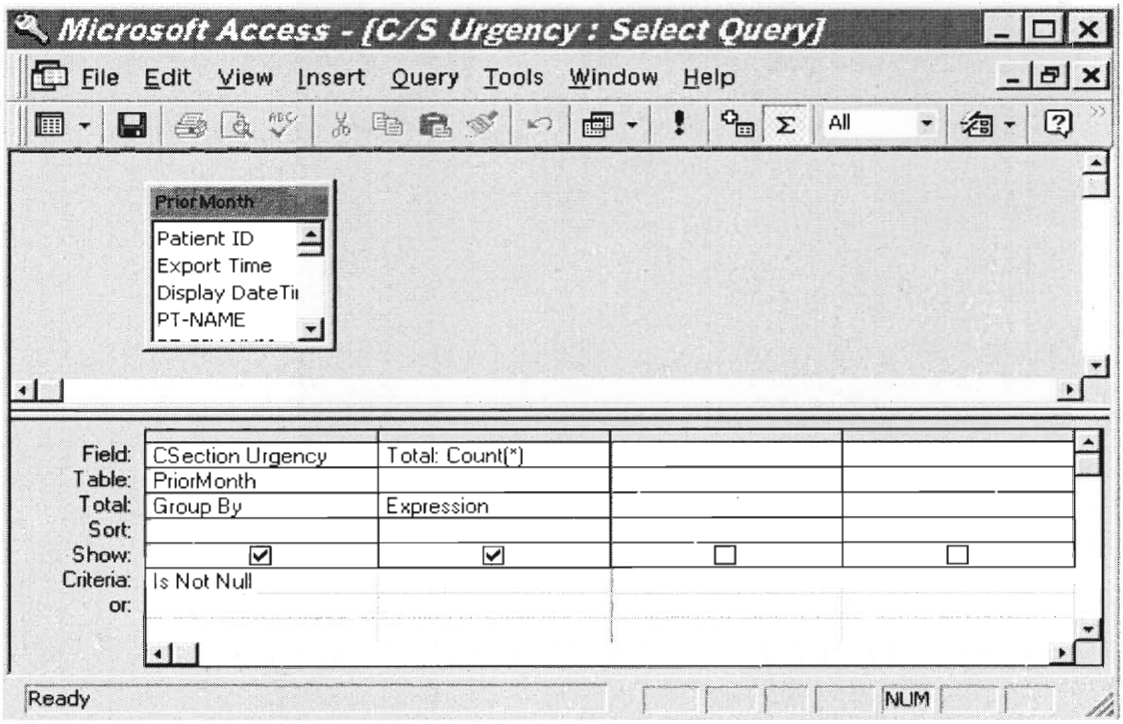


Figure 32: Design View Of Csection Urgency

SQL Code 4:

```
SELECT PriorMonth.[CSection Urgency], Count(*) AS Total
FROM PriorMonth
GROUP BY PriorMonth.[CSection Urgency]
HAVING (((PriorMonth.[CSection Urgency]) Is Not Null));
```

Description: This query uses the Group By function to group Csection Urgency into two subgroups - Scheduled and Nonscheduled cesarean sections. It then uses the Count function to tally up the instances of each subgroup. Furthermore, it checks to see if that the "Csection Urgency" field is not null.

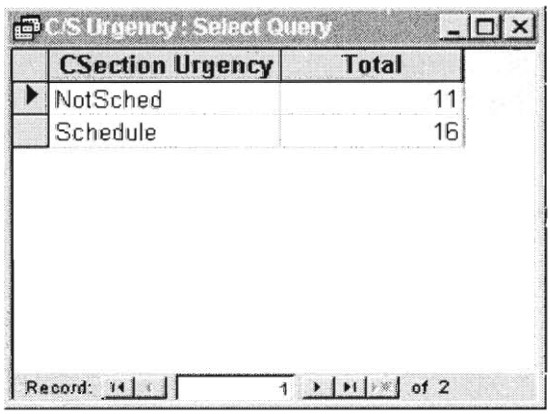


Figure 33: C/S Uargency Query

7.7 Delivery Anesthesia

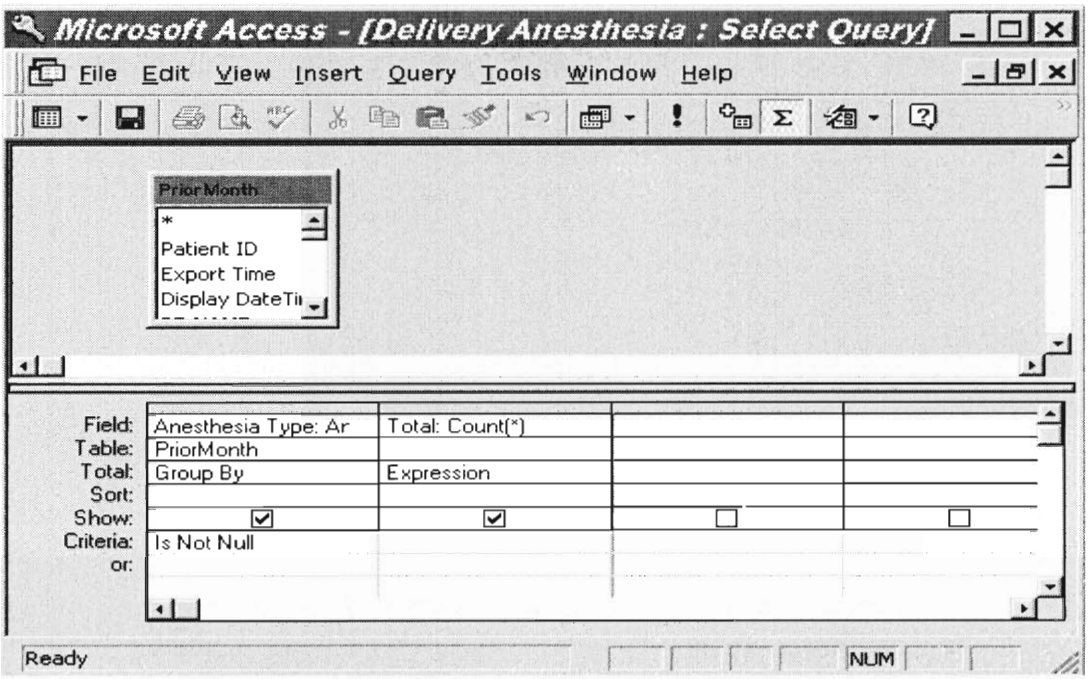


Figure 34: Design View of Delivery Anesthesia Query

SQL Code 5:

```
SELECT PriorMonth.[Anesthesia Delivery] AS [Anesthesia Type], Count(*) AS Total
FROM PriorMonth
GROUP BY PriorMonth.[Anesthesia Delivery]
HAVING (((PriorMonth.[Anesthesia Delivery]) Is Not Null));
```

Description: This query uses the Group By function to group Anesthesia Delivery into different subgroups, including "Local," "Epidural," "Spinal," "General," " Pudental," and "None." It then uses the Count function to tally up the instances of various cases in each of the individual subgroups. Furthermore, it checks to see if that the "Anesthesia Delivery" field is not null.

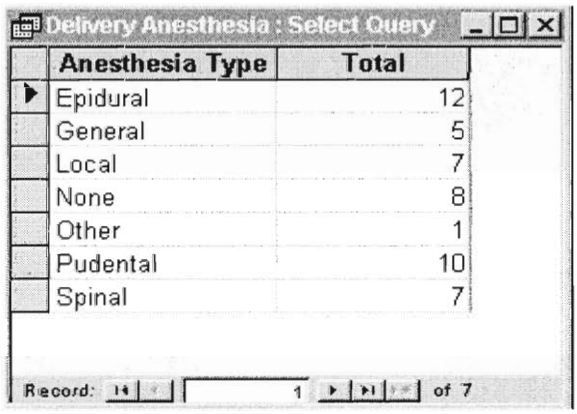


Figure 35: Delivery Anesthesia Query

7.8 Episiotomy Query

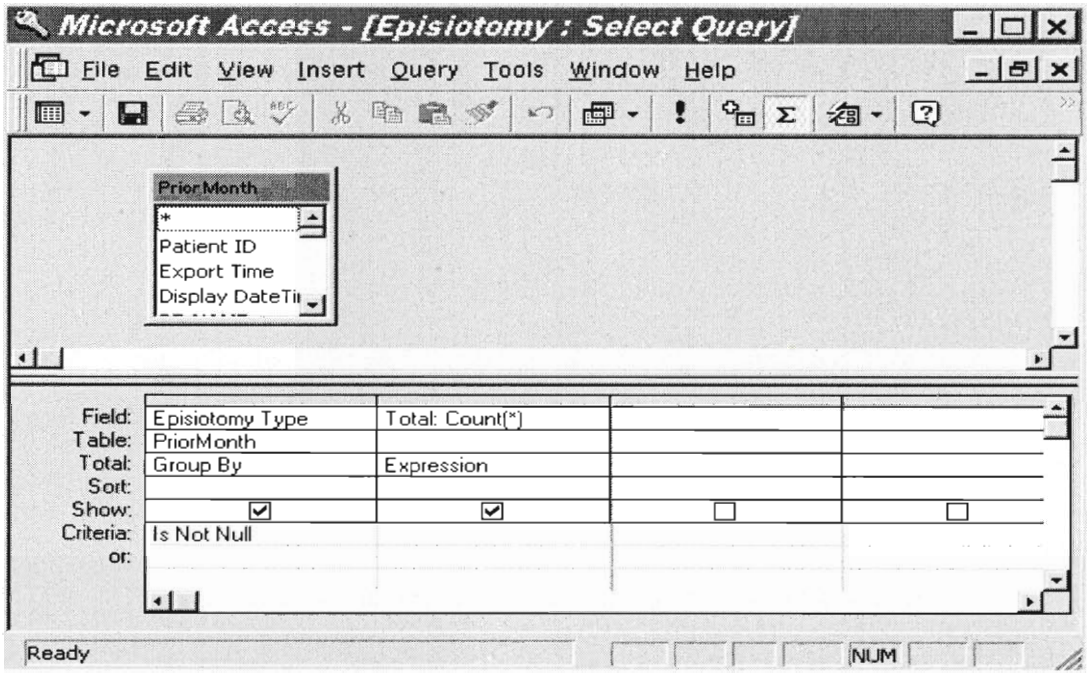


Figure 36: Design View of Epistomology Query

SQL Code 6:

```
SELECT PriorMonth.[Episiotomy Type], Count(*) AS Total
FROM PriorMonth
GROUP BY PriorMonth.[Episiotomy Type]
HAVING (((PriorMonth.[Episiotomy Type]) Is Not Null));
```

Description: This query uses the Group By function to group Episiotomy into different subgroups. Subgroups include *"Median," "Right Medio," "Left Medio," "Other," and "None."* It then uses the Count function to tally up the instances of various cases in each of the individual subgroups. Furthermore, it checks to see if that the field is not null.

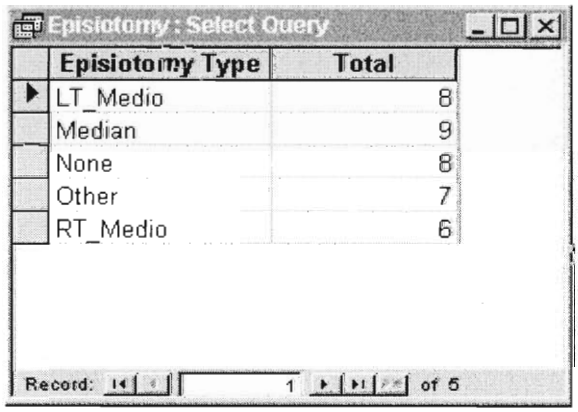


Figure 37: Episiotomy Query

7.9 Induction Mem

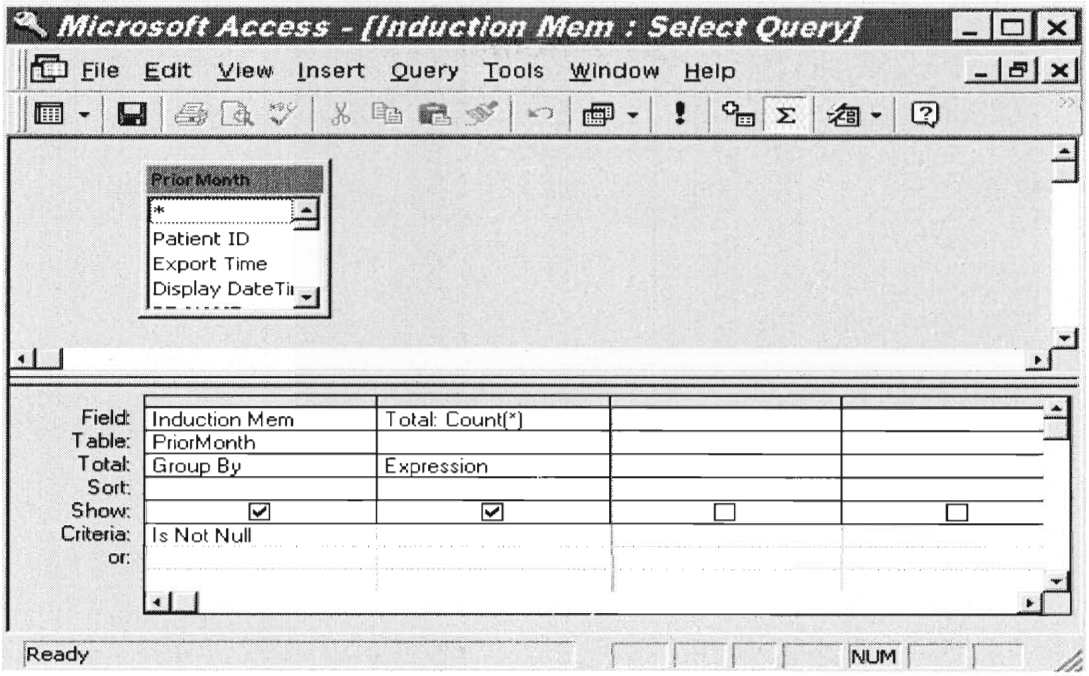


Figure 38: Design View of Induction Mem Query

SQL Code 7:

```
SELECT PriorMonth.[Induction Mem], Count(*) AS Total
FROM PriorMonth
GROUP BY PriorMonth.[Induction Mem]
HAVING (((PriorMonth.[Induction Mem]) Is Not Null));
```

Description: This query uses the Group By and Count functions to determine how many inductions were and were not done. It does so by placing the "Induction Mem" field into two subgroups - *"Yes"* and *"No."* Furthermore, it checks to see if that the Induction Mem field is not null.

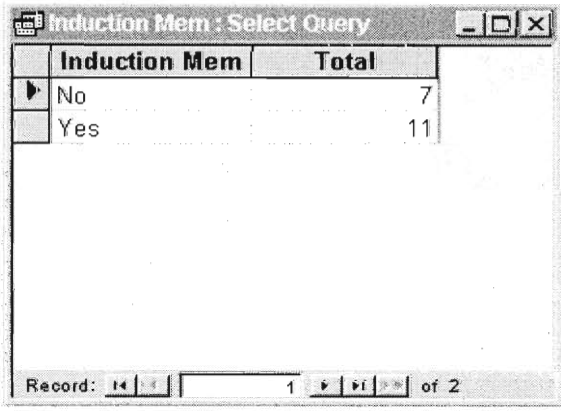


Figure 39: Induction Mem.Query

7.10 Induction Method Query

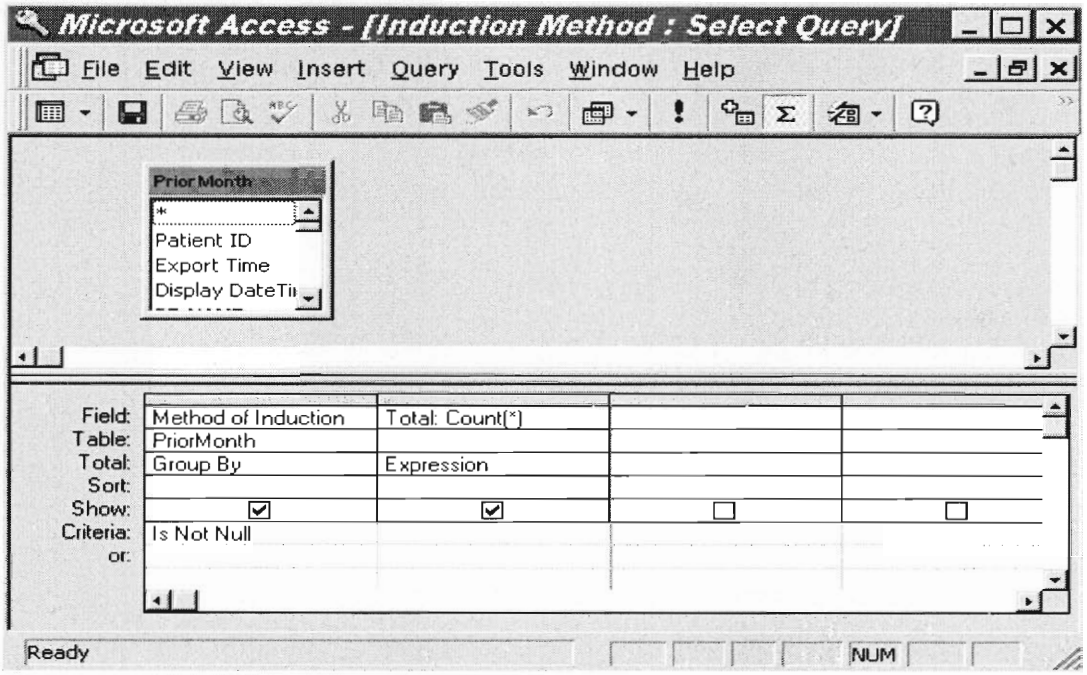


Figure 40: Design View of Induction Method

SQL Code 8:

```
SELECT PriorMonth.[Method of Induction], Count(*) AS Total
FROM PriorMonth
GROUP BY PriorMonth.[Method of Induction]
HAVING (((PriorMonth.[Method of Induction]) Is Not Null));
```

Description: This query uses the Group By function to group Method of Induction into different subgroups. Subgroups include *"Artificial Rupture of the membrane," "oxytocin," "cervical ripening," "other,"* and *"none."* It then uses the Count function to tally up the instances of various cases in each of the individual subgroups. Furthermore, it checks to see if that the "Method of Induction" field is not null.

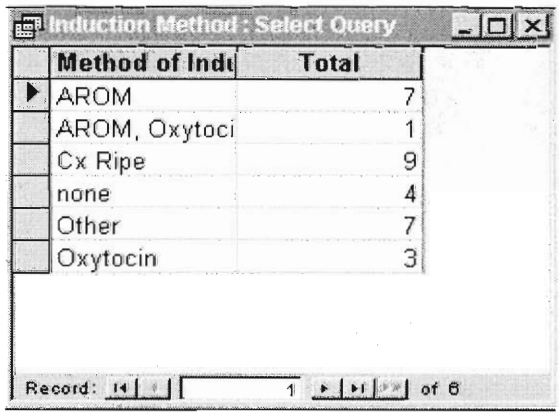


Figure 41: Induction Method Query

7.11 Induction Reason Query

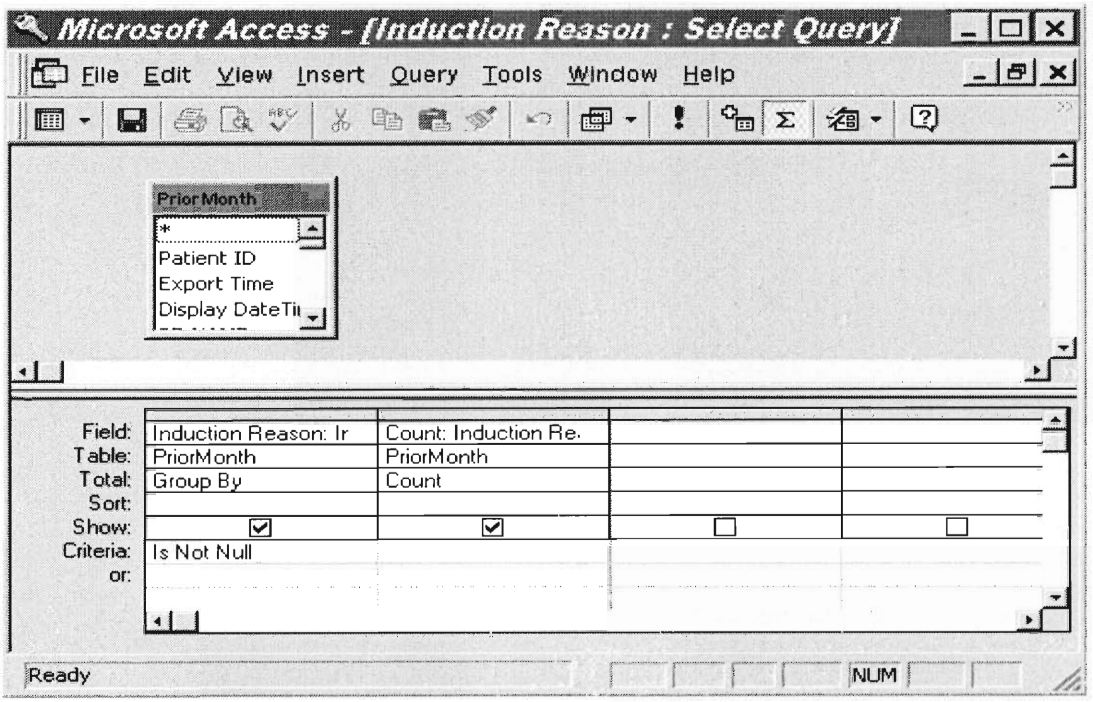


Figure 42: Design View of Induction Reason Query

SQL Code 9:

```
SELECT PriorMonth.[Induction Reason, Medical] AS [Induction Reason],
Count(PriorMonth.[Induction Reason, Medical]) AS Count
FROM PriorMonth
GROUP BY PriorMonth.[Induction Reason, Medical]
HAVING (((PriorMonth.[Induction Reason, Medical]) Is Not Null));
```

Description: This query uses the Group By function to group Induction Reasons into different subgroups. Subgroups include "PIH," "Fetal Demise," "PROM," "Other," etc. It then uses the Count function to tally up the instances of various cases in each of the individual subgroups. Furthermore, it checks to see if that the field is not null.

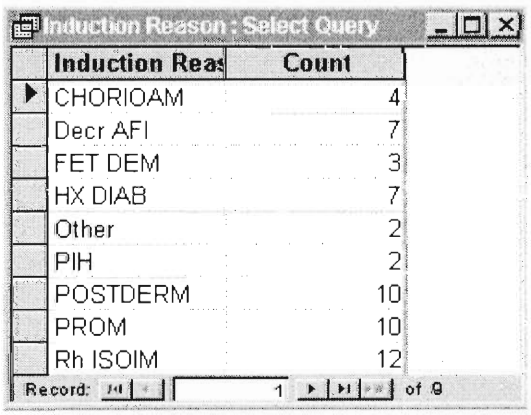


Figure 43: Induction Reason Query

7.12 Laceration Type

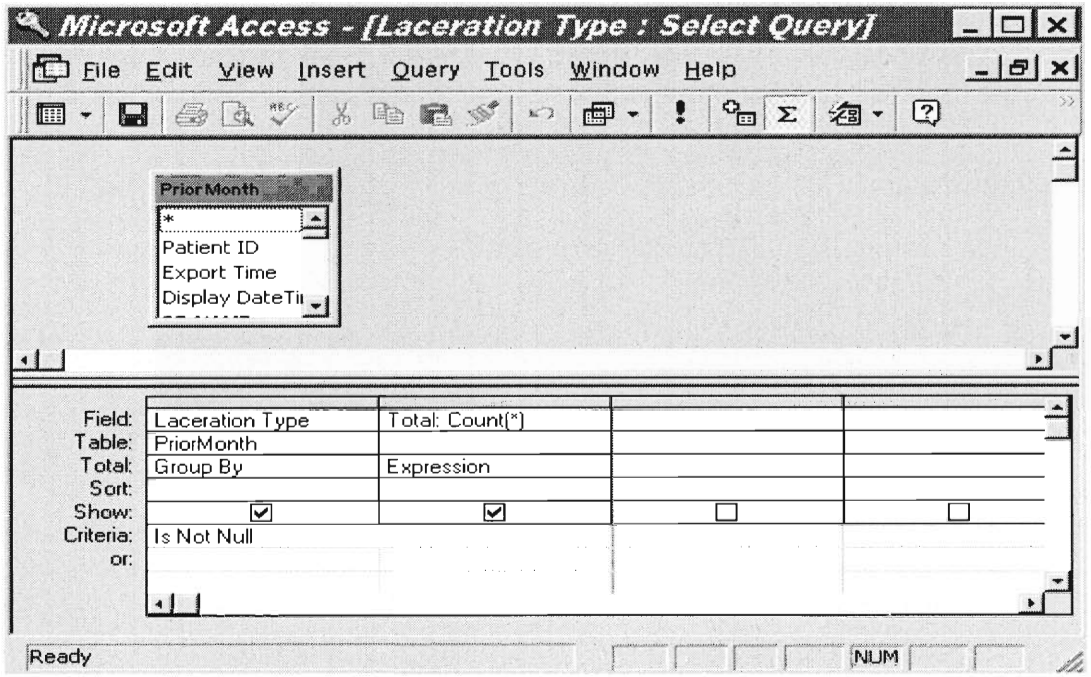


Figure 44: Design View of Laceration Type Query

SQL Code 10:

```
SELECT PriorMonth.[Laceration Type], Count(*) AS Total
FROM PriorMonth
GROUP BY PriorMonth.[Laceration Type]
HAVING (((PriorMonth.[Laceration Type]) Is Not Null));
```

Description: This query uses the Group By function to group Laceration Types into different subgroups, including *"Perineal," "Vaginal," "Cervical," "Uterine," "Other,"* and *"None."* It then uses the Count function to tally up the instances of various cases in each of the individual subgroups. Furthermore, it checks to see if that the field is not null.

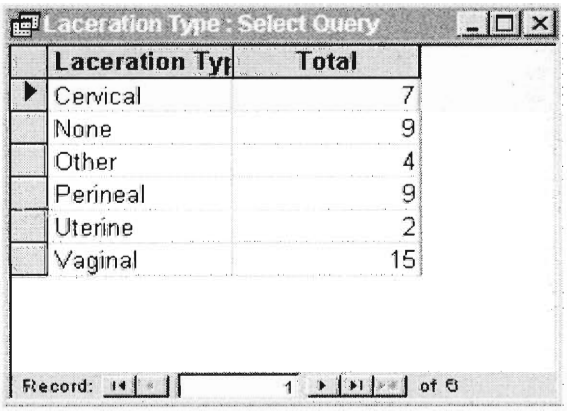


Figure 45: Laceration Type Query

7.13 Multips

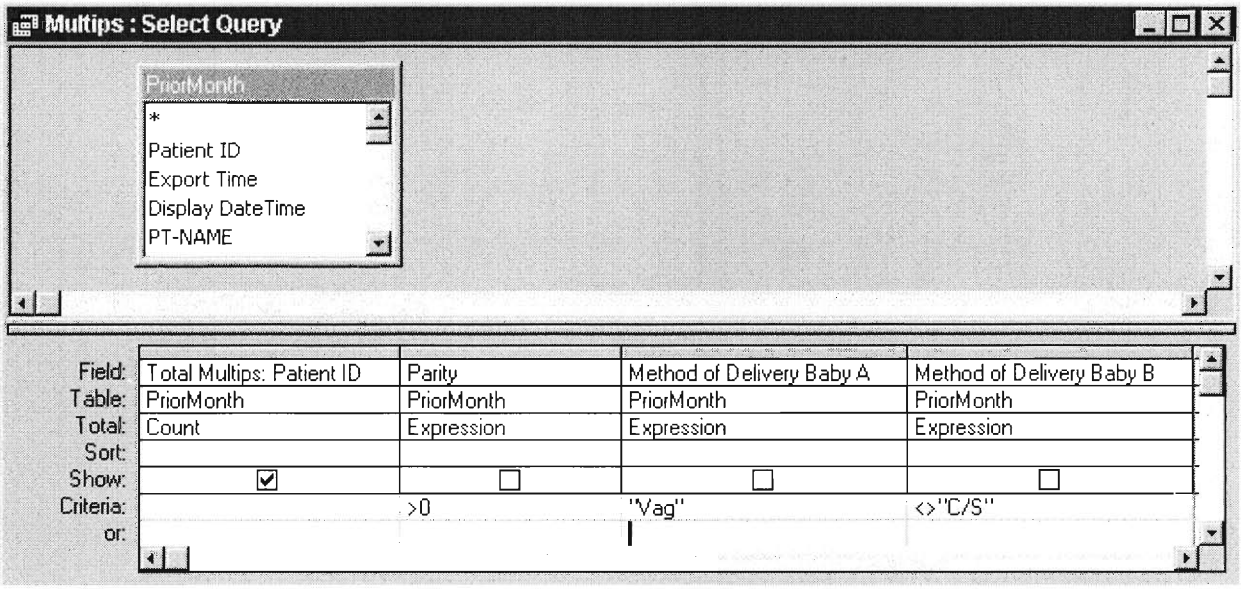


Figure 45: Design View of Multips Query

SQL Code 12:

```
SELECT Count(PriorMonth.[Patient ID]) AS [Total Multips]
FROM PriorMonth
HAVING (((PriorMonth.Parity)>0) AND ((PriorMonth.[Method of Delivery Baby A])="Vag") AND
((PriorMonth.[Method of Delivery Baby B])<>"C/S"));
```

Description: This query tallies up multips by checking the parity values for each patient. In order to be considered a multip, a patient has to have a parity value greater than zero. For each patient that meets this condition, the "multips" value is incremented and a total is calculated. The final multips figure is calculated by subtracting the total successful VBACS from the final figure generated by this query. See Query 7.25: Multips 2 for further details.

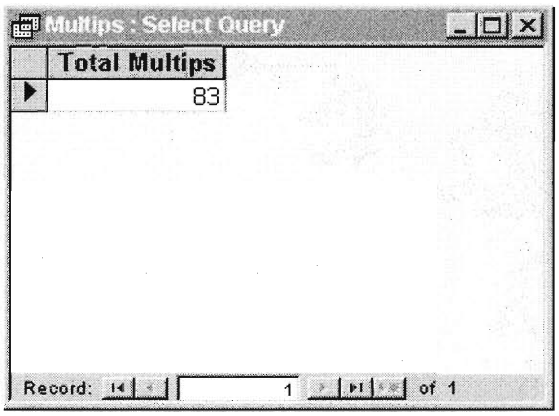


Figure 46: Multips Query

7.14 Nurse Midwife Breakdown

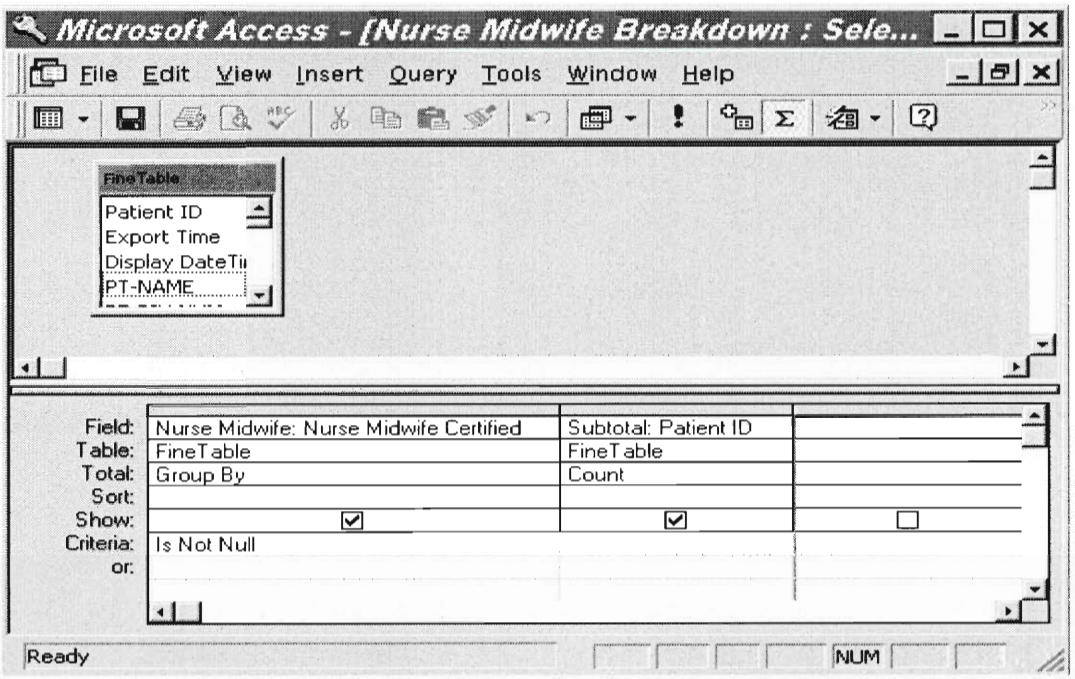


Figure 48: Design View of Nurse Midwife Breakdown Query

SQL Code 13:

```
SELECT DISTINCTROW FineTable.[Nurse Midwife Certified] AS [Nurse Midwife],
Count(FineTable.[Patient ID]) AS Subtotal
FROM FineTable
GROUP BY FineTable.[Nurse Midwife Certified]
HAVING (((FineTable.[Nurse Midwife Certified]) Is Not Null));
```

Description: The "Nurse Midwife Certified" field contains the name of the midwife that was used in the delivery, if any. If no midwife was used, this field is left blank. This query uses the Group By function to group the nurse midwives accordingly. It then uses the Count function to tally up the number of times each midwife helps in a delivery. Furthermore, it checks to see if that the "Nurse Midwife Certified" field is not null, in which case none was used.

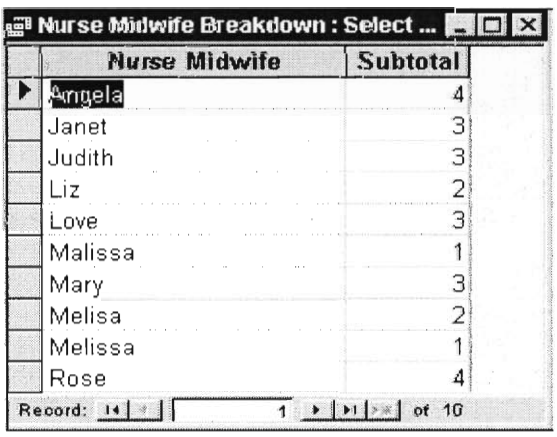


Figure 49: Nurse Midwife Query

7.15 Percent Cesarean Section

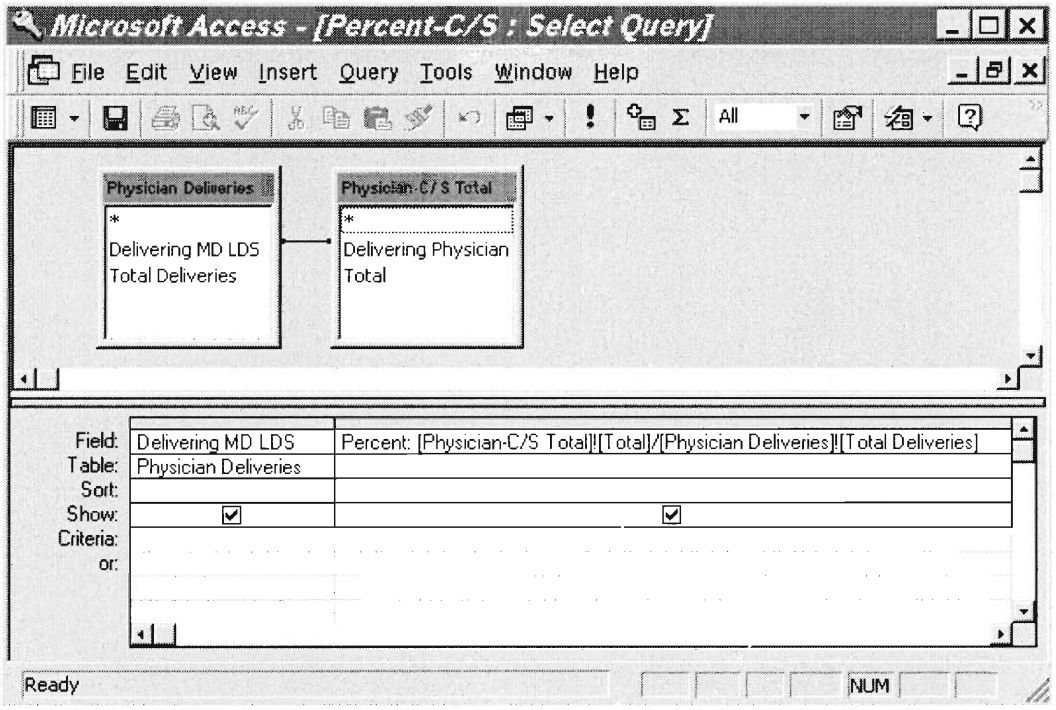


Figure 50: Design View of Percent C/S Query

SQL Code 13:

```
SELECT DISTINCTROW [Physician Deliveries].[Delivering MD LDS],
[Physician-Vaginal]![Total C/S]/[Physician Deliveries]![Total Deliveries] AS [Percent]
FROM [Physician-Vaginal] INNER JOIN [Physician Deliveries] ON [Physician-Vaginal].[Delivering MD] =
[Physician Deliveries].[Delivering MD LDS];
```

Description: This query is used to calculate the percentage of c/s deliveries performed by each doctor. The first field contains the name of the doctor. The Expression Builder was used to create the second field, which divides the number of c/s deliveries by the total number of deliveries that the doctor has performed.

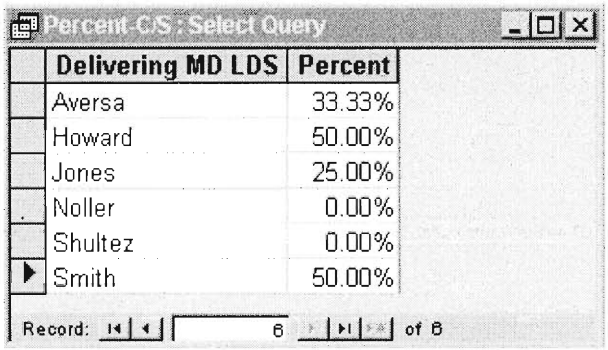


Figure 51: Percent C/S

7.16 Percent Vaginal Deliveries

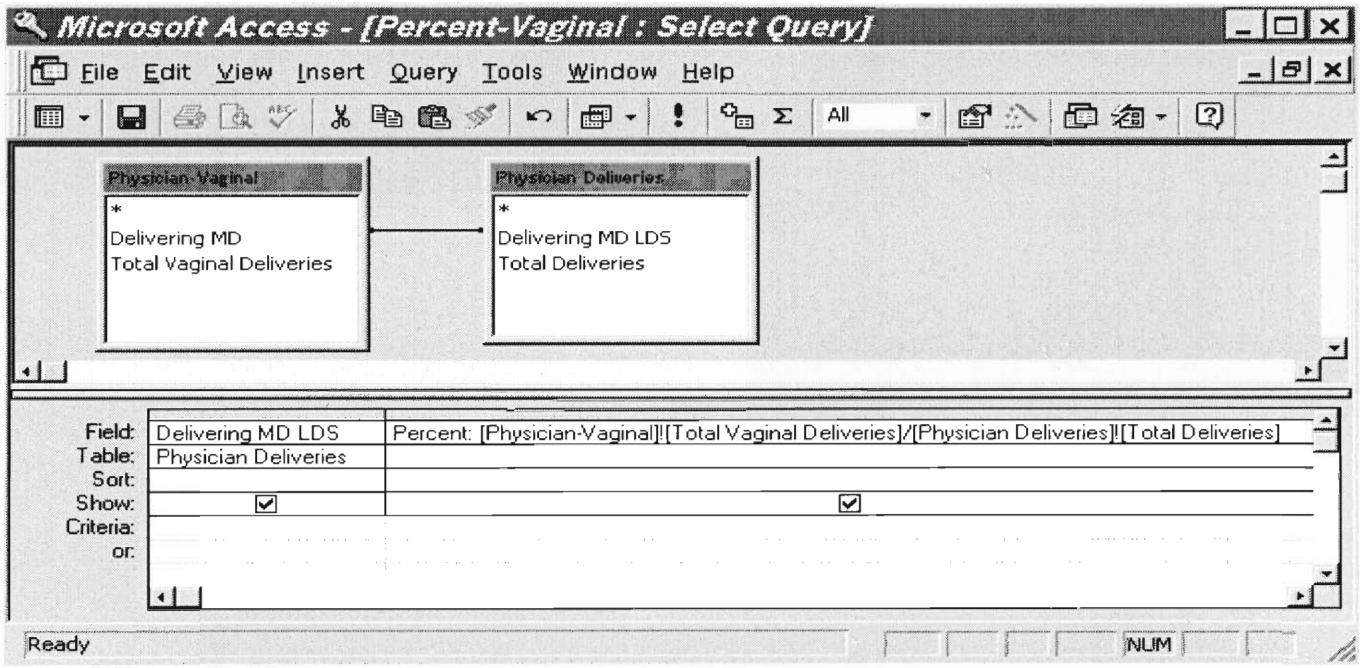


Figure 52: Design View of Percent Vaginal Deliveries Query

SQL Code 13:

```
SELECT DISTINCTROW [Physician Deliveries].[Delivering MD LDS],
[Physician-Vaginal]![Total Vaginal Deliveries]/[Physician Deliveries]![Total Deliveries] AS [Percent]
FROM [Physician-Vaginal] INNER JOIN [Physician Deliveries] ON [Physician-Vaginal].[Delivering MD]
= [Physician Deliveries].[Delivering MD LDS];
```

Description: This query is used to calculate the percentage of vaginal deliveries performed by each doctor. The first field contains the name of the doctor. The Expression Builder was used to create the second field, which divides the number of vaginal deliveries by the total number of deliveries that the doctor has performed. Note that the field "Delivering MD LDS" from the "Physician Deliveries" query is linked to the "Delivering MD" field from the "Physician-Vaginal" query. This ensures that each doctor's total vaginal deliveries is divided by the same doctor's total deliveries.

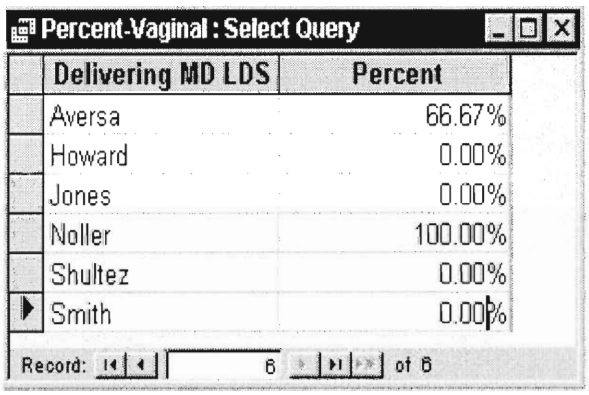


Figure 53: Percent Vaginal Query

7.16 Physician/Delivery Breakdown

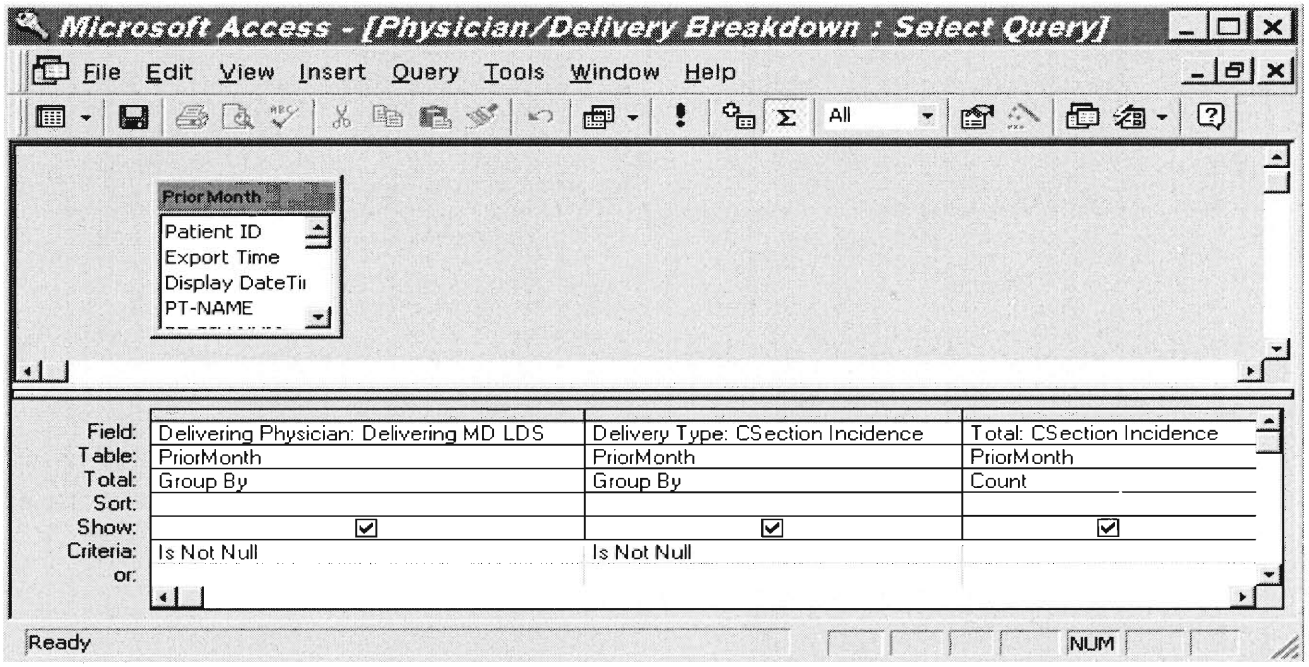


Figure 55: Design View of Physician Delivery Breakdown

SQL Code 13:

```
SELECT DISTINCTROW PriorMonth.[Delivering MD LDS] AS [Delivering Physician],
PriorMonth.[CSection Incidence] AS [Delivery Type], Count(PriorMonth.[CSection Incidence]) AS
Total
FROM PriorMonth
GROUP BY PriorMonth.[Delivering MD LDS], PriorMonth.[CSection Incidence]
HAVING (((PriorMonth.[Delivering MD LDS]) Is Not Null) AND ((PriorMonth.[CSection Incidence]) Is
Not Null));
```

Description: This query tabulates all the different types of cesarean section deliveries that doctors can perform. Choices include *"None," Arom," "Oxytocin," "Cx_Ripe,"* and *"Other."* The first field displays the doctor's name, the second field displays the type of cesarean section and the third field displays the total for that particular cesarean section delivery for that particular doctor.

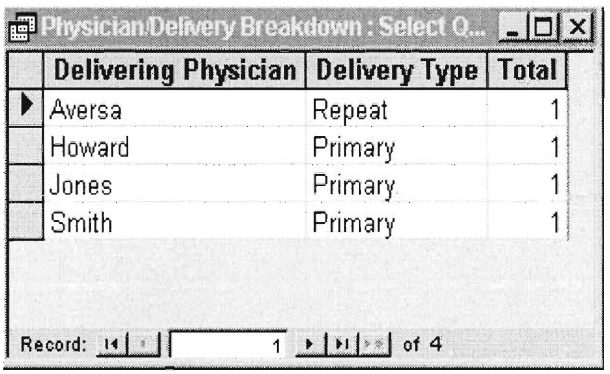


Figure 54: Physician Delivery Breakdown Query

7.17 Physician C/S (Cesarean Section) Total

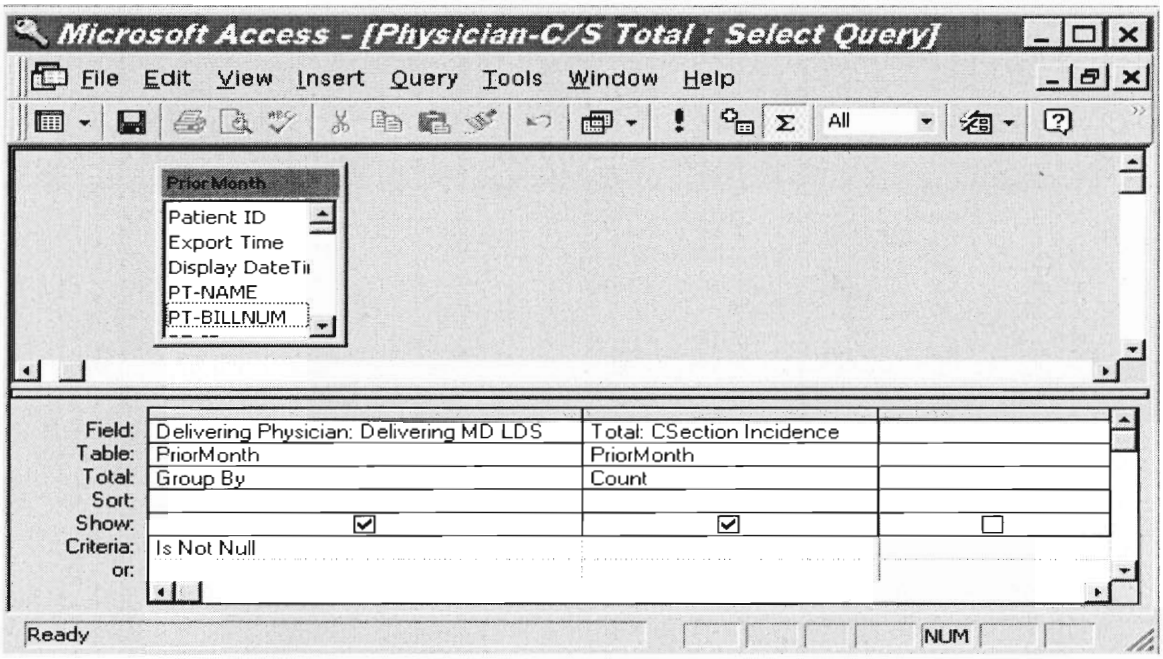


Figure 57: Design View of Physician C/S Total

SQL Code 13:

```
SELECT DISTINCTROW PriorMonth.[Delivering MD LDS] AS [Delivering Physician],
Count(PriorMonth.[CSection Incidence]) AS Total
FROM PriorMonth
GROUP BY PriorMonth.[Delivering MD LDS]
HAVING (((PriorMonth.[Delivering MD LDS]) Is Not Null));
```

Description: This query calculates the total number of cesarean section deliveries that a doctor has performed. It performs a count on the "Csection Incidence" field, which will contain a value in the case that a cesarean section has been performed. The Group By function used on the first field will group the doctors into subgroups based on their names. This will result in a total number of cesarean deliveries for each doctor.

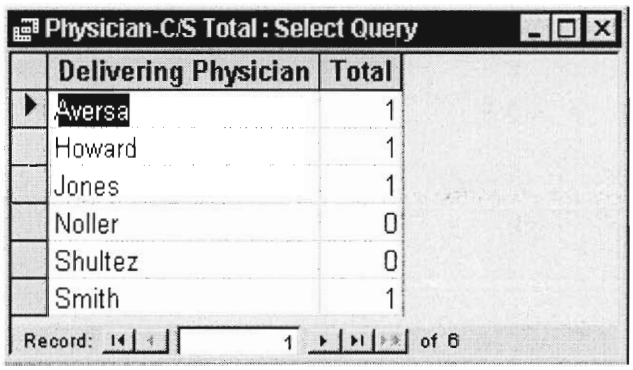


Figure 56: Physician C/S Query

7.18 Physician Reason For C/S (Cesarean Section)

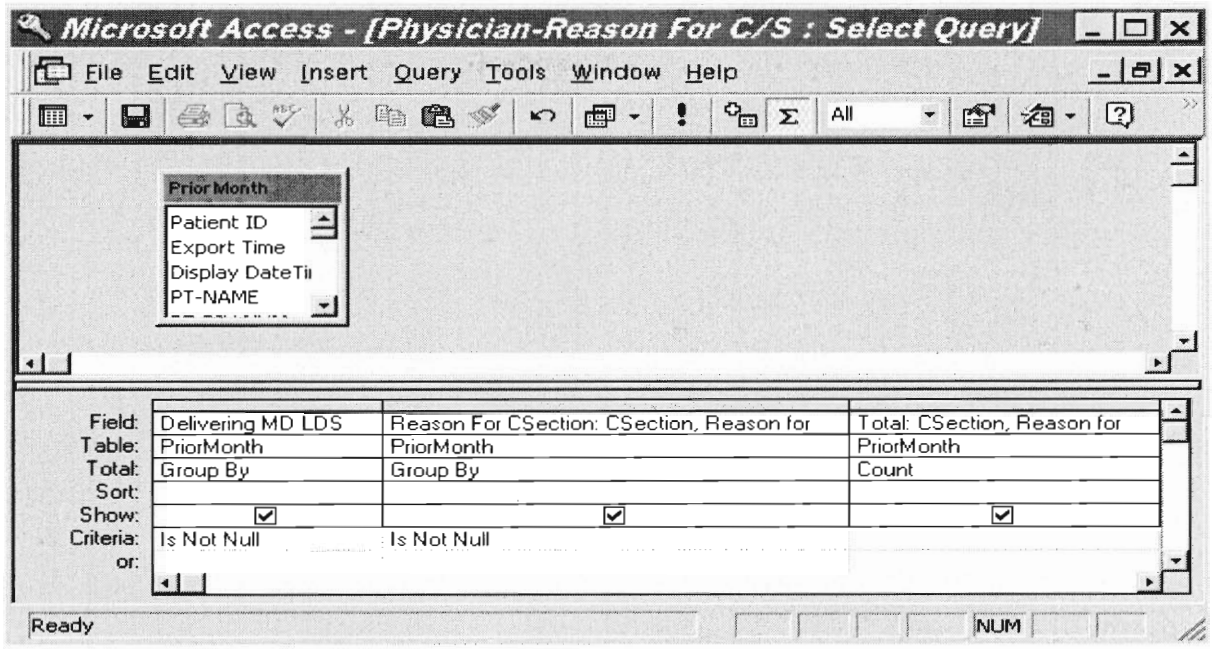


Figure 59: Design View of Physician Reason For C/S

SQL Code 13:

```
SELECT DISTINCTROW PriorMonth.[Delivering MD LDS], PriorMonth.[CSection, Reason for] AS
[Reason For CSection], Count(PriorMonth.[CSection, Reason for]) AS Total
FROM PriorMonth
GROUP BY PriorMonth.[Delivering MD LDS], PriorMonth.[CSection, Reason for]
HAVING (((PriorMonth.[Delivering MD LDS]) Is Not Null) AND ((PriorMonth.[CSection, Reason for])
Is Not Null));
```

Description: This query displays a count of each of the different types of cesarean section deliveries each doctor has performed.

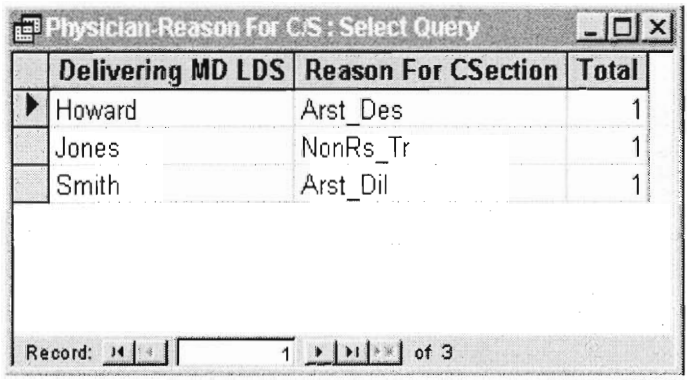


Figure 58: Physician, Reason For C/S Query

7.19 Physician Deliveries

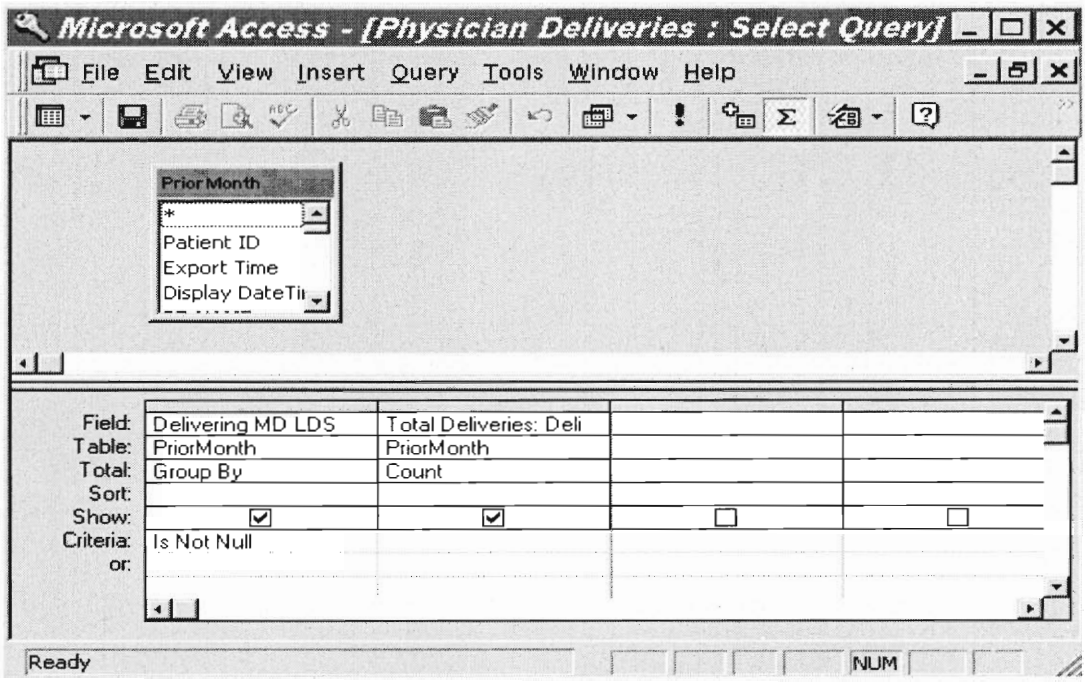


Figure 60: Design View of Physician Deliveries Query

SQL Code 13:

```
SELECT PriorMonth.[Delivering MD LDS], Count(PriorMonth.[Delivering MD LDS]) AS [Total
Deliveries]
FROM PriorMonth
GROUP BY PriorMonth.[Delivering MD LDS]
HAVING (((PriorMonth.[Delivering MD LDS]) Is Not Null));
```

Description:

This query uses the Group By function to split up the physicians. A count is then done of how many deliveries each physician has done via the Count function. Furthermore, it checks to see if that the field is not null.

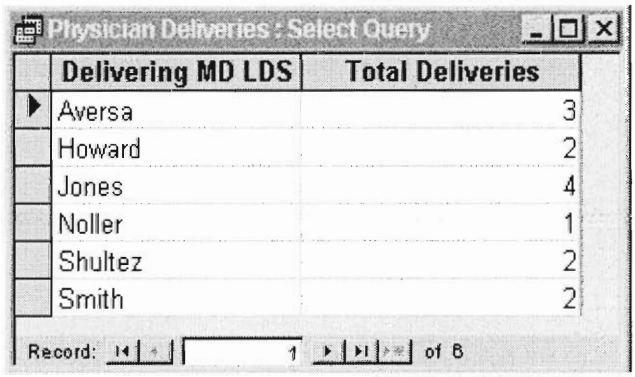


Figure 61: Physician Deliveries Query

7.20 Physician-Vaginal

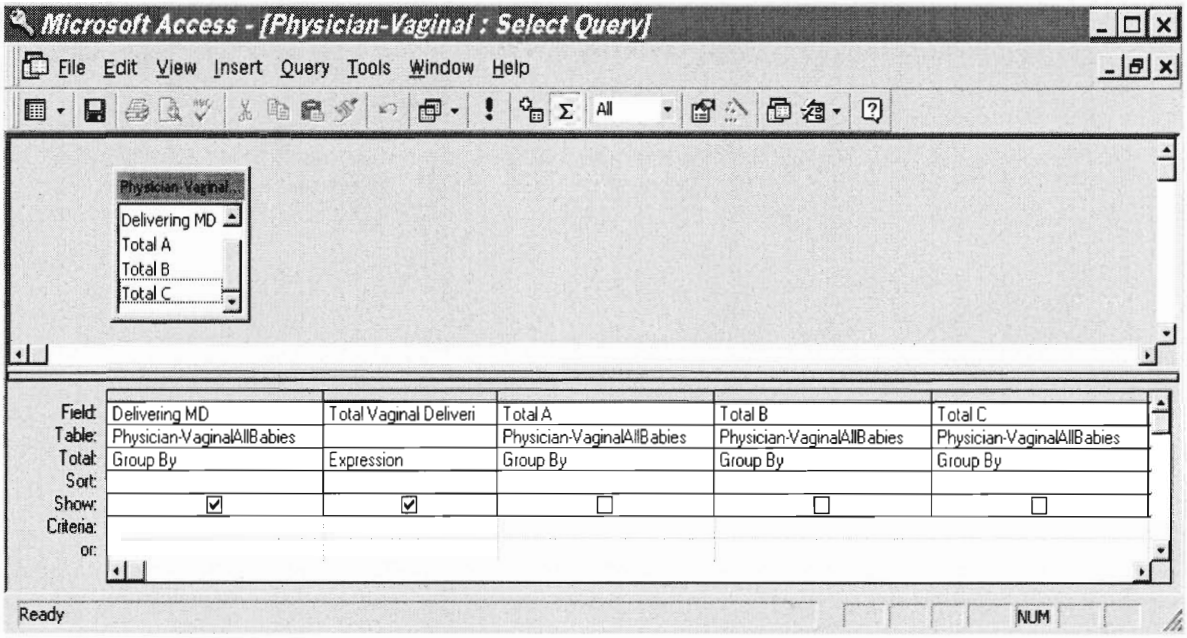


Figure 63: Design View of Physician-Vaginal Query

SQL Code 14:

```
SELECT [Physician-VaginalAllBabies].[Delivering MD], Sum([Physician-VaginalAllBabies]![Total
A]+[Physician-VaginalAllBabies]![Total B]+[Physician-VaginalAllBabies]![Total C]) AS [Total
Vaginal Deliveries]
FROM [Physician-VaginalAllBabies]
GROUP BY [Physician-VaginalAllBabies].[Delivering MD], [Physician-VaginalAllBabies].[Total A],
[Physician-VaginalAllBabies].[Total B], [Physician-VaginalAllBabies].[Total C];
```

Description: This query displays the total number of vaginal deliveries performed by each doctor.

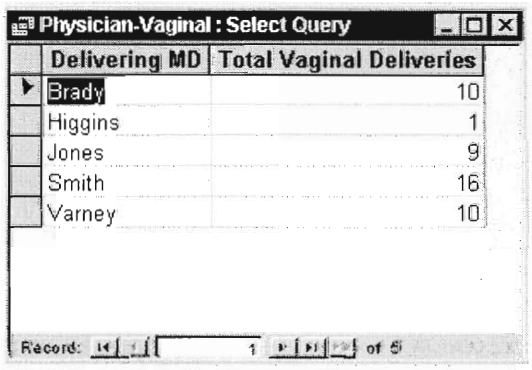


Figure 62: Percent Vaginal Delivery

7.21 Primips

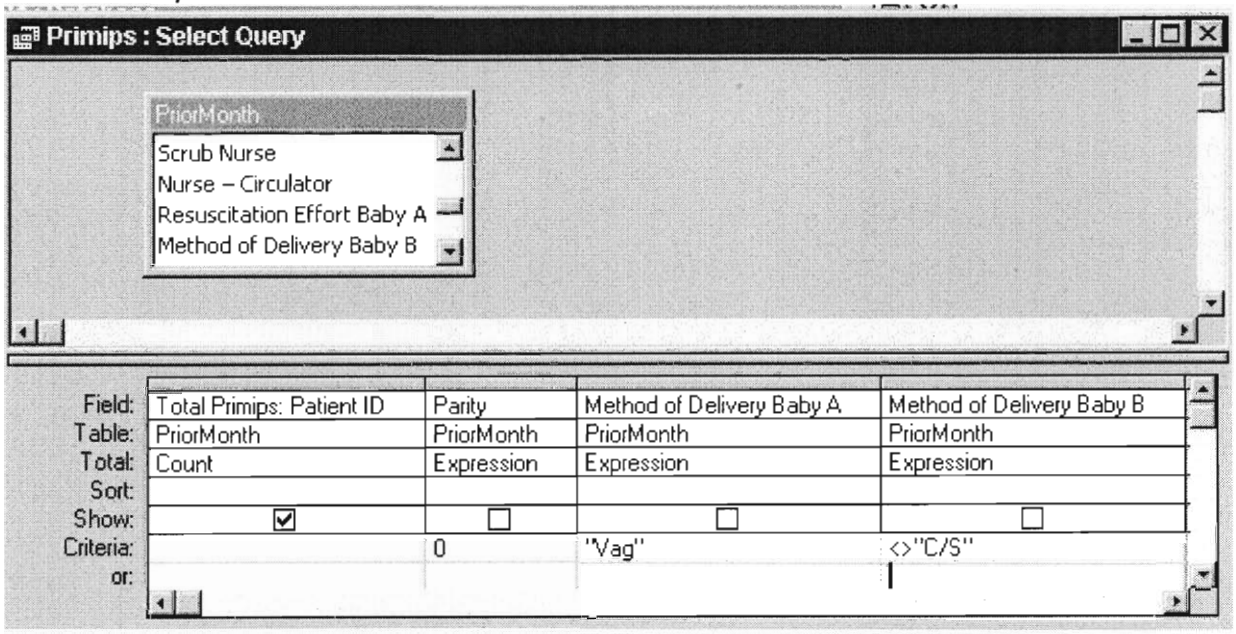


Figure 63: Design View of Total Primips Query

SQL Code 14:

```
SELECT Count(PriorMonth.[Patient ID]) AS [Total Primips]
FROM PriorMonth
HAVING (((PriorMonth.Parity)=0) AND ((PriorMonth.[Method of Delivery Baby A])="Vag") AND
((PriorMonth.[Method of Delivery Baby B])<>"C/S"));
```

Description: This query tallies up primips by checking the parity values for each patient. A patient is considered to be a "primip" when her parity value is zero and the birth is of type "Vag" or vaginal. For each patient that meets this condition, the "primips" value is incremented and a total is calculated.

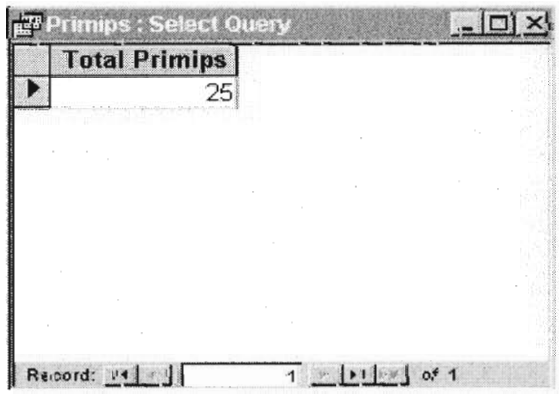


Figure 64: Primps Query

7.22 Quintuplets Query

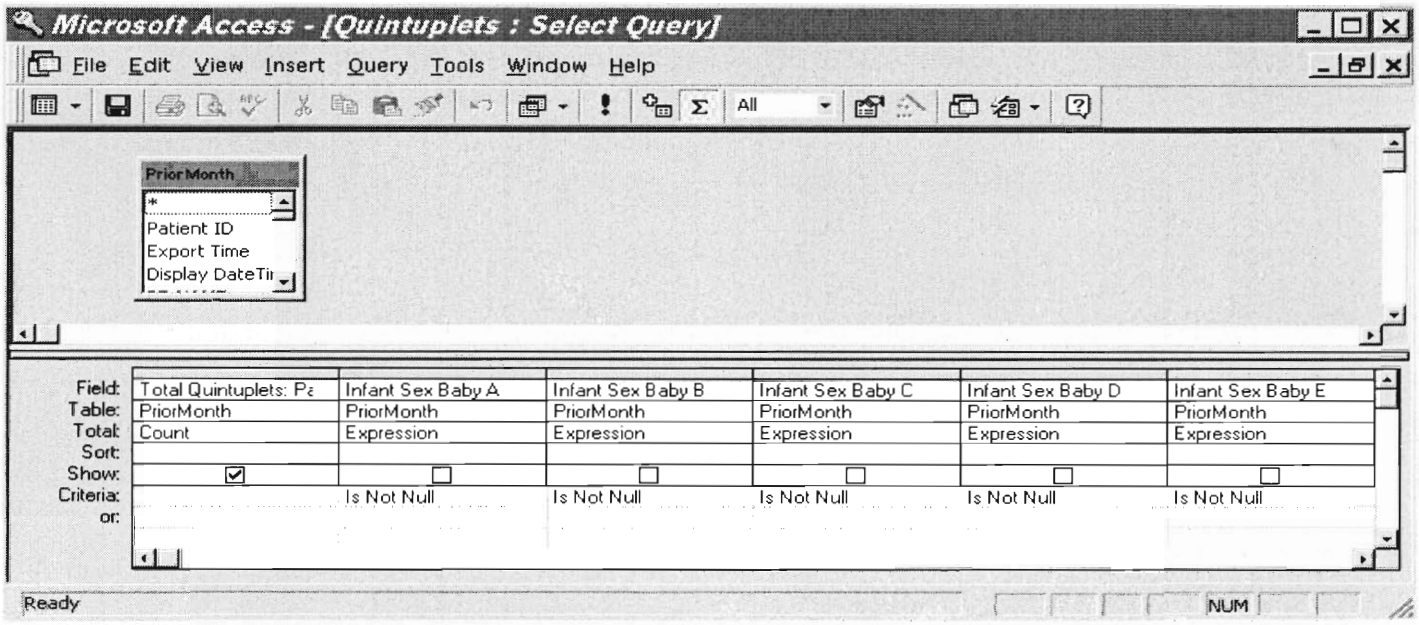


Figure 66: Design View of Total Quintuplets Query

SQL Code 15:

```
SELECT Count(PriorMonth.[Patient ID]) AS [Total Quintuplets]
FROM PriorMonth
HAVING (((PriorMonth.[Infant Sex Baby A]) Is Not Null) AND ((PriorMonth.[Infant Sex Baby B]) Is Not Null) AND ((PriorMonth.[Infant Sex Baby C]) Is Not Null) AND ((PriorMonth.[Infant Sex Baby D]) Is Not Null) AND ((PriorMonth.[Infant Sex Baby E]) Is Not Null));
```

Description: This query tallies up the number of quintuplets by checking whether the "Infant Sex" field for all five babies contains some value (i.e., the field is not null). The same statistics can be done for other cases - single births, twins, triplets, quads by changing the appropriate fields from "Is Not Null" to "Is Null." For Instance, twins would contain "Is Not Null" for babies A and B and "Is Null" for babies C-E.

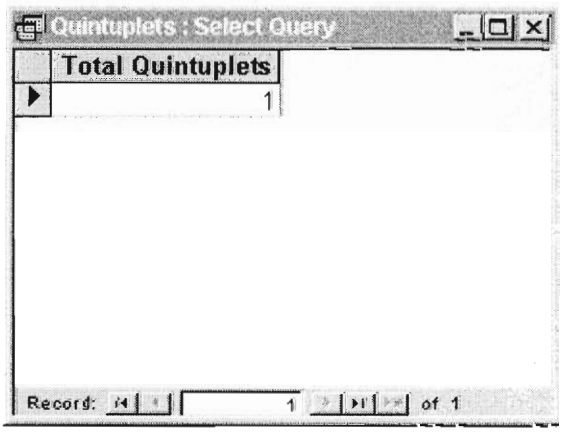


Figure 67: Quintuplets Query

7.23 Total Mothers Delivered

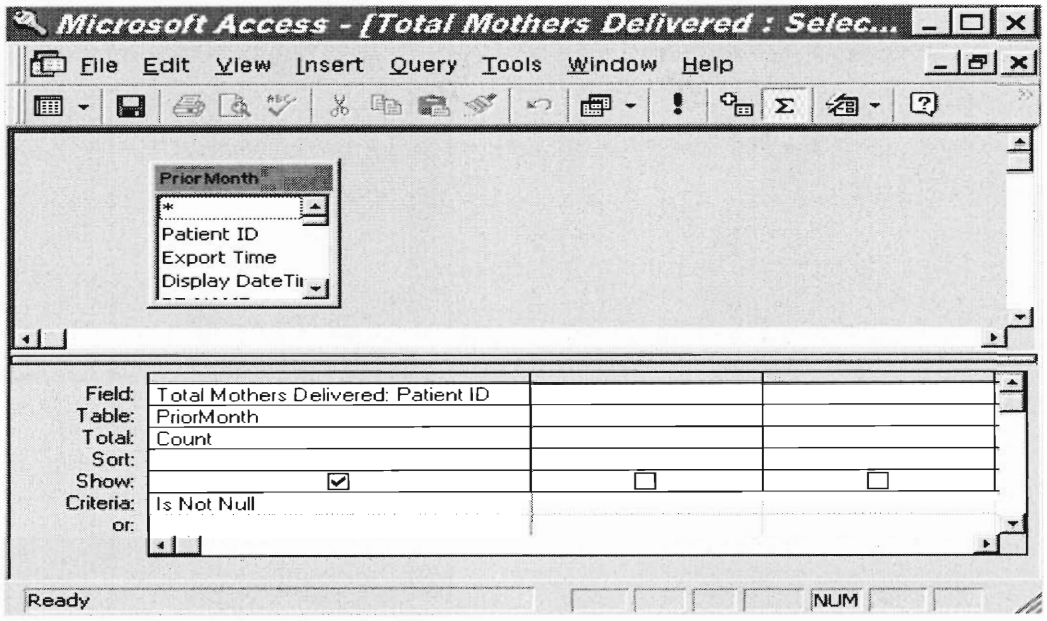


Figure 69: Total Mothers Delivered Selection

SQL Code 16:

```
SELECT Count(PriorMonth.[Patient ID]) AS [Total Mothers Delivered]
FROM PriorMonth
HAVING (((Count(PriorMonth.[Patient ID])) Is Not Null));
```

Description: This query uses the Count function to calculate how many mothers delivered in the previous month. It does this by counting up how many patient ids exist. Furthermore, it checks that the patient id is not null.

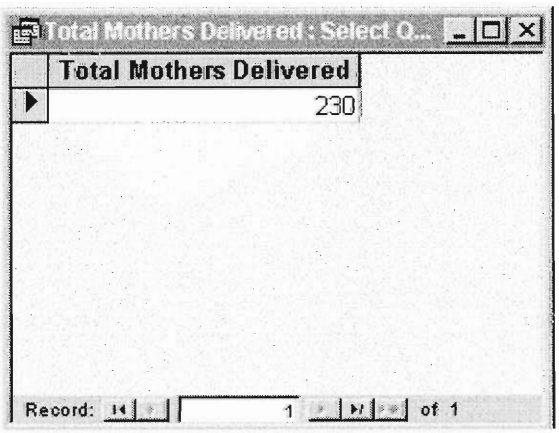


Figure 68: Total Mothers Delivered Query

7.24 Total Nurse Midwives

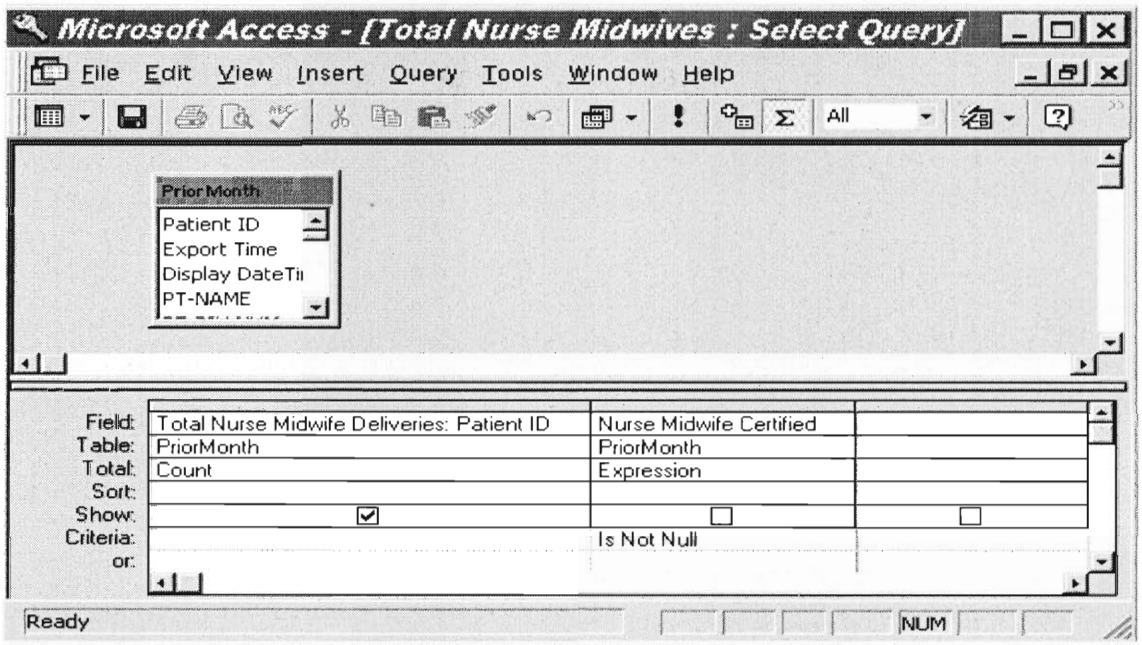


Figure 71: Total Nurse Midwives Select Query

SQL Code 16:

```
SELECT DISTINCTROW Count(PriorMonth.[Patient ID]) AS [Total Nurse Midwife Deliveries]
FROM PriorMonth
HAVING (((PriorMonth.[Nurse Midwife Certified]) Is Not Null));
```

Description: This query uses the count function to calculate how many certified nurse midwives were used in deliveries in the previous month. The first field lists how many total nurse midwives were used. The second field (which is not displayed in the final result) simply makes sure that the query counts only records whose "Nurse Midwife Certified" field contains a value.

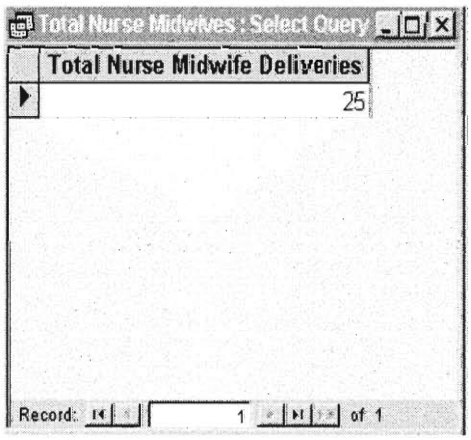


Figure 70: Total Nurse Midwife result

7.25 Multips2

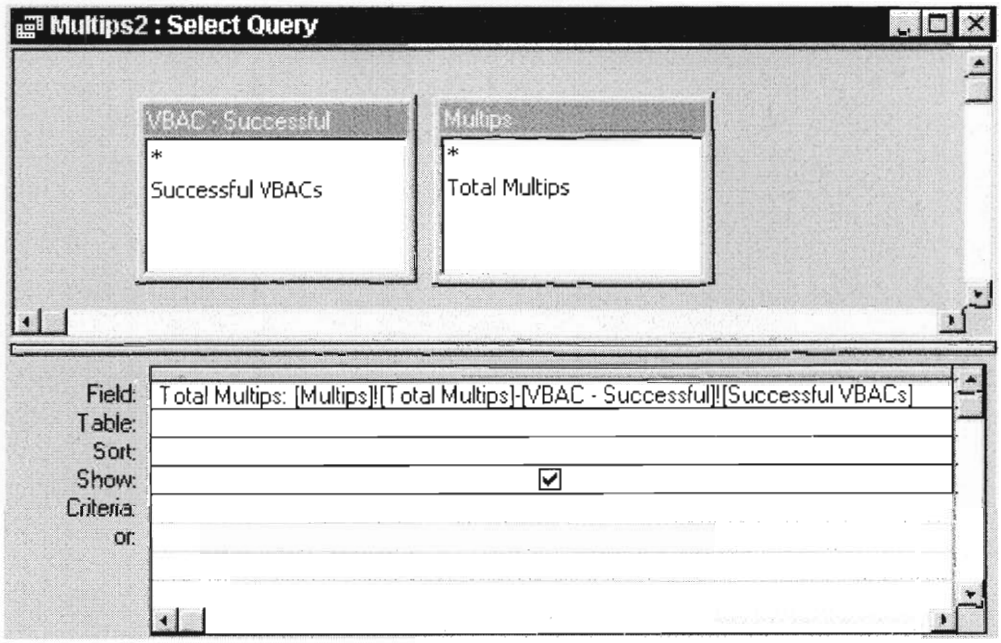


Figure 71: Design View Multips 2

SQL Code 17:

```
SELECT DISTINCTROW [Multips]![Total Multips]-[VBAC - Successful]![Successful VBACs] AS
[Total Multips]
FROM [VBAC - Successful], Multips;
```

Description: This query subtracts the total number of successful VBACS from the total number of multips calculated from the original Multips query (see Section 7.13: Multips). This will result in the final total number of multips.

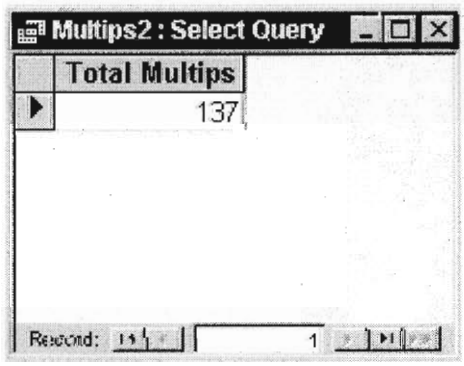


Figure 72: Multips2

7.26 Successful VBACs Query

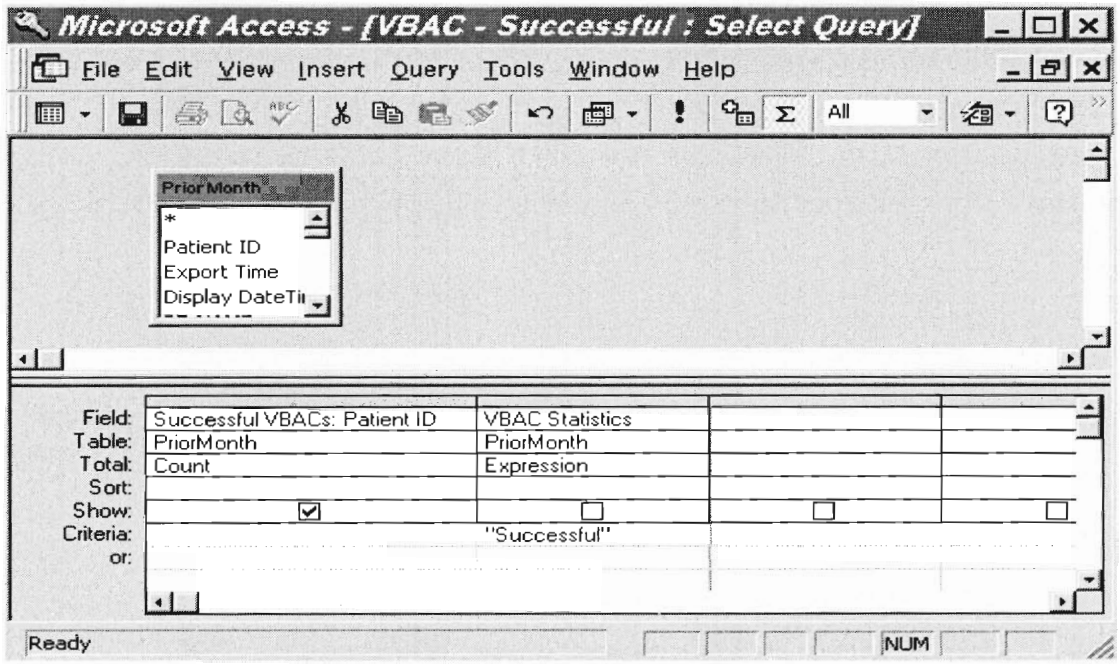


Figure 74: VBAC

SQL Code 17:

```
SELECT Count(PriorMonth.[Patient ID]) AS [Successful VBACs]
FROM PriorMonth
HAVING (((PriorMonth.[VBAC Statistics])="Successful"));
```

Description: This query uses the Count function to tally up the number of successful VBACs by checking the "VBAC Statistics" field for the term, "Successful." The counterpart of this query (i.e., Unsuccessful VBACs)checks for the term "Unsuccessful" to calculate the total number of unsuccessful VBACs in the previous month.

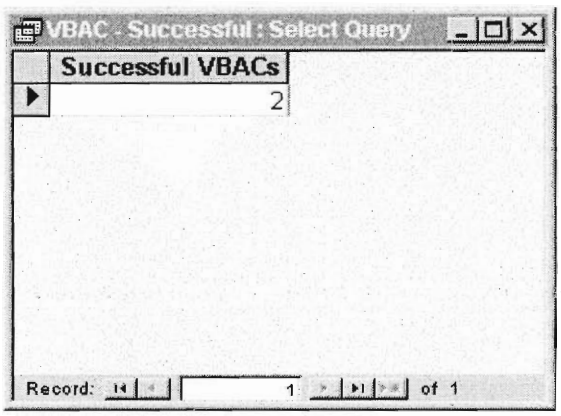


Figure 75: VBAC query

Prenatal Database Technical Report

8. Technical Report

8.1 Introduction

This section of the paper explains the ins and outs of the Access end of the project. After the introduction we will explain how to run the database, view and print the final report. Later, we will explain the Modules that are used to get the data from the QMI server, and how it is processed. That part is more technical and assumes that the user has had background in SQL and/or Visual Basic for Access. When editing this part we recommend saving the module in a different file so that accidental mistakes do not hinder the performance of this database. Below is the screen shot of the tables that exist when the database is first opened up. Notice that only two tables show up, but in the operation there actually exists three more. These are deleted when the user clicks on the CleanUpArchive Server button.

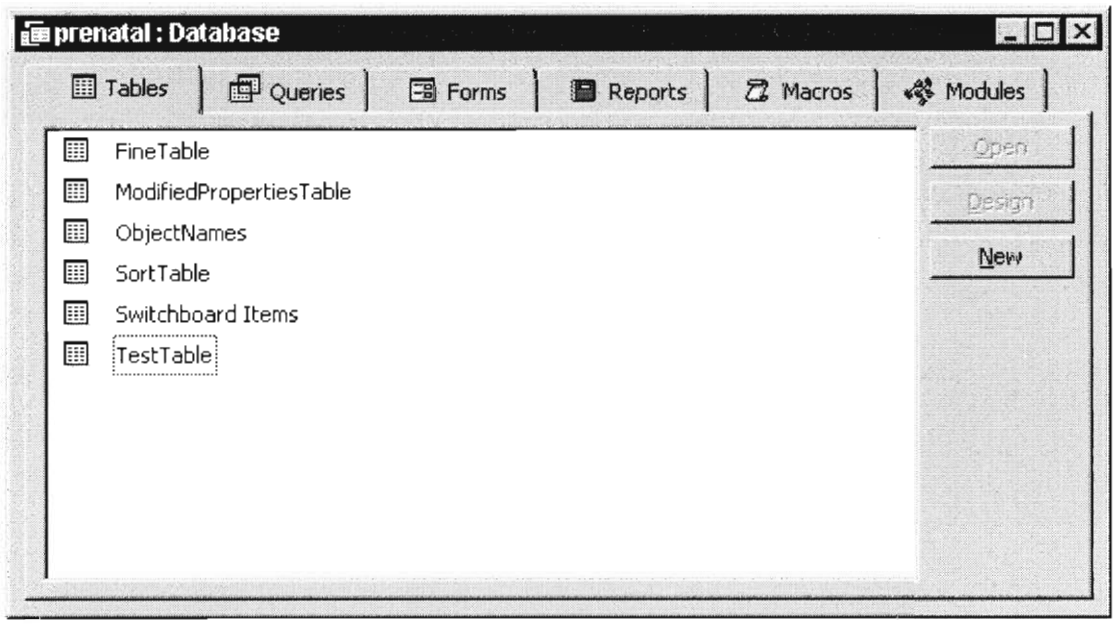


Figure 76: Screen shot of tables while the data is being analyzed

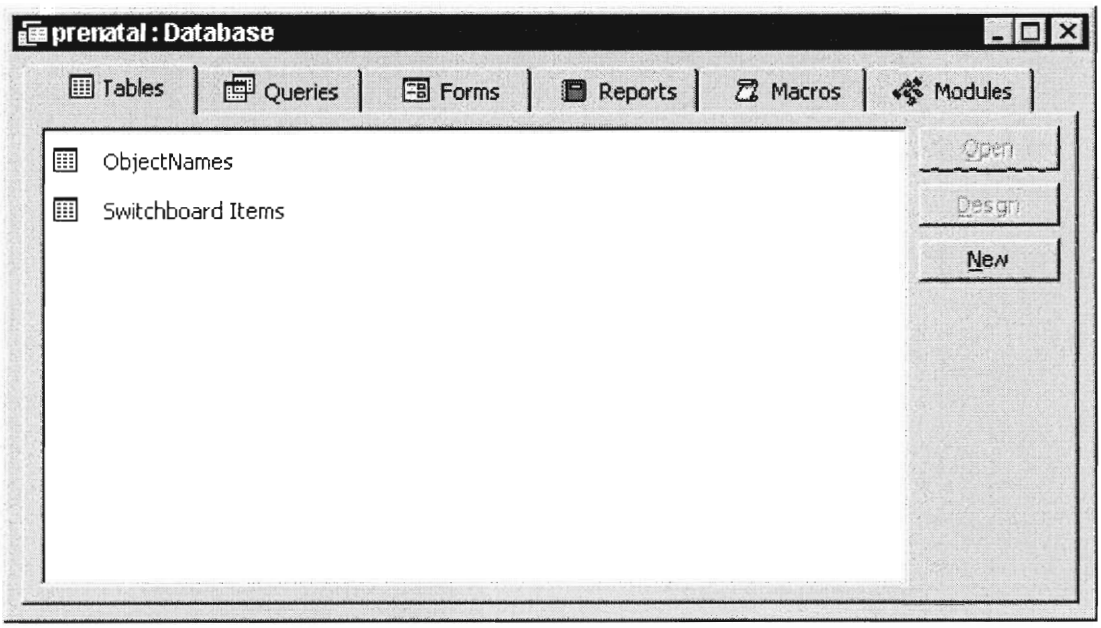


Figure 77: Screen shot of tables before database is run

8.2 The Macro for Retrieving and Processing Data

The steps listed here occurs when the user presses the Retrieve and Process Data icon, on Figure 2.

Follow the steps below to get started with the database.

1. Click on the Macro Tab

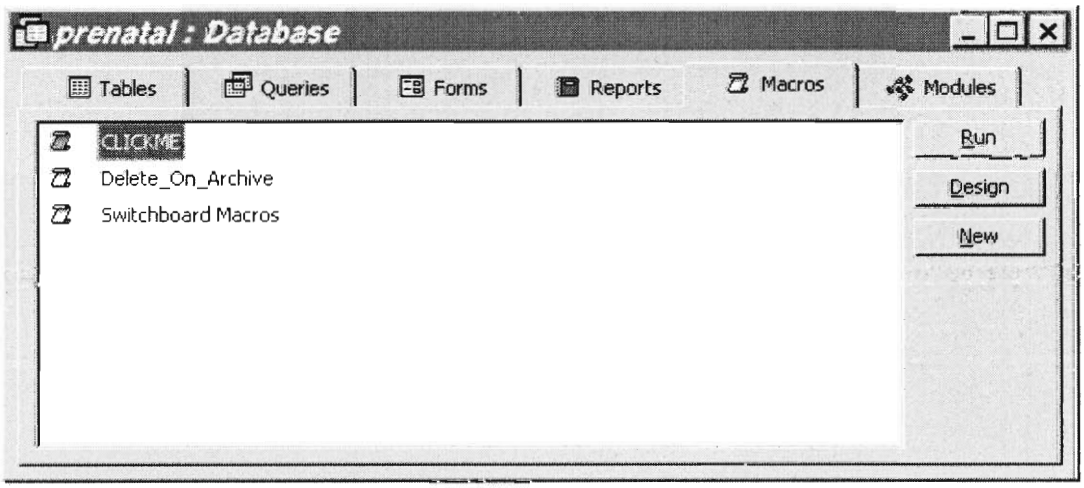


Figure 78: Macro Tab

2. Click RUN, after selecting and highlighting the CLICKME Macro.
3. Hit OK, when the subsequent screen pops up.
4. Please be patient, and wait. Depending on how much data is being processed, Access may take time to finish. Once it has finished importing the data and has processed everything, a message box should appear signaling that it is done.

   The computer should not be disturbed during this process.

The macro essentially performs the following tasks:

1. Imports data from external source. That is, it finds the QMI export data via FTP and imports it into the Prenatal Access database.
2. Processes data and modifies properties (e.g., text, number, date/time) of certain fields for calculation purposes. In essence, some fields are changed from text to numbers.
3. Once these steps have been completed, the queries and reports pertaining to statistics will be created.

Note: If you wish to backup the information open up the TestTable by clicking on the Table Tab, then go to File and Save. This makes sure that next month this data is not erased, but is backed up in a place known to you.

8.3 Importing Data

When this database is run every few weeks, a macro named ClickMe will execute. This macro makes sure that data gets imported into the Access database and that the data is split up into the appropriate tables. Note that the source can be changed using the steps labeled below. The source can be changed when a previous months data needs to be re-calculated.

To change the source file for importing, do the followings:

1. First, click on the Macros Tab, as seen in above figure
2. Click on the Design button, and a figure similar to the one below will open up
3. Click on the white area next to the "File Name" field and enter the path or location of the file which you wish to import.

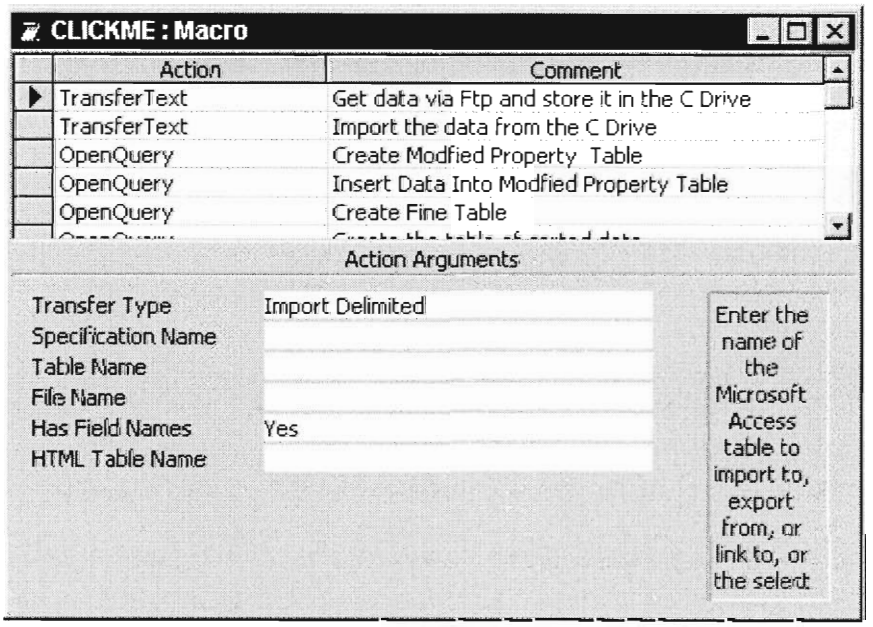


Figure 79: Transferring Text

4. Leave the rest of the information in the figure above alone.
5. If you see an action prior to TransferText please do not alter it in any manner. This function attempts to log into the Archive Server, on the QMI end and retrieves data for this database.

The action prior to TransferText retrieves data from the archive server, as suggested above. The module is explained below. A module is a group of functions written in a database, so that they can be called multiple times. This saves space and is efficient since one function can be used for multiple purposes. Later in the paper we explain in details the steps of the TransferText function. A basic outline is also listed here, for reference. These steps occur at runtime for the first macro.

1. The Windows95 FTP client opens up.
2. The ftp client opens a filename, which contains the relevant information such as:
    1. Server Name, or IP Address
    2. Username
    3. Password
    4. Directory where the file is stored
    5. A command to Get the filename and store it on a local machine
    6. A command to log off the machine

8.4 Adding an Item

For an item to be used in Reports and Analysis it must be included in the database. Before an item is added, a few issues must be addressed. Items or fields can be various types, i.e., text (e.g., Worcester Hospital 17 Chester Rd.), number (e.g., 9372934), date/time (e.g., Nov. 12, 1997 11:20:20pm), etc. Note items that contain text and numbers, like the address field, are considered as a text field. Phone numbers, with anything but numbers, i.e., '-', '/', are considered as text.

This database uses many tables, only two of which interest us at this point. Suppose we added an item in the QMI export table, and wanted Access to acknowledge it. We would need to open up Access and click on the Queries Tab.

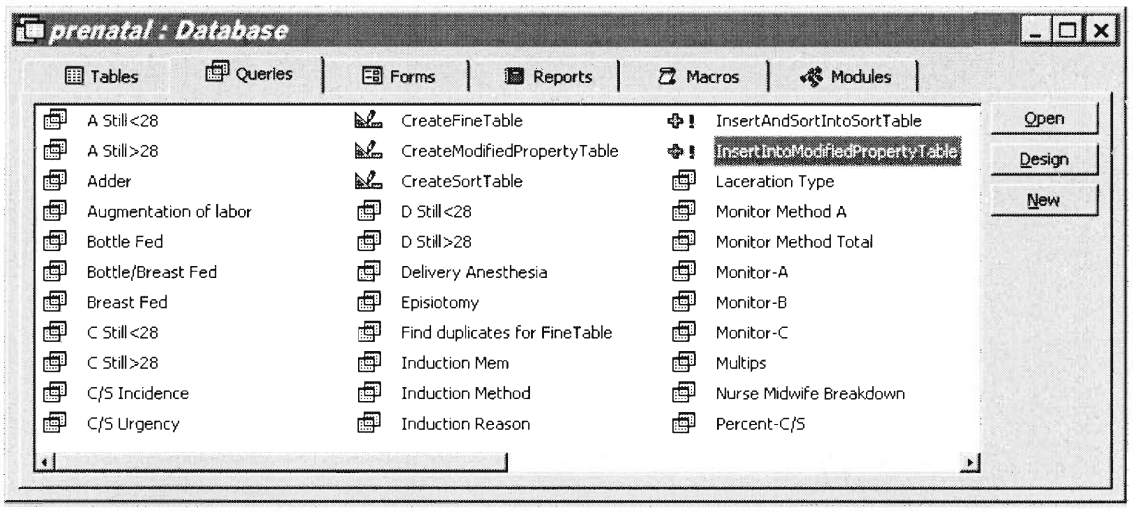


Figure 79: Example Of Sample Queries

The figure shows sample queries, which were developed for this IQP. The one we need to concern ourselves with is the InsertIntoModifiedPropertyTable Query. A sample code is enclosed below. Modifications, namely adding an item and its type to this query, will make the item available for use in the reports. In order to modify the query, we need

to edit it. Click on the button titled, "**Design,**" and the screen seen below should show up.

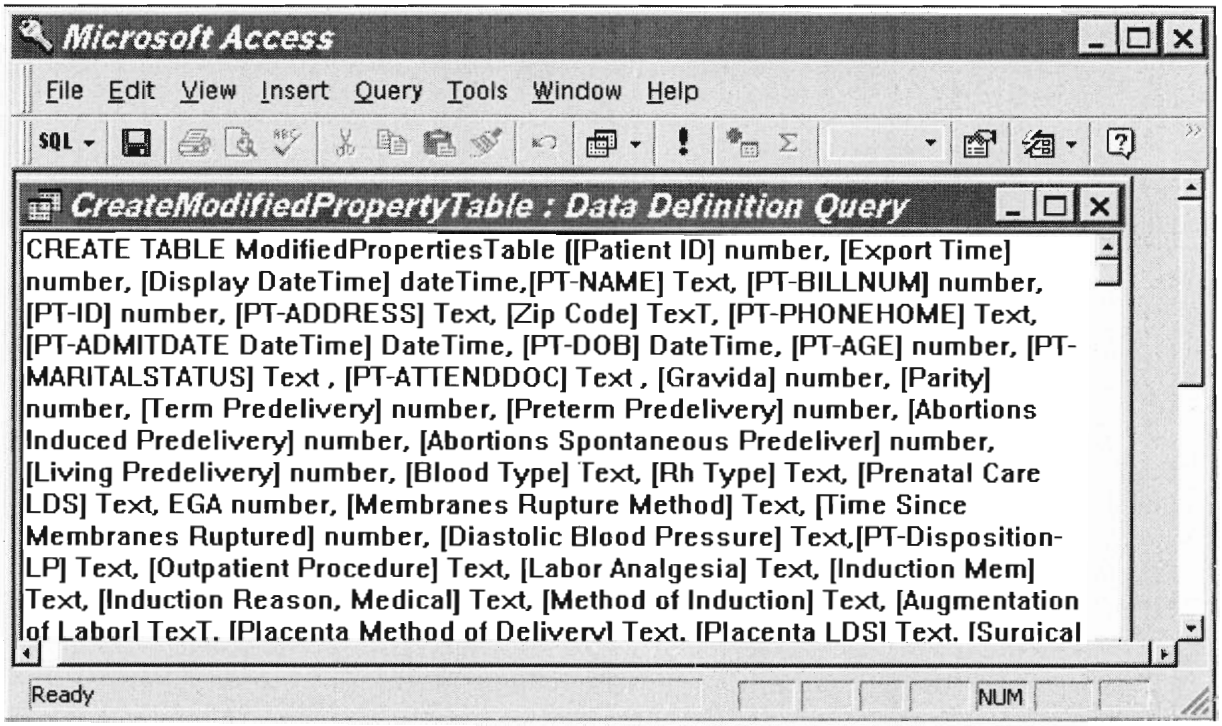


Figure 80: Create ModifiedPropertyTable

Notice that the ***view button*** on the toolbar displays **SQL**, on the top left hand corner. If it is not displayed, click on the view button and select SQL from the drop down menu. The drop down menu looks like the figure below.

Figure 81: Drop Down Menu

In the window with the CREATE TABLE text scroll down and add the new item name and its property. Assume for example that an item named, "TestItem," *a text field* needs to be entered into the database. Go to the last line of the window, and add the item name, preceded by a comma.

Make sure that data around it is not tampered with, or else unexplainable errors will occur during runtime. The figure below displays how the screen should look.

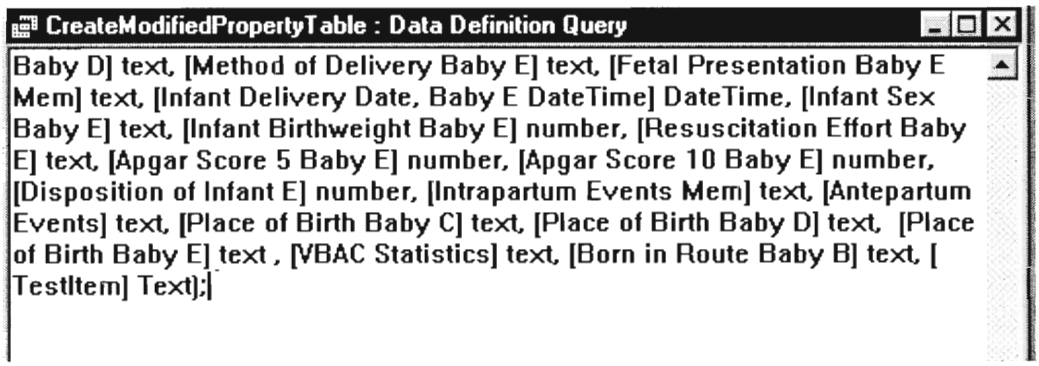


Figure 82: Placement of new item.

If the item that you are attempting to add has a SPACE within its name, *make sure to enclose the name within square brackets as seen below*. The screen below displays the same item as earlier, but with a space between the "Test" and "Item".

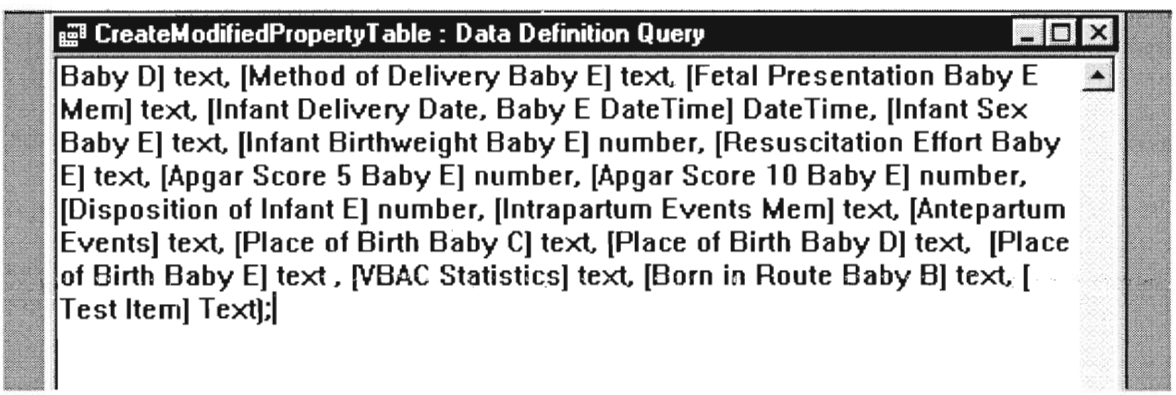


Figure 83: Placement of new item with space in name.

Once changes have been made, make sure to save it. If there are errors such as the one shown below, click OK on the button and make sure that the ')' bracket, exists, along with the ']' at the end of the item name.

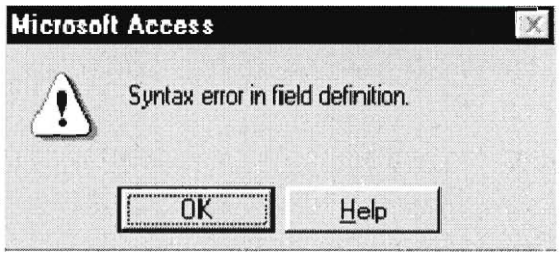


Figure 84: Errors associated with inserting new item

Assuming that the item was entered into that query correctly, the new item will be imported into the Access database without any problems.

8.5 Removing an Item

Removing an item from the database is just as simple as adding an item. The item has to be deleted from the query that gets that value from the export chart. To do that, open up the query named, "CreateModifiedPropertyTable." Begin by clicking on the tab labeled Queries, as displayed in the figure below.

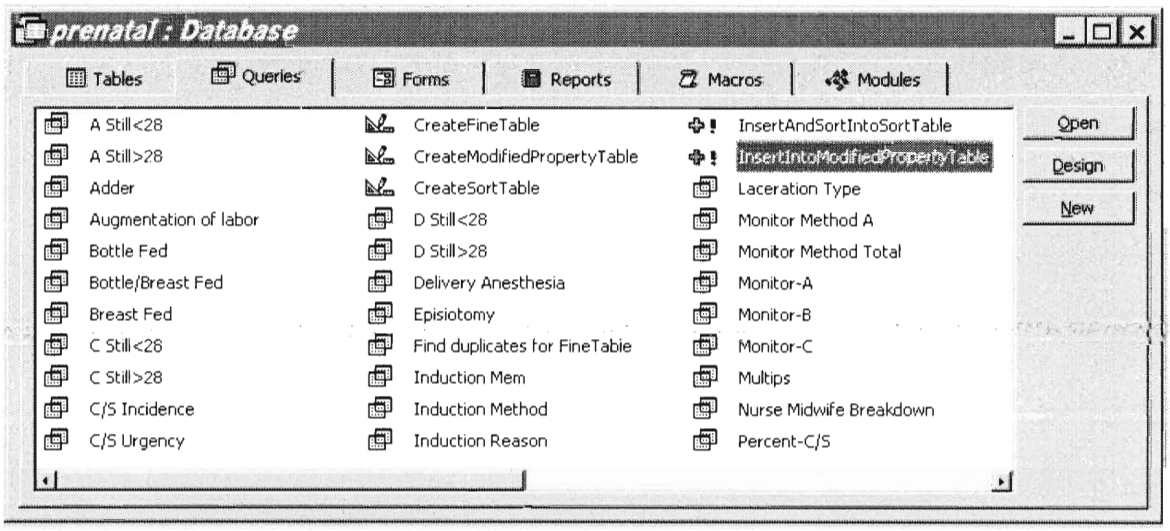


Figure 85: Click on Queries Tab

After clicking on the Design Button, a screen similar to the one below is displayed. Next, find the extra item, and remove it and its associated properties (e.g., text, number, DateTime, etc.). Assume that the item TestItem needs to be removed from the query below. The screen shots below show how the query looks before and after TestItem is deleted.

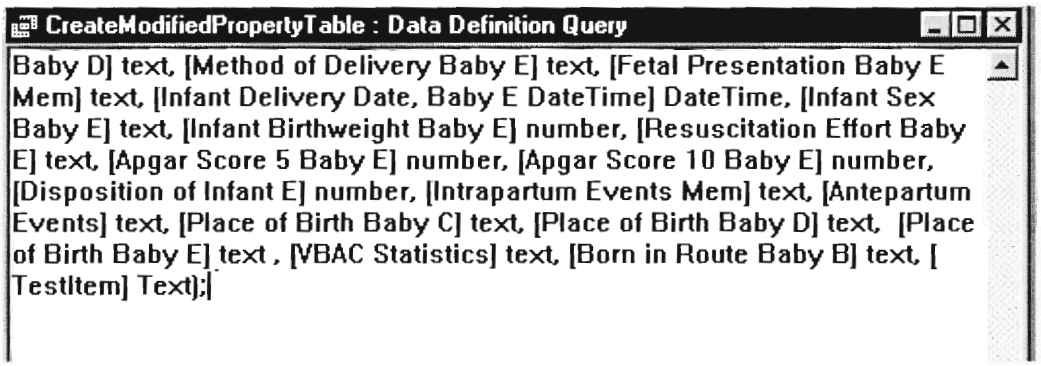


Figure 86: Query before removing TestItem

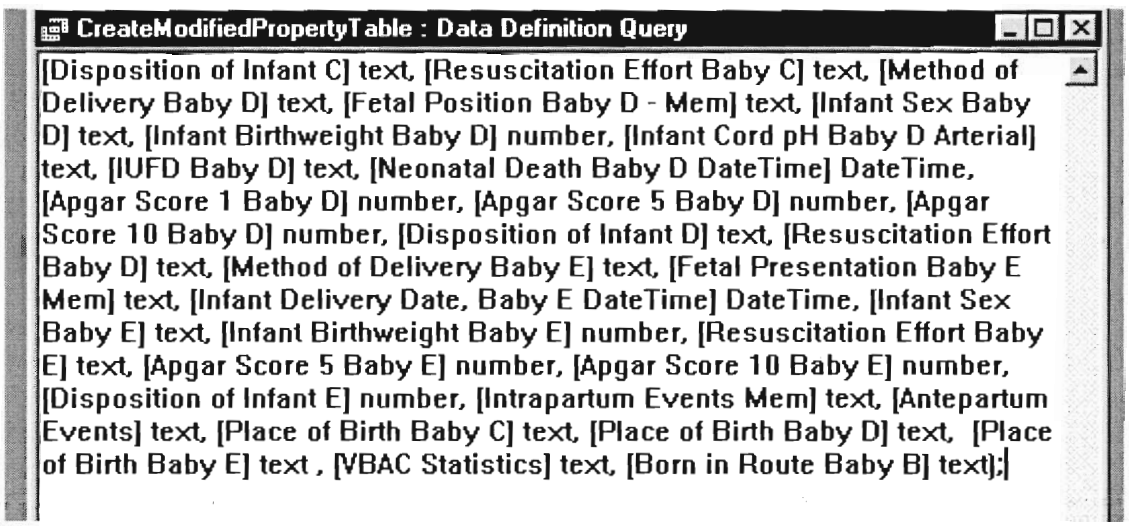


Figure 86: Query after removing TestItem

Lastly, remember to save the file! The item should now be removed from the Access database and the QMI export chart.

8.6 Modules Explained

This part of the documentation is more technical, and explains the FTP and Process modules. The information in this part should be understood before changes are made to either part of the database. We will follow this type of documentation throughout this section:

> Variables will be *italicized.*
> Field Names will be **bolded.**
> Table Names will not be altered.
> Functions/code will be in a very small font size.
> File names/directories will be ***bold and italicized.***

We recommend that a backup copy be made before changes occur to these modules. As a further introduction to this part of the documentation, we shall follow a certain protocol to explain the code. Preceding the code an explanation exists, on the code and how to modify it for future needs/changes. We shall start by explaining the FTP module and then the Process module.

Ftp Module:

The ftp module starts by calling the function IniMe(). Access95/97 needs a function to call the procedure (Sub *name*). This function expects that the file ***temp.src*** to exist in the ***c:\temp*** directory. This file, as seen in Appendix III, tells the ftp program the commands to use to get the file from the server.

```
Function IniMe()
SFTP ("C:\temp\temp.src")
End Function
```

Code 1: IniMe Function

As seen previously, the SFTP function is called from the function IniMe. More information on this program can be found on http://home.att.net/~dashish/modules/mdl0015.htm since the module was attained from there. According to the author "We need to pass FTP.EXE as the program name, not CMD.EXE (under NT) which Environ$("Comspec") returns. If you want the Dos window to be hidden, you can use vbHide instead of vbNormalFocus." The only change that was done between the function gotten from there to here is the last sentence. We had some problems getting it to work with Access95. In order for the code to work with Access95, one must not include the following line:

```
Call Shell(stSysDir & "c:\windows\Ftp.exe" & stSCRFile, vbNormalFocus)
```

```
Function SFTP(stSCRFile As String)
Dim stSysDir As String
stSysDir = Environ$("COMSPEC")
stSysDir = Left$(stSysDir, Len(stSysDir) - Len(Dir(stSysDir)))
'Call Shell(stSysDir & "c:\windows\Ftp.exe" & stSCRFile, vbNormalFocus)
Call Shell("ftp.exe -s:" & stSCRFile, vbNormalFocus)
End Function
```

Code 2: SFtp Function

Process Module:

Now we will explain about the main module, Process. This module takes the table name from *CurrentTable* and places it in the *FinalTable.* In reality it does more than just copy information for the patient from one table to another. Information in the *CurrentTable* is duplicated since the patient can have more than one entry. This module expects that the information in the *CurrentTable* to be sorted in descending order, by Export Time. This has to occur since only the latest information is incorporated in the table. If, only the latest information is sent to the export file, the last information will going to have the greatest Export time. This script works on the basis that the export time is going to be correct!

The code below opens the database, and the corresponding tables. If the table names need to be changed, which we do not recommend since the queries expect the integrity and name of certain tables to exist, the contents in the variables *CurrentTable* and *FinalTable* must be altered. After opening the database, a loop contains a variable which states the number of times certain functions are called. In order to guarantee that a patient gets entered into the database only once, and the correct information is entered, we grab the Export Time and Patient ID for the patient in every run. This makes sure that, if it is the first time that the information for the patient is being incorporated, the SQL statement does not make multiple selections for the same patient. A function DoesPatientExist is called to answer the question, "Does the patient already exist in the *FinalTable*?" Depending on the answer it receives, appropriate action is taken.

```
Sub ODatabase()
' Open the database which we need

   Dim dbs As Database, rst As Recordset
   Dim NumberOfRecords As Integer
   Dim CurrentTable, FinalTable As String
   Dim PatientExists As Boolean
   Dim PatientID As Variant, Nothing1 As Variant
   Dim FieldLoop As Field, ExportTime As Variant

   Set dbs = CurrentDb                    ' Set the name of the database..u want this database..right?
   CurrentTable = "SortTable"               ' Set the name of the table
   FinalTable = "FineTable"                ' Set the name of the table where queries are run!
   Set rst = dbs.OpenRecordset(CurrentTable)     ' Set the Table which we want to use
   NumberOfRecords = DCount("[Patient ID]", CurrentTable)  ' Lets count the number of patients in this
                                                           ' database  so that the loop only runs this
                                                           ' many times!

     Do Until (NumberOfRecords = 0)          ' Stay in loop until we're done w/all records
       For Each FieldLoop In rst.Fields      ' Scan until we've reached either PATIENT ID
                                             ' Or Export Time
         Select Case FieldLoop.Name        ' Eval. Name of the investigating field
           Case "Patient ID"               ' If Patient ID
             PatientID = FieldLoop.Value ' grab the value
           Case "Export Time"              ' If Export Time
             ExportTime = FieldLoop.Value  'grab the  value
           Case "PT-ADDRESS"               ' grab the address
             Nothing1 = GrabZipCode(FieldLoop.Value) ' Grab the Zip code
           ' Case "Zip Code"                ' Lets populate the Zipcode filed for this patient
          '   Nothing1 = UpdateRecord(dbs, rst, CurrentTable, PatientID, ZipCode)
         End Select
       Next                              ' Just keep going if neither!
                                         ' Now lets find out if that patientID already exists
                                        ' in the final table.
       PatientExists = DoesPatientExist(rst, CurrentTable, FinalTable, PatientID)
       If (PatientExists = False) Then       ' If not, place them there
         Nothing1 = InsertPatient(dbs, CurrentTable, FinalTable, PatientID, ExportTime)
       End If                            ' else.. just move on to the next record!
     NumberOfRecords = NumberOfRecords - 1      ' Lets decrement the # of records!
     rst.MoveNext

     Loop
   rst.Close
   dbs.Close

   End Sub
```

Code 3: Sub Odatabase

The next paragraph explains the first function that is called from the preceding procedure. This function gets the zip code portion from the address field. Since QMI does not incorporate the zip code field into the appropriate field, it is done using Access. The Case "PT-ADDRESS" statement makes sure that if the current field is the one specified to carry out the next function call. This call gets the zip code by manipulating the **PT-ADDRESS** field. When the function is called, the variable *TempAddress* gets the last 15 digits in the address field. We expect that the zip code to be within this limitation. After the last 15 digits are stored, a function called Val is called using the *TempAddress* value. This function grabs the integer/numerical part of the address field, and stores it in the *IntegerFromZipCode* field. Of course, if the zip code is preceded with a '0', like 01532, then the '0' will be dropped. Appending a '0' if the field length is less than 5 solves this problem. If the field length is greater than five, then the field is not altered. After the function is run, data for this patient is stored in the global variable *ZipCode*. This variable is used later on the program. See the section on InsertPatient.

```
Function GrabZipCode(Address As Variant) As Variant
  ' This function  gets the zip code from the address a field from QMI
  ' Since QMI does not want to give us data in the ZipCode field, we need to get it from the address field
  ' What is basically does is this:
  '  1) Gets the last 15 letters from the address, using the Right command
  '  2) Grabs the integer portion of the field, using the Val command
  '  3) Obviously, it does not like the '0' that is the zipcode field, therefore we have to fill it ourself
  '  4) Therefore the len command, if ZipCode < 5, then it precedes the 0 in the ZipCode field!

  ' First grab the address!
  Dim TempAddress As Variant
  Dim IntegerFromZipCode As Variant

  TempAddress = Right(Address, 15)              'Get the last 15 digits in the Address filed!
  IntegerFromZipCode = Val(TempAddress)         ' Get the ZipCode Part; just gets the first set of
integers!

   If (Len(IntegerFromZipCode) < 5) Then        ' See if it's similar to 01532, length = 5 digits
     ZipCode = CVar("0" & IntegerFromZipCode)   ' else add a '0' so that u have 01532
   Else
     ZipCode = IntegerFromZipCode
```

```
  End If
End Function
```

Code 4: GrabZipCode function

The next function that is explained is the DoesPatientExist function. This function ascertains whether the patient already exists in the FinalTable. It expects *RecordSet, CurrentTable, FinalTable* and *PatientID* variables to be passed to it. Without this information, the function will not work correctly. We use the DLookup function, a built-in VB function, to make sure that the patient does not exist in the FinalTable. A lookup is made using the PatientID field, and depending on the response, appropriate action is taken. If the value is set, then the patient exists, else he/she can be added into the FinalTable.

```
Function DoesPatientExist(rst, CurrentTable, FinalTable, PatientID) As Boolean
  Dim NumberOfRecordsForPatient
  ' This function is supposed to see if the patient ID exists in the final table
  ' Lets use the Dlookup function..
    NumberOfRecordsForPatient = DCount("[Patient ID]", "" & FinalTable & "", "[Patient ID] =" &
PatientID)
    If (NumberOfRecordsForPatient = 0) Then
      DoesPatientExist = False
    Else
DoesPatientExist = True
    End If
  End Function
```

Code 5: DoesPatientExist Function

The final function that is used in the Process module is InsertPatient. It expects the *rst*, *CurrentTable*, *FinalTable*, *PatientID* and *ExportTime* to be used correctly. The *ExportTime* and *PatientID* are important since the SQL statement imports all the patients with the same PatientID, if that was the only variable to be passed in. The ExportTime makes sure that one and only one patient per PatientID is incorporated in the FinalTable, and that the zipcode field is filled in this table. Therefore the UpdateRecord is called after the SQL statement is executed. The SQL statement inserts into the FinalTable the data for

a patient that is unique. The next statement inserts the ZipCode field with data the correct zipcode for this patient. Inserting the data at this point is the most efficient way of doing this since data is only being updated once.

```
Function InsertPatient(dbs, CurrentTable, FinalTable, PatientID, ExportTime) As Boolean
  ' This function is called when the patient is new, and all relevent data has been entered for him/her!
        dbs.Execute " INSERT INTO " & FinalTable & " SELECT * FROM " & CurrentTable _
            & " WHERE [Patient ID] = " & PatientID  AND [Export Time] = " & ExportTime & ";"
        UpdateRecord(dbs, rst, FinalTable, PatientID, ZipCode)

   End Function
```

Code 6: InsertPatient Function

This section explains about the UpdateRecord function used in the InsertPatient function above. The code below is executed with the function is called. This statement updates

```
Function UpdateRecord(dbs, rst, CurrentTable, PatientID, ZipCode)
   ' Now we need to make sure that the correct patient has the correct zipcode, from the address filed
   ' Therefore this Update Query!
   ' It takes the value of the ZipCode, and the patientID, and populates the filed with the correct data!
     dbs.Execute "UPDATE " & CurrentTable & " SET [Zip Code]= " & ZipCode & " WHERE [Patient
ID] = " & PatientID & ";"

  End Function
```

Code 7: UpdateRecord Function

The code explained in this section occurs on every run of the database. It deletes the old tables in the database so that new data is not corrupted with the old data. After making sure that all the tables are deleted, the macro as explained in the previous sections are run. The code is relatively simple. It makes sure that the tables in the array, *TablesInDatabase* do not exist when the database starts running. It grabs the item in the array, upon arriving to the loop. It then attempts to delete the table from the database, using the Drop Table statement. Of course, an error message is generated if the table does not exist, therefore an ErrorHandler is incorporated within this part of the code. The ErrorHandler basically grabs the error, and disregards it. The error that is generated is not

used in any other part of the program, so it is disregarded. If the tables exist, then it is dropped and the next one is checked. This loop continues until there are no tables to use.

If more tables are created in the database, it is expected that the table name will be incorporated into the array, along with incrementing the *NumberOfTables* variable.

```
Function DeleteTables()
Dim TablesInDatabase As Variant, x As Variant
Dim NumberOfTables As Integer, loopcounter
Dim CurrentTable As String
Set dbs = CurrentDb

' TablesInDatabase contains the Tables in the database!
' They should be included here
TablesInDatabase = Array("TestTable", "FineTable", "ModifiedPropertiesTable", "SortTable")  ' Changes
here!


 NumberOfTables = 4   ' The number should then be entered here!
                ' Changes here!!

 ' Please do not modify the rest of code!
While (NumberOfTables > 0)                    ' Make sure that you have gone through all the tables!
   NumberOfTables = NumberOfTables - 1
   CurrentTable = TablesInDatabase(NumberOfTables)    ' Lets grab the table name from the array
   On Error GoTo HandleError                    ' You need to grab the error handle
                                                ' else the user sees odd error messages!
     dbs.Execute "DROP TABLE " & CurrentTable & ";"  ' Lets drop the table
HandleError:
   On Error Resume Next          ' Specifies that when a run-time error occurs,
                                 ' control goes to the statement immediately
                                 ' following the statement where the error occurred
                                 ' where execution continues. (microsoft help copy!) Need it!
    Resume                           ' Resume execution at same line
                                 ' that caused the error. (microsoft help copy!!) Need it!
   Wend                              ' Lets continue with the While loop
End Function
```

Code 8: DeleteTable Function

The last function that we will explain is one of the most important functions in this module. It makes sure that old data is not lost when new data arrives. It runs after the reports, queries and everything else is run. It is the users responsibility to delete the files that are created by the program, to guarantee that data in this file is no longer needed, for any means or purposes. The file generated by this function is the one used to generate

values for queries, reports, etc. therefore we recommend that you know the consequences of deleting this file.

The filename it follows is simple. ***MonthYear.txt*** is the format it follows. Data is stored in a separate directory so as to not corrupt data. It uses a built-in VB function called TransferText. Data is exported using Tab Delimited format, with field names included in the first line. The two variables used, *ThisMonth* and *ThisYear* also call VB functions Month(Now) and Year(Now) respectively. This basically gets the current month and year, based on the month/year on the PC running the database. Data is exported from the FineTable.

```
Function ExportData()
' This function exports the data in FineTable to the database\archivedata directory
' The file name follows the MonthYear.txt format, so that future data can be gathered
' by grabbing this dataset and parsing it through the database, making sure that
' the database is FULLY run. Unless of-couse, you know how to run this D.base!

' First Lets grab todays month and year

Dim ThisMonth As Variant, ThisYear As Variant
ThisMonth = Month(Now)                    ' Get todays month
ThisYear = Year(Now)                      ' Get this year

' Lets send the data..shall we!
DoCmd.TransferText acExportDelim, , "FineTable", "C:\Database\ArchiveData\" & ThisMonth & "_" &
ThisYear & ".txt", True
```

Code 9: ExportData function

The last code that we will explain about is WarnPeople. This function is run when the database is initially opened and "Clean-Up Archive Server" button is pressed. This function opens a Pop-Up menu asking the user if they want to continue the current action. Depending on the answer, appropriate action is taken. If they wish to continue, data is removed from the Archive Server, the data is backed up, and all the tables are dropped. The way it deletes data from the server is similar to the way it is retrieved. Another Ftp session is called, which logs into the server, and deletes the data. Notice that a different

script is called. When the data is backed up, data is taken from the FineTable, and exported, then all the tables are dropped using the DeleteTables function.

```
Function WarnPeople()
   Dim strMsg As String, strInput As String

   ' Initialize string.
   strMsg = " This will delete ALL current data set. Do you wish to continue?"
   ' Prompt user for input.
     If MsgBox(strMsg, vbOKCancel, "Warning!") = vbOK Then
       SFTP ("c:\database\removedata.src")
       ExportData
       DeleteTables
End If
End Function
```

Code 10:WarnPeople Function

9. Conclusion

In light of the advancement of public health measures taken throughout history, this IQP essentially serves to propagate and expand upon the goal of improving public health. It is apparent that society has continually striven to make advancements in whatever manner necessary to ensure the welfare and health of its citizens. This is evident as far back as the 6th century B.C. when Rome provided pipes to bring clean water to and wastes away from the homes of its citizens or when inoculation and vaccines against certain diseases were introduced in the last century. Women's health in particular has been a primary concern to many, given the important role they play in the continuation of the human species. Advances continue to be made all over the world in terms of prenatal care.

This project is specifically aimed at providing some means of analyzing prenatal care in a hospital environment. The data gathered may also be used by other parties (e.g., medical management, Department of Public Health, nurses, OBGYN, researchers, medical students, etc.) for purposes they deem relevant. The project essentially improves the efficiency, accuracy and completeness of statistics gathered by the hospital.

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Glossary

antenatal : (adj.)- occurring during pregnancy

arrhythmia : (n.)- an alteration in the rhythm of the heart beat in time or force that is of functional or organic origin

intrapartum : (adj.)- occurring chiefly to a mother during the act of birth

hemodynamic : (adj.)- concerning with or functioning in the mechanics of blood circulation

sequela : (n.; plural = sequelae)- an aftereffect of disease or injury; a secondary result

perinatal : (adj.)- occurring at about the time of birth

morbidity : (n.)- the incidence of disease; the rate of sickness

mortality: (n.)- a whole sum or number of death in a given time or a given community

Appendices

Appendix I: Process Code

```
Option Compare Database
Option Explicit
' This  module is supposed to take the data from a given
' table and make sure that the data is not duplicated
' It expects that the CurrentTable table is sorted,
' by Export Time in DESCENDING order.
' It has to be that way to make sure that the first
' time the patient has the latest information!

Dim ZipCode As String

Function ProcessData()
ODatabase
End Function


Sub ODatabase()
' Open the database which we need

   Dim dbs As Database, rst As Recordset
   Dim NumberOfRecords As Integer
   Dim CurrentTable, FinalTable As String
   Dim PatientExists As Boolean
   Dim PatientID As Variant, Nothing1 As Variant
   Dim FieldLoop As Field, ExportTime As Variant

   Set dbs = CurrentDb                    ' Set the name of the database..u want this database..right?
   CurrentTable = "SortTable"               ' Set the name of the table
   FinalTable = "FineTable"                 ' Set the name of the table where queries are run!
   Set rst = dbs.OpenRecordset(CurrentTable)      ' Set the Table which we want to use
   NumberOfRecords = DCount("[Patient ID]", CurrentTable)  ' Lets count the number of patients in this
database
                                 ' so that the loop only runs this many times!


      Do Until (NumberOfRecords = 0)            ' Stay in loop until we're done w/all records
        For Each FieldLoop In rst.Fields       ' Scan until we've reached either PATIENT ID
                                 ' Or Export Time
          Select Case FieldLoop.Name          ' Eval. Name of the investigating field
            Case "Patient ID"              ' If Patient ID
              PatientID = FieldLoop.Value ' grab the value
            Case "Export Time"             ' If Export Time
              ExportTime = FieldLoop.Value  'grab the  value
            Case "PT-ADDRESS"                ' grab the address
              Nothing1 = GrabZipCode(FieldLoop.Value) ' Grab the Zip code
            'Case "Zip Code"                ' Lets populate the Zipcode filed for this patient
             ' Nothing1 = UpdateRecord(dbs, rst, CurrentTable, PatientID, ZipCode)
```

```
            End Select
          Next                          ' Just keep going if neither!
                                       ' Now lets find out if that patientID already exists
                                       ' in the final table.
          PatientExists = DoesPatientExist(rst, CurrentTable, FinalTable, PatientID)
          If (PatientExists = False) Then        ' If not, place them there
            Nothing1 = InsertPatient(dbs, rst, CurrentTable, FinalTable, PatientID, ExportTime, ZipCode)
          End If                        ' else.. just move on to the next record!
        NumberOfRecords = NumberOfRecords - 1      ' Lets decrement the # of records!
        rst.MoveNext

        Loop
    rst.Close
    dbs.Close

    End Sub
     Function UpdateRecord(dbs, rst, CurrentTable, PatientID, ZipCode)
     ' Now we need to make sure that the correct patient has the correct zipcode, from the address filed
     ' Therefore this Update Query!
     ' It takes the value of the ZipCode, and the patientID, and populates the filed with the correct data!
       dbs.Execute "UPDATE " & CurrentTable & " SET [Zip Code]= " & ZipCode & " WHERE [Patient
ID] = " & PatientID & ";"

    End Function

    Function GrabZipCode(Address As Variant) As Variant
    ' This function  gets the zip code from the address a field from QMI
    ' Since QMI does not want to give us data in the ZipCode field, we need to get it from the address filed
    ' What is basically does is this:
    '   1) Gets the last 15 letters from the address, using the Right command
    '   2) Grabs the integer portion of the field, using the Val command
    '   3) Obviously, it does not like the '0' that is the zipcode field, therefore we have to fill it ourself
    '   4) thefore the len command, if ZipCode < 5, then it precedes the 0 in the ZipCode field!

    ' First grab the address!
    Dim TempAddress As Variant
    Dim IntegerFromZipCode As Variant

    TempAddress = Right(Address, 15)              'Get the last 15 digits in the Address filed!
    IntegerFromZipCode = Val(TempAddress)          ' Get the ZipCode Part; just gets the first set of
integers!

     If (Len(IntegerFromZipCode) < 5) Then          ' See if it's similar to 01532, length = 5 digits
       ZipCode = CVar("0" & IntegerFromZipCode)      ' else add a '0' so that u have 01532
      Else
       ZipCode = IntegerFromZipCode
      End If
    End Function

    Function InsertPatient(dbs, rst,CurrentTable, FinalTable, PatientID, ExportTime,ZipCode) As Boolean
    ' This function is called when the patient is new, and all relevent
    ' data has been entered for him/her!

       dbs.Execute " INSERT INTO " & FinalTable & " SELECT * FROM " & CurrentTable _
                & " WHERE " & CurrentTable & ".[Patient ID] = " & PatientID _
                & "AND " & CurrentTable & ".[Export Time] = " & ExportTime & ";"
```

```
        UpdateRecord(dbs, rst, FinalTable, PatientID, ZipCode)
    End Function


  Function DoesPatientExist(rst, CurrentTable, FinalTable, PatientID) As Boolean
  Dim NumberOfRecordsForPatient
  ' This function is supposed to see if the patient ID exists in the final table
  ' Lets use the Dlookup function..
     NumberOfRecordsForPatient = DCount("[Patient ID]", "" & FinalTable & "", "[Patient ID] =" &
PatientID)
     If (NumberOfRecordsForPatient = 0) Then
        DoesPatientExist = False
     Else
        DoesPatientExist = True
     End If
  End Function


Function DeleteTables()
' Okay, this is what this function does. It deletes the tables specified
' in the array specified below. Any additional tables in the Tables Tab
' should be spefied there along with changing the NumberOfTables variable
' It reads through the array, and drops the table, if it exists  Since an
' error occurs if strange things happen, say the file does not exist
' an ErrorHandler is palced. This takes care of the error, by ignoring it
' and going on with life!


Dim TablesInDatabase As Variant, x As Variant
Dim NumberOfTables As Integer, loopcounter
Dim CurrentTable As String
Dim dbs As Database
Set dbs = CurrentDb

' TablesInDatabase contains the Tables in the database!
' They should be included here

TablesInDatabase = Array("TestTable", "FineTable", "ModifiedPropertiesTable", "SortTable")  ' Changes
here!


 NumberOfTables = 4   ' The number should then be entered here!
              ' Changes here!!

 ' Please do not modify the rest of code!
While (NumberOfTables > 0)     ' Make sure that you have gone through all the tables!
  NumberOfTables = NumberOfTables - 1
  CurrentTable = TablesInDatabase(NumberOfTables)
                              ' Lets grab the table name from the array
  On Error GoTo HandleError                  ' You need to grab the error handle
                              ' else the user
                              ' sees odd error messages!
     dbs.Execute "DROP TABLE " & CurrentTable & ";"  ' Lets drop the Table
HandleError:
   On Error Resume Next                      ' Specifies that when a run-time error occurs,
                            ' control goes to the statement immediately
```

```
                                ' following the statement where the error occurred
                                ' where execution continues. (microsoft help copy!) Need it!
    Resume                          ' Resume execution at same line
                                ' that caused the error. (microsoft help copy!!) Need it!

  Wend                              ' Lets continue with the While loop
End Function
Function ExportData()
' This function exports the data in FineTable to the database\archivedata directory
' The file name follows the MonthYear.txt format, so that future data can be gathered
' by grabbing this dataset and parsing it through the database, making sure that
' the database is FULLY run. Unless of-couse, you know how to run this D.base!

' First Lets grab todays month and year

Dim ThisMonth As Variant, ThisYear As Variant
ThisMonth = Month(Now)      ' Get todays Month
ThisYear = Year(Now)        ' Get this year
 On Error GoTo ErrorHandlerExportData
                ' Lets send the data..shall we!
DoCmd.TransferText acExportDelim, , "FineTable", "C:\Database\ArchiveData\" & ThisMonth & "_" &
ThisYear & ".txt", True

ErrorHandlerExportData:
   On Error Resume Next                 ' Specifies that when a run-time error occurs,
                                ' control goes to the statement immediately
                                ' following the statement where the error occurred
                                ' where execution continues. (microsoft help copy!) Need it!
    Resume                          ' Resume execution at same line
                                ' that caused the error. (microsoft help copy!!) Need it!


End Function

Function WarnPeople()
  Dim strMsg As String, strInput As String

  ' Initialize string.
  strMsg = " This will delete ALL current data set.Do you wish to continue?"
  ' Prompt user for input.
   If MsgBox(strMsg, vbOKCancel, "Warning!") = vbOK Then
     SFTP ("c:\database\removedata.src")
     ExportData
     DeleteTables
End If
End Function
```

Appendix II: Ftp Module

```
Option Compare Database
Option Explicit

Function IniMe()
SFTP ("C:\temp\temp.src")
End Function

Function SFTP(stSCRFile As String)
Dim stSysDir As String
   stSysDir = Environ$("COMSPEC")
   stSysDir = Left$(stSysDir, Len(stSysDir) - Len(Dir(stSysDir)))
'   Call Shell(stSysDir & "c:\windows\Ftp.exe" & stSCRFile, vbNormalFocus)
   Call Shell("ftp.exe -s:" & stSCRFile, vbNormalFocus)

End Function
```

Appendix III: Script File used by the FTP Module

```
open ftp.this.server
loginName
LoginPssword
cd GotoThisDirectory
binary
get this.file AndStoreIt.Here
bye
```

Appendix IV: Nursing Staff Workload Summary Worksheet

Memorial Site - ...ion and Delivery
Nursing Staff Workload Summary Worksheet
For Use 10/11/95 - 5/31/96

Month ____ Year ____

Day of Month	Col 1 False Labor	Col 2 Observ Patients	Col 3 Premature labor/ante part comp	Col 4 Vaginal Deliveries Primip	Col 5 Vaginal Deliveries Multip	Col 6 VBAC	Col 7 C-Sections Elec	Col 8 C-Sections Non Elec	Col 9 Tubal Lig	Col 10 Non Steve	Col 11 D&C or Cervix Suture	Col 12 OCT	Col 13 PP Mg SO4	Col 14 ROUTINE POST PARTUM CARE Mothers	Col 15 Babies	Col 16 Boarders
1	IIII		I	III		I		I								
2	II		I	III												
3					IIII											
4			I	II	III			I								
5				I	II			I				I				
6				I	I			I								
7				I												
8																
9																
10																
11																
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16																
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19																
20																
21																
22																
23																
24																
25																
26																
27																
28																
29																
30																
31																
Total																

Column 1 Total _____ x 1.87 = _____
Column 2 Total _____ x 5.97 = _____
Column 3 Total _____ x 6.78 = _____
Column 4 Total _____ x 14.20 = _____
Column 5 Total _____ x 6.68 = _____
Column 6 Total _____ x 16.29 = _____
Column 7 Total _____ x 6.27 = _____
Column 8 Total _____ x 18.24 = _____

Column 9 Total _____ x 2.10 = _____
Column 10 Total _____ x 1.50 = _____
Column 11 Total _____ x 5.40 = _____
Column 12 Total _____ x 3.00 = _____
Column 13 Total _____ x 18.58 = _____
Column 14 Total _____ x 4.00 = _____
Column 15 Total _____ x 4.00 = _____
Column 16 Total _____ x 4.00 = _____

Plus
Cal Days _____ x 9.2 = _____
Total Requires Hours = _____
Tot Hrs WK'd (incl Floats & overtime) = _____

Total Required Hours = _____ % Labor Utilization
Total Hours Worked
Target Labor Utilization 90 Percent

Appendix V: East 4 Productivity Report - GRASP

EAST 4 PRODUCTIVITY REPORT - GRASP

DEPARTMENT STATISTICS FISCAL YEAR 1998

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
False Labor	139	138	158	192	159	187	161	201	178	206	214	190
Observ Pt	23	31	40	27	14	18	18	20	20	17	8	9
PTL/Ante	85	58	63	64	37	35	64	38	54	60	51	55
Vag Primip	107	108	113	130	130	127	121	102	122	124	105	112
Vag Multip	152	126	111	143	136	124	145	156	153	149	149	152
VBAC	12	8	8	16	8	14	23	14	16	20	7	8
C/S Elect	12	7	16	13	18	24	11	20	9	15	12	17
C/S Non Elect	43	25	38	37	41	34	42	44	55	56	50	52
Tubals Only	9	7	8	8	0	4	4	8	3	4	4	1
NST/ Ext Vers	9	3	2	1	3	9	9	7	5	2	5	11
Sx Cx/ D&C	3	2	1	2	2	2	6	3	3	3	4	7
OCT	0	0	0	1	0	0	0	0	0	0	0	
PP MgSO4	15	10	16	8	9	11	9	7	14	4	2	10
PP Mom Pt Days	788	599	670	773	746	781	795	805	866	893	761	885
Baby Pt Days	806	602	668	757	758	761	760	797	858	877	751	840
Boarder Pt Days	16	43	56	60	52	60	38	57	65	63	37	48

FAMILY CENTER LABOR UTILIZATION

Variable Workload	Stand. Hrs	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
False Labor	1.87	259.93	258.06	291.72	359.04	297.33	349.69	301.07	375.87	332.86	385.22	400.18	355.30	3,966.27
Observ Pt	5.97	137.31	185.07	238.80	161.19	83.58	113.43	113.43	119.40	119.40	101.49	47.76	53.73	1,474.59
PTL/Ante	6.78	576.30	379.68	427.14	433.92	250.86	237.30	433.92	264.42	366.12	406.80	345.78	372.90	4,495.14
Vag Primip	14.20	1,519.40	1,533.60	1,604.60	1,846.00	1,846.00	1,803.40	1,718.20	1,448.40	1,732.40	1,760.80	1,491.00	1,590.40	19,894.20
Vag Multip	6.68	1,015.36	841.68	741.48	955.24	908.48	828.32	968.60	1,042.08	1,022.04	995.32	995.32	1,015.36	11,329.28
VBAC	16.29	195.48	130.32	130.32	260.64	130.32	228.06	374.67	228.06	260.64	325.80	114.03	130.32	2,508.66
C/S Elect	6.27	75.24	43.89	112.86	81.51	112.86	150.48	68.97	125.40	56.43	94.05	75.24	106.59	1,103.52
C/S Non Elect	18.24	784.32	456.00	693.12	674.88	747.84	620.16	766.08	802.56	1,003.20	1,021.44	912.00	948.48	9,430.08
Tubals Only	2.10	12.60	14.70	12.60	12.60	-	8.40	8.40	16.80	6.30	8.40	8.40	2.10	111.30
NST/ Ext Vers	1.50	13.50	4.50	3.00	1.50	4.50	13.50	13.50	10.50	7.50	3.00	7.50	16.50	99.00
Sx Cx/ D&C	5.40	16.20	10.80	5.40	10.80	10.80	10.80	32.40	16.20	16.20	16.20	21.60	37.80	205.20
OCT	3.00	-	-	-	3.00	-	-	-	-	-	-	-	-	3.00
PP MgSO4	18.58	278.70	185.80	297.28	148.64	167.22	204.38	167.22	130.06	260.12	74.32	37.16	185.80	2,136.70
PP Mom Pt Days	4.00	3,152.00	2,396.00	2,680.00	3,092.00	2,984.00	3,124.00	3,180.00	3,220.00	3,472.00	3,572.00	3,044.00	3,460.00	37,376.00
Baby Pt Days	4.00	3,224.00	2,408.00	2,672.00	3,028.00	3,024.00	3,044.00	3,040.00	3,188.00	3,432.00	3,508.00	3,004.00	3,360.00	36,932.00
Boarder Pt Days	4.00	72.00	172.00	224.00	240.00	208.00	240.00	156.00	228.00	260.00	252.00	148.00	192.00	2,392.00
Total Var. Required Hrs		11,332.34	9,020.10	10,134.32	11,308.96	10,775.79	10,975.92	11,342.46	11,215.75	12,347.21	12,524.84	10,651.97	11,827.28	133,456.94
Constant Workload	92.24	2,859.44	2,767.20	2,859.44	2,859.44	2,582.72	2,859.44	2,767.20	2,859.44	2,767.20	2,859.44	2,859.44	2,767.20	33,667.60
Total Required Hours		14,191.78	11,787.30	12,993.76	14,168.40	13,358.51	13,835.36	14,109.66	14,075.19	15,114.41	15,384.28	13,511.41	14,594.48	167,124.54
Total Worked Hours		15,885.00	14,411.00	14,984.00	15,725.00	14,108.00	15,631.00	14,921.00	15,343.00	15,954.00	16,992.00			153,954.00
Labor Utilization %		89.34%	81.79%	86.72%	90.10%	94.69%	88.51%	94.56%	91.74%	94.74%	90.54%	#DIV/0!	#DIV/0!	-
TOTAL DELIVERIES		326	274	288	339	333	323	342	336	355	364	323	341	3,944

C. SECTION / DELIVERIES BY PHYSICI

Oct-97

Physician	Prim	%		Rpt	%		Elect	%		Vag	~~Total~~		Total	
	A	B	T	A	B	T	A	B	T	A	B		Vag	T/D
Halpin												0		
McLaughlin												0		
Dunn												0		
Aversa												0		
Kern												0		
Narducci												0		
Hunter												0		
Davidow												0		
Fischer												0		
Kopin												0		
Albert												0		
Pokoly												0		
Klein												0		
Magee												0		
Deprez												0		
Louca												0		
Green												0		
Delpapa												0		
Hitti												0		
Papa												0		
Poehlmann												0		
Riley												0		
Noller												0		
Johnson												0		
Paul												0		
Neary												0		
Evans												0		
Kraft												0		
Farricy												0		
Hayden												0		
Hollenbeck												0		
Fallon												0		
Hogan												0		
Surette												0		
Scannell												0		
Blackstone												0		
Family Pract												0		
B.B.V.												0		
Memorial												0		
HO														

Appendix VI: Project Schedule

LOG SHEET

Aug. 29th, 1998: First group meeting in the library. We generally discussed how to get the project started.

Sept. 9th, 1998: First group meeting with Prof. Strong. We discussed with Prof. Strong our plan for doing the IQP.

Sept. 11th, 1998: Group meeting at Memorial. We went to Memorial Hospital to learn more about the current process. There, we also proposed to them our plan for the project.

Sept. 16th, 1998: Group meeting nurses and QMI managers at Memorial Hospital. We spent approximately four hours with them learning how the current process works. We were given many sample data sheets, which are included in the appendix.

Sept. 19th, 1998: Group meeting in the library. We discussed how to write up our proposal. Work was divided so that each of us took care of a specific task. We also discussed how to create export and import charts for the QMI data.

Sept. 23rd, 1998: Weekly group meeting with Prof. Strong. We updated Prof. Strong with the latest information on the QMI system and our proposal.

Sept. 25th, 1998: Group meeting Memorial Hospital. Nurses showed us how they collected and imported perinatal data into the QMI system. Basically, we learned more about how the QMI system works.

Sept. 30th, 1998: Weekly meeting with Prof. Strong. We handed in our literature review on the Public Health, Women Health, and Technology and Public Health

as a part of the proposal. Also, we updated Prof. Strong on how we did on the QMI system.

Oct. 8th, 1998: Weekly meeting with Prof. Strong. We received our literature review back. Prof. Strong would like us to write more about Technology and Public Health for the literature review. As usual, we updated Prof. Strong on how we did on the export chart at Memorial Hospital.

Oct. 11th, 1998: Group meeting in the library. We worked on the proposal; trying to get it done by the end of A term. We also discussed how and when we would start to create export and import charts for QMI data.

Oct. 19th, 1998: Meeting with Prof. Strong. We handed in our IQP proposal.

Oct. 23rd, 1998: Group meeting at Memorial Hospital. We worked on the export chart. The running time was set at 1:00 AM on Saturday of the same week.

Oct. 28th, 1998: Weekly meeting with Prof. Strong. We received our proposal back. Prof. Strong wanted us to write more about the Medical Information System for the literature review. We updated Prof. Strong on the export charts.

Oct. 29th, 1998: Group meeting at Memorial Hospital. We continued working on the export charts. We spent approximately 4 hours for this meeting.

Nov. 4th, 1998: Weekly meeting with Prof. Strong was cancelled. We then moved to the library to discuss how everything was going.

Nov. 11th, 1998: Group meeting in CCC. We divided work: Prasanth and Brandon will basically take care of Microsoft Access and David will correct and finish up the proposal.

Nov. 11th, 1998: Weekly meeting with Prof. Strong. As usual, we informed Prof. Strong about updated information on the project. We told Prof. Strong that database was expected to be done by the end of B term; ready to be used and tested at the Memorial Hospital by then.

Nov. 15th, 1998: Group meeting: we informed each other the progress of individual work. Nothing was too exciting; everyone was doing just fine as planned.

Nov. 18th, 1998: Weekly meeting with Prof. Strong at the department's conference room. Prasanth had some minor technical problems in database. Many questions were asked and all were satisfactorily answered by Prof. Strong. It seemed like we were getting on a right track and that Prof. Strong was quite satisfied with our work. Thanks to Prof. Strong for her great counsels!

Nov. 25th, 1998: Weekly meeting with Prof. Strong was canceled.

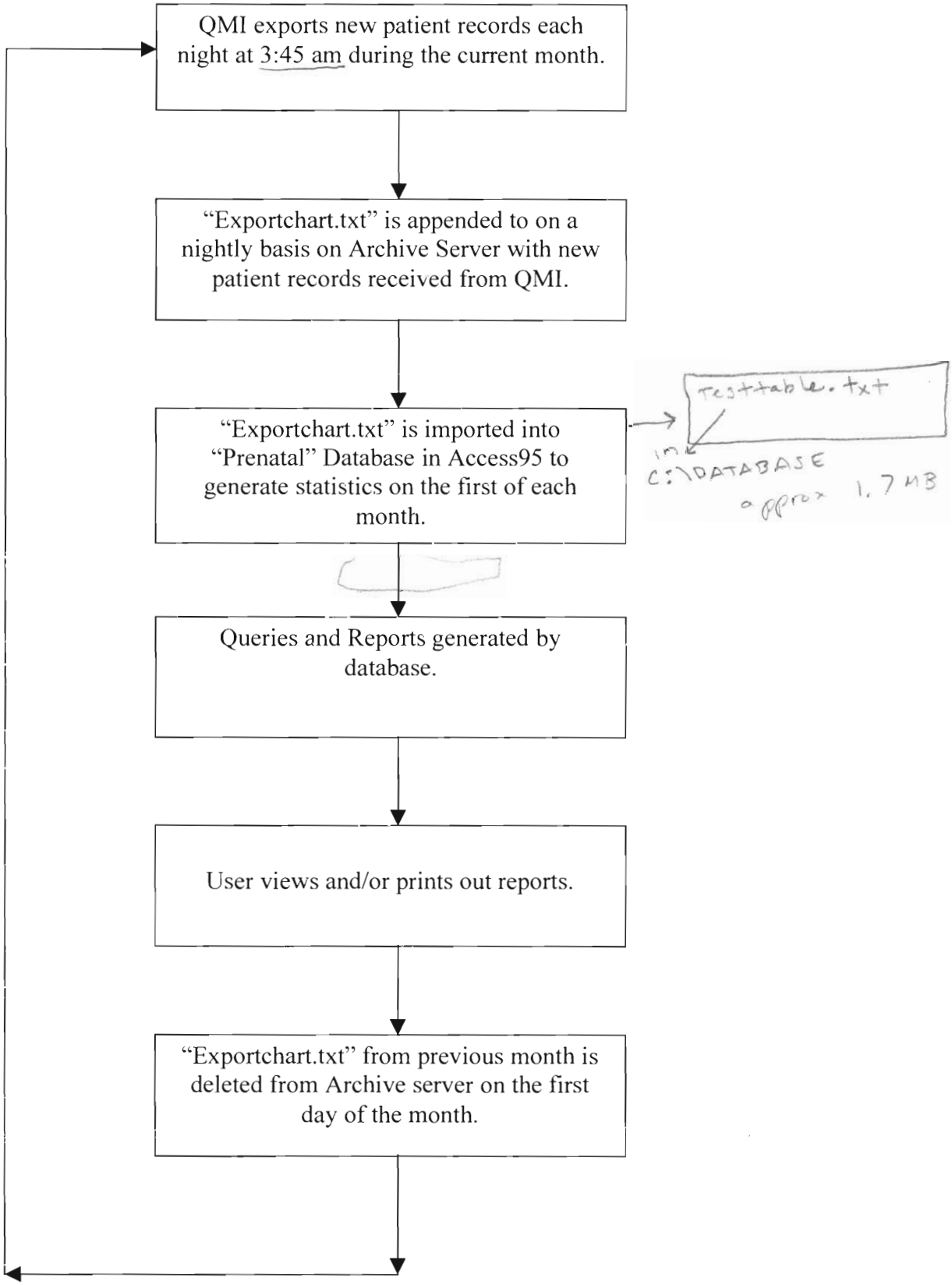
Dec. 2nd, 1998: Weekly meeting with Prof. Strong: We updated Prof. Strong with our progress on the project. It was a short meeting after all.

Dec. 9th, 1998: Weekly meeting with Prof. Strong. At this meeting we told Prof. Strong that the database would be done and ready for use and test at the end of the term. Prof. Strong asked us to make a log sheet.

Dec. 13th, 1998: Group meeting in CCC and AK lab. We tried to finish up the database by putting pieces of work together.

Dec. 19th, 1998: Group meeting in CCC. Brandon had some troubles with his work. Prasanth helped him out. David worked on the log sheet. By the end of the meeting, the whole database seemed to be its final form.

Appendix VII: Process Diagram



Appendix VIII: Data Dictionary

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
Fine	PT-NAME	Patient Name	VCHAR	40	x(40)			
	PT-BILLNUM	Hospital Account Number	FCHAR	7	9999999	1-9999999		
	PT-ID	Patient Medical Record Number	FCHAR	7	9999999	1-9999999		
	PT-ADDRESS	Patient's Home Address	VCHAR	70	x(70)			
	ZIP CODE	Zip Code	FCHAR	5	99999			
	PT-PHONEHOME	Patient's Home Phone	FCHAR	13	(999)999-9999			
	PT-DATETIME	Admission Date/Time	DATE	20	MM/DD/YY HH:MM:CC AA			
	PT-DOB	Patient's Date of Birth	DATE	8	MM/DD/YY			
	PT-AGE	Patient's Age	FCHAR	2	99	0-99		
	PT-MARITALSTATUS	Patient's Marital Status	VCHAR	10	x(10)			
	PT-ATTENDDOC	Attending Physician	VCHAR	15	x(15)			
	GRAVIDA	Gravida	FCHAR	2	99	1-99		
	PARITY	Para	FCHAR	2	99	0-99		
	TERM PREDELIVERY	Term Predelivery	FCHAR	1	9	0-9		
	PRETERM PREDELIVERY	Preterm Predelivery	FCHAR	1	9	0-9		
	ABORTIONS INDUCED PREDELIVERY	IAB	FCHAR	1	9	0-9		
	ABORTIONS SPONTANEOUS PREDELIVERY	SAB	FCHAR	1	9	0-9		
	LIVING PREDELIVERY	Living predelivery	FCHAR	1	9	0-9		
	BLOOD TYPE	Blood Type	CHOES					
		Choices: 1) A						
		3) AB						
		4) O						
		5) Unknown						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
	Rh TYPE	Rh Type	CHOES					
		Choices: 1) Negative						
		2) Positive						
		3) Unknown						
	PRENATAL CARE LDS	Prenatal Care	CHOES					
		Choices: 1) Yes						
		2) No						
	EGA	Estimated Gestational Age	DECML	4	99.9	0-99.9		
	MEMBRANE RUPTURE METHOD	Membrane Ruptured	CHOES					
		Choices: 1) Spontaneous						
		2) Artificial						
	TIME SINCE MEMBRANES RUPTURED	Time Since Membrane Rupt.	DECML	7	9(4).99	0-9999.99		
	PT-DISPOSITION-LP	Disposition of Patient	CHOES					
		Choices: 1) Full Admit						
		2) Discharged-undelivered						
		3) Transfer to S4						
		4) 24 hr. Observation						
		5) Transfer to other Hospital						
		6) Transfer to other floor						
	OUTPATIENT PROCEDURE	Out-patient procedures	CHOES					
		Choices: 1) Non-Stress Test						
		2) External Version						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		3) Oxytocin Challenge Test						
		4) D&C for Spont AB						
		5) Suture of Cervix						
		6) Other Please Annotate	VCHAR	500	x(500)			
	LABOR ANALGESIA	Labor Analgesia	CHOES					
		Choices: 1) None						
		2) Sedation						
		3) Epidural						
		4) Other Please annotate	VCHAR	500	x(500)			
	INDUCTION OF LABOR	Induction of Labor	CHOES					
		Choices: 1) Yes						
		2) No						
	INDUCTION REASON MEDICAL	Reason for Induction	CHOES					
		Choices: 1) PIH						
		2) Post Term >42 wks gest.						
		3) Fetal Demise						
		4) Hx Maternal Diabetes						
		5) PROM						
		6) Rh Isoimmuni-zation						
		7) Chorioamnio-nitis						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		8) Other, Please Annotate	VCHAR	500	x(500)			
	METHOD OF INDUCTION	Method of Induction	CHOES					
		Choices: 1) None						
		2) Artificial Rupt of Membr.						
		3) Oxytocin						
		4) Cervical Ripening						
		5) Other, Please Annotate	VCHAR	500	x(500)			
	AUGMENTATION OF LABOR	Augmentation of Labor	CHOES					
		Choices: 1) Artificial Rupt. Of Membr.						
		2) Oxytocin						
		3) None						
	PLACENTA METHOD OF DELIVERY	Delivery of Placenta	CHOES					
		Choices: 1) Spontaneous						
		2) Expressed						
		3) Manual Removal						
		4) Curettage						
		5) Adherent						
		6) Uterine Exploration						
	PLACENTA LDS	Placenta Configuration	CHOES					
		Choices: 1) Normal						
		2) Placental Infarction						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		3) Velamentous Insertion						
		4) Battledore Insertion						
		5) Vasa Previa						
		6) Circumvallate						
		7) Succenturiate Lobe						
		8) Other, Please Annotate	VCHAR	500	x(500)			
	SURGICAL PROCEDURES LDS	Surgical Procedures at Delivery	CHOES					
		Choices: 1) Tubal Ligation With C/S						
		2) Tubal Ligation post VagDel						
		3) Curettage						
		4) Hysterectomy						
		5) Other, Please Annotate	VCHAR	500	x(500)			
	DELIVERYING MD LDS	Attending @ Vaginal Delivery	VCHAR	20	x(20)			
	DELIVERING RESIDENT LDS	Delivering Resident Vaginal Del.	VCHAR	20	x(20)			
	ASSISTING RESIDENT LDS	Assisting Resident Vaginal Delivery	VCHAR	20	x(20)			
	NURSE MIDWIFE CERTIFIED	Delivering CNM	VCHAR	20	x(20)			
	EPISIOTOMY TYPE	Episiotomy	CHOES					
		Choices: 1) None						
		2) Median						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		3) Right Mediolateral						
		4) Left Mediolateral						
		5) Other, Please Annotate	VCHAR	500	x(500)			
	LACERATION TYPE	Laceration Type	CHOES					
		Choices: 1) None						
		2) Perineal						
		3) Vaginal						
		4) Cervical						
		5) Uterine						
		6) Other, Please Annotate	VCHAR	500	x(500)			
	LACERATION EXTENSION	Laceration Extensions	CHOES					
		Choices: 1) None						
		2) First Degree						
		3) Second Degree						
		4) Third Degree						
		5) Fourth Degree						
	ANESTHESIOLOGIST	Anesthesiologist	VCHAR	20	x(20)			
	ANESTHESIA DELIVERY	Delivery Anesthesia	CHOES					
		Choices: 1) None						
		2) Local						
		3) Epidural						
		4) Spinal						
		5) General						
		6) Other, Please Annotate	VCHAR	500	x(500)			

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
	MEDICATIONS IN DELIVERY	Medications in Delivery	CHOES					
		Choices: 1) Pitocin						
		2) Methergine						
		3) Antibiotics Pls Annotate	VCHAR	200	x(200)			
		4) Other, Please Annotate	VCHAR	500	x(500)			
	ATTENDING C/S	C/S Attending	VCHAR	20	x(20)			
	SURGEON C/S	C/S Surgeon	VCHAR	20	x(20)			
	ASSISTANT C/S	C/S Assistant	VCHAR	20	x(20)			
	CSECTION INCIDENT	C Section Incident	CHOES					
		Choices: 1) Primary						
		2) Repeat						
	CSECTION URGENCY	C Section Urgency	CHOES					
		Choices: 1) Scheduled						
		2) Not Scheduled						
	CSECTION, REASON FOR	Reason for C/Section	CHOES					
		Choices: 1) Non-reassuring Tracing						
		2) Failure to Progr Secondary to Arrest of Dilatation						
		3) Failure to Progr						
		Secondary to Arrest of Descent						
		4) Fetal Distress						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		5) Breech						
		6) Cephalopelvic Disproportion						
		7) Active Herpes						
		8) Placenta Previa						
		9) Placenta Abruption						
		10) Uterine Rupture						
		11) Cord Prolapse						
		12) Failed Trial of Labor						
		13) Elective C/S						
		14)Malpresentation						
		15) Failed Forceps						
		16) Failed Vacuum						
		17) Pt. Refusal of Trial of Labor						
		18) Other, Please Annotate	VCHAR	500	x(500)			
	CSECTION INCISION	C/Section Incision	CHOES					
		Choices: 1) Lower Uterine Transverse						
		2) Classic						
		3) Low Vertical						
		4) Incision T'd						
		5) Extended into Broad Ligament						
		6) Extended into Cervix/Vagina						
		7) Other, Please Annotate	VCHAR	500	x(500)			

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
	MONITORING METHOD	Fetal Monitoring	CHOES					
		Choices: 1) Auscultation						
		2) External Fetal Heart						
		3) Fetal Scalp Electrode FSE						
		4) Both FSE & Ext FH						
		5) External Toconometer						
		6) Intrauterine Pressure Catheter						
		7) Both External & Catheter						
	METHOD OF DELIVERY BABY A	Method of Delivery	CHOES					
		Choices: 1) Vaginal						
		2) C. Section						
	VBAC STATISTICS BABY A	VAGINAL BIRTH AFTER C/S (VBAC)	CHOES					
		Choices: 1) Successful						
		2) Failed						
	VAGINAL DELIVERY TYPE, BABY A	Vaginal Delivery Type	CHOES					
		Choices: 1) Normal Spont. Delivery						
		2) Vacuum Extraction Delivery						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		3) Vacuum/ Forceps Delivery						
		4) Outlet Forceps						
		5) Low Forceps						
		6) Mid Forceps						
		7) Rotation with Forceps						
		8) Spontaneous Breech						
		9) Assisted Breech						
		10) Assisted Breech with Aftercoming Head Forceps						
		11) Breech Extraction						
		12) Breech Extraction with Aftercoming Head Forceps						
	FETAL PRESENTATION BABY A	Fetal Presentation	CHOES					
		Choices: 1) Vertex						
		2) Military						
		3) Brow						
		4) Face						
		5) Compound						
		6) Frank Breech						
		7) Complete Breech						
		8) Single Footing						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		9) Double Footing						
		10) Shoulder						
		11) Transverse Lie						
		12) Other, Please Annotate	VCHAR	500	x(500)			
	INFANT DELIVERY DATE BABY A	Delivery Date/Time	FCHAR	8	MM/DD/YY			
	PLACE OF BIRTH BABY A	Place of Birth A	CHOES					
		Choices: 1) East 4						
		2) Born Outside Hospital						
		3) Born other than E4 – Annotate	VCHAR	200	x(200)			
	INFANT SEX BABY A	Infant Sex	CHOES					
		Choices: 1) Male						
		2) Female						
		3) Undetermined						
	INFANT BIRTHWEIGHT BABY A	Birthweight (Grams)	FCHAR	2	0-99			
	INFANT CORD pH BABY A ARTERIAL	Cord pH	FCHAR	2	0-14			
	IUFD BABY A	Intrauterine Fetal Demise (IUFD)	CHOES					
		Choices: 1) Antapartum						
		2) Intrapartum						
		3) <28 weeks						
		4) >28 weeks						
	NEONATAL DEATH BABY A	Neonatal Death Date/Time	DATE	8	MM/DD/YY			

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
	APGAR SCORE 1 BABY A	Apgar Score 1	FCHAR	1				
	APGAR SCORE 5 BABY A	Apgar Score 5	FCHAR	1				
	APGAR SCORE 10 BABY A	Apgar Score 10	FCHAR	1				
	DISPOSITION OF INFANT A	Disposition of Infant	CHOES					
		Choices: 1) With Mother						
		2) Newborn Nursery						
		3) NICU						
		4) Morgue						
	PEDIATRICIAN	Pediatrician	VCHAR	20	x(20)			
	PRENATAL CLASSES ATTENDED	Prenatal Classes Attended	CHOES					
		Choices: 1) Yes						
		2) No						
	FEEDING PREFERENCE	Feeding Preference	CHOES					
		Choices: 1) Breast						
		2) Bottle						
		3) Both						
		4) Undecided						
	ADOPTION REQUESTED	Adoption Requested	CHOES					
		Choices: 1) Yes						
		2) No						
	HEPATITIS B	Hepatitis B	CHOES					

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		Choices: 1) Negative						
		2) Positive						
		3) Not done						
	HEPATITIS C	Hepatitis C	CHOES					
		Choices: 1) Yes						
		2) No						
		3) Unknown						
	HIV+ EXPOSURE TEST	HIV+ Exposure Test	CHOES					
		Choices: 1) Negative						
		2) Positive						
		3) Not Done						
		4) Not Available						
	CHLAMYDIA	Chlamydia	CHOES					
		Choices: 1) Negative						
		2) Positive						
		3) Not Done						
	HERPES SIMPLEX TYPE 1 & 2	Herpes Simplex Type 1 & 2	CHOES					
		Choices: 1) Negative						
		2) Positive						
		3) Not Done						
	GROUP POSITIVE BETA STREP	Group Positive Beta Strep	CHOES					
		Choices: 1) Negative						
		2) Positive						
		3) Not Done						
	GONORRHEA, LD	Gonorrhea	CHOES					
		Choices: 1) Negative						
		2) Positive						
		3) Not Done						
	TRANSPORT HOSPITAL-NAME	Transport Hospital	VCHAR	50	x(50)			

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
	TRANSPORT DOCTOR-NAME	Transport Doctor Name	VCHAR	50	x(50)			
	REASON FOR ADMISSION LD	Reason for Admission	CHOES					
		Choices: 1) Onset of Labor						
		2) Induction of Labor						
		3) Scheduled C-Section						
		4) TOL/Prev. C/S						
		5) Preterm Labor						
		6) Premature Rupture Membrane						
		7) Motor Vehicle Accident						
		8) Bleeding						
		9) R/O Placenta Abruption						
		10) Obs, Complication Annotate	VCHAR	200	x(200)			
		11) Med. Complication Annotate	VCHAR	200	x(200)			
		12) Spontaneous Abortion						
		13) Observation						
		14) Fetal Statue						
		15) R/O Pre-eclampsia						
		16) Pre-eclampsia						
		17) IUFD						
		18)Oligohydramnios						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		19) Other, Please Annotate						
	RECREATIONAL DRUGS	Recreational Drugs	CHOES					
		Choices: 1) None						
		2) Heroin						
		3) Cocaine						
		4) Marijuana						
		5) Methadone – Annotate amt.	VCHAR	100	x(100)			
		6) Other, Please Annotate	VCHAR	200	x(200)			
	MATERNAL COMPLICATIONS	Maternal Complications	CHOES					
		Choices: 1) None						
		2) Preeclampsia						
		3) Preg Induced HTN						
		4) Preterm Labor						
		5) PPROM						
		6) Prem Rupture of Membrane						
		7) Abruption						
		8) Placenta Previa						
		9) Oligohydramnios						
		10) Gestational Diabetes						
		11) Diabetes						
		12) Breech						
		13) Vaginal Bleeding						
		14) Multiple Gestation						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		15) HIV Positive						
		16) Active Herpes						
		17) Teen Pregnancy						
		18) Obesity						
		19) Increased Maternal Age						
		20) Anemia						
		21) Heart Disease						
		22) Infection Please Annotate						
		23) Incompetent Cervix						
		24) Abnormal AFP						
		25) Fetal Anomalies						
		26) Uterine Anomalies						
		27) Iso-imunization						
		28) Renal Disease						
		29) IUGR						
		30) Other, Please Annotate	VCHAR	200	x(200)			
	MATERNAL RISK FACTORS	Maternal Risk Factors	CHPES					
		Choices: 1) None						
		2) No Prenatal Care						
		3) Drug Use						
		4) Caffeine						
		5) Recent URI						
		6) Exposure to Infection						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		7) Vomitting						
		8) Diarrhea						
		9) Previous C/S Annotate Reasons	VCHAR	200	x(200)			
		10) Other, Please Annotate	VCHAR	200	x(200)			
	MATERNAL COMPLICATIONS PAST PG	Maternal Complication Past Pg	CHOES					
		Choices: 1) None						
		2) Preeclampsia						
		3) Preg Induced HTN						
		4) Preterm Labor						
		5) PPROM						
		6) Preterm Deli.						
		7) Placenta Previa						
		8) Placenta Abruption						
		9) Postpartum Hemorrhage						
		10) Gestational Diabetes						
		11) Diabetes Mellitus						
		12) IUGR						
		13) Previous C/S Annotate Reasons	VCHAR	200	x(200)			
		14) Multiple Gestation						
		15) HIV Positive						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		16) Heart Disease						
		17) Other, Please Annotate	VCHAR	200	x(200)			
	MEDICAL HISTORY	Medical History	CHOES					
		Choices: 1) None						
		2) Cardiovascular Disease						
		3) Mitral Valve Prolapse						
		4) Hypertension						
		5) Asthma						
		6) IDD						
		7) Thyroid Disease						
		8) Epilepsy						
		9) GI Disease						
		10) Hepatitis B						
		11) Hepatitis C						
		12) Pylonephritis						
		13) Nephrolithiasis						
		14) Depression						
		15) Anxiety						
		16) Lupus SLE						
		17) Hematologic Disorder						
		18) History of Blood Transfusion						
		19) History of Chicken Pox						
		20) Other, Please Annotate	VCHAR	200	x(200)			

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
	PSYCH/SOCIAL HISTORY	Psycho/Social History	CHOES					
		Choices: 1) None						
		2) Anxiety Disorders						
		3) Psychiatics Disorders						
		4) Drug Intake						
		5) Alcohol Intake						
		6) Smoking						
		7) Single						
		8) Married						
		9) FOB involved						
		10) Employment						
		11) Other, Please Annotate	VCHAR	200	x(200)			
	SCRUB NURSE	Scrub Nurse	VCHAR	20	x(20)			
	NURSE-CIRCULATOR	Circulator	VCHAR	20	x(20)			
	RESUSCITATION EFFORT BABY A	Resuscitation Effort	CHOES					
		Choices: 1) None						
		2) Tactile Stimulation						
		3) Blowby O2						
		4) Bulb Suction						
		5) Deep Suction						
		6) Bag and Mask						
		7) Intubation						
		8) Chest Compression						
		9) Chemical Resuscitation						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		10) NICU at Delivery						
	METHOD OF DELIVERY BABY B	Method of Delivery	CHOES					
		Choices: 1) Vaginal						
		2) C. Section						
	VBAC STATISTICS BABY B	VAGINAL BIRTH AFTER C/S (VBAC)	CHOES					
		Choices: 1) Successful						
		2) Failed						
	VAGINAL DELIVERY TYPE, BABY B	Vaginal Delivery Type	CHOES					
		Choices: 1) Normal Spont. Delivery						
		2) Vacuum Extraction Delivery						
		3) Vacuum/ Forceps Delivery						
		4) Outlet Forceps						
		5) Low Forceps						
		6) Mid Forceps						
		7) Rotation with Forceps						
		8) Spontaneous Breech						
		9) Assisted Breech						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		10) Assisted Breech with Aftercoming Head Forceps						
		11) Breech Extraction						
		12) Breech Extraction with Aftercoming Head Forceps						
	FETAL PRESENTATION BABY B	Fetal Presentation	CHOES					
		Choices: 1) Vertex						
		2) Military						
		3) Brow						
		4) Face						
		5) Compound						
		6) Frank Breech						
		7) Complete Breech						
		8) Single Footing						
		9) Double Footing						
		10) Shoulder						
		11) Transverse Lie						
		12) Other, Please Annotate	VCHAR	500	x(500)			
	INFANT DELIVERY DATE BABY B	Delivery Date/Time	FCHAR	8	MM/DD/YY			
	PLACE OF BIRTH BABY B	Place of Birth B	CHOES					
		Choices: 1) East 4						
		2) Born Outside Hospital						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		3) Born other than E4 – Annotate	VCHAR	200	x(200)			
	INFANT SEX BABY B	Infant Sex	CHOES					
		Choices: 1) Male						
		2) Female						
		3) Undetermined						
	INFANT BIRTHWEIGHT BABY B	Birthweight (Grams)	FCHAR	2	0-99			
	INFANT CORD pH BABY B ARTERIAL	Cord pH	FCHAR	2	0-14			
	IUFD BABY B	Intrauterine Fetal Demise (IUFD)	CHOES					
		Choices: 1) Antapartum						
		2) Intrapartum						
		3) <28 weeks						
		4) >28 weeks						
	NEONATAL DEATH BABY B	Neonatal Death Date/Time	DATE	8	MM/DD/YY			
	APGAR SCORE 1 BABY B	Apgar Score 1	FCHAR	1				
	APGAR SCORE 5 BABY B	Apgar Score 5	FCHAR	1				
	APGAR SCORE 10 BABY B	Apgar Score 10	FCHAR	1				
	DISPOSITION OF INFANT B	Disposition of Infant	CHOES					
		Choices: 1) With Mother						
		2) Newborn Nursery						
		3) NICU						
		4) Morgue						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
	RESUSCITATION EFFORT BABY B	Resuscitation Effort	CHOES					
		Choices: 1) None						
		2) Tactile Stimulation						
		3) Blowby O2						
		4) Bulb Suction						
		5) Deep Suction						
		6) Bag and Mask						
		7) Intubation						
		8) Chest Compression						
		9) Chemical Resuscitation						
		10) NICU at Delivery						
	METHOD OF DELIVERY BABY C	Method of Delivery	CHOES					
		Choices: 1) Vaginal						
		2) C. Section						
	VBAC STATISTICS BABY C	VAGINAL BIRTH AFTER C/S (VBAC)	CHOES					
		Choices: 1) Successful						
		2) Failed						
	VAGINAL DELIVERY TYPE, BABY C	Vaginal Delivery Type	CHOES					
		Choices: 1) Normal Spont. Delivery						
		2) Vacuum Extraction Delivery						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		3) Vacuum/ Forceps Delivery						
		4) Outlet Forceps						
		5) Low Forceps						
		6) Mid Forceps						
		7) Rotation with Forceps						
		8) Spontaneous Breech						
		9) Assisted Breech						
		10) Assisted Breech with Aftercoming Head Forceps						
		11) Breech Extraction						
		12) Breech Extraction with Aftercoming Head Forceps						
	FETAL PRESENTATION BABY C	Fetal Presentation	CHOES					
		Choices: 1) Vertex						
		2) Military						
		3) Brow						
		4) Face						
		5) Compound						
		6) Frank Breech						
		7) Complete Breech						
		8) Single Footing						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		9) Double Footing						
		10) Shoulder						
		11) Transverse Lie						
		12) Other, Please Annotate	VCHAR	500	x(500)			
	INFANT DELIVERY DATE BABY C	Delivery Date/Time	FCHAR	8	MM/DD/YY			
	PLACE OF BIRTH BABY C	Place of Birth C	CHOES					
		Choices: 1) East 4						
		2) Born Outside Hospital						
		3) Born other than E4 – Annotate	VCHAR	200	x(200)			
	INFANT SEX BABY C	Infant Sex	CHOES					
		Choices: 1) Male						
		2) Female						
		3) Undetermined						
	INFANT BIRTHWEIGHT BABY C	Birthweight (Grams)	FCHAR	2	0-99			
	INFANT CORD pH BABY C ARTERIAL	Cord pH	FCHAR	2	0-14			
	IUFD BABY C	Intrauterine Fetal Demise (IUFD)	CHOES					
		Choices: 1) Antapartum						
		2) Intrapartum						
		3) <28 weeks						
		4) >28 weeks						
	NEONATAL DEATH BABY C	Neonatal Death Date/Time	DATE	8	MM/DD/YY			
	APGAR SCORE 1 BABY C	Apgar Score 1	FCHAR	1				

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
	APGAR SCORE 5 BABY C	Apgar Score 5	FCHAR	1				
	APGAR SCORE 10 BABY C	Apgar Score 10	FCHAR	1				
	DISPOSITION OF INFANT C	Disposition of Infant	CHOES					
		Choices: 1) With Mother						
		2) Newborn Nursery						
		3) NICU						
		4) Morgue						
	RESUSCITATION EFFORT BABY C	Resuscitation Effort	CHOES					
		Choices: 1) None						
		2) Tactile Stimulation						
		3) Blowby O2						
		4) Bulb Suction						
		5) Deep Suction						
		6) Bag and Mask						
		7) Intubation						
		8) Chest Compression						
		9) Chemical Resuscitation						
		10) NICU at Delivery						
	METHOD OF DELIVERY BABY D	Method of Delivery	CHOES					
		Choices: 1) Vaginal						
		2) C. Section						
	VBAC STATISTICS BABY D	VAGINAL BIRTH AFTER C/S (VBAC)	CHOES					

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		Choices: 1) Successful						
		2) Failed						
	VAGINAL DELIVERY TYPE, BABY D	Vaginal Delivery Type	CHOES					
		Choices: 1) Normal Spont. Delivery						
		2) Vacuum Extraction Delivery						
		3) Vacuum/ Forceps Delivery						
		4) Outlet Forceps						
		5) Low Forceps						
		6) Mid Forceps						
		7) Rotation with Forceps						
		8) Spontaneous Breech						
		9) Assisted Breech						
		10) Assisted Breech with Aftercoming Head Forceps						
		11) Breech Extraction						
		12) Breech Extraction with Aftercoming Head Forceps						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		Choices: 1) Vertex						
		2) Military						
		3) Brow						
		4) Face						
		5) Compound						
		6) Frank Breech						
		7) Complete Breech						
		8) Single Footing						
		9) Double Footing						
		10) Shoulder						
		11) Transverse Lie						
		12) Other, Please Annotate	VCHAR	500	x(500)			
	INFANT DELIVERY DATE BABY D	Delivery Date/Time	FCHAR	8	MM/DD/YY			
	PLACE OF BIRYH BABY D	Place of Birth D	CHOES					
		Choices: 1) East 4						
		2) Born Outside Hospital						
		3) Born other than E4 – Annotate	VCHAR	200	x(200)			
	INFANT SEX BABY D	Infant Sex	CHOES					
		Choices: 1) Male						
		2) Female						
		3) Undetermined						
	INFANT BIRTHWEIGHT BABY D	Birthweight (Grams)	FCHAR	2	0-99			

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
	INFANT CORD pH BABY D ARTERIAL	Cord pH	FCHAR	2	0-14			
	IUFD BABY D	Intrauterine Fetal Demise (IUFD)	CHOES					
		Choices: 1) Antapartum						
		2) Intrapartum						
		3) <28 weeks						
		4) >28 weeks						
	NEONATAL DEATH BABY D	Neonatal Death Date/Time	DATE	8	MM/DD/YY			
	APGAR SCORE 1 BABY D	Apgar Score 1	FCHAR	1				
	APGAR SCORE 5 BABY D	Apgar Score 5	FCHAR	1				
	APGAR SCORE 10 BABY D	Apgar Score 10	FCHAR	1				
	DISPOSITION OF INFANT D	Disposition of Infant	CHOES					
		Choices: 1) With Mother						
		2) Newborn Nursery						
		3) NICU						
		4) Morgue						
	RESUSCITATION EFFORT BABY D	Resuscitation Effort	CHOES					
		Choices: 1) None						
		2) Tactile Stimulation						
		3) Blowby O2						
		4) Bulb Suction						
		5) Deep Suction						
		6) Bag and Mask						
		7) Intubation						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		8) Chest Compression						
		9) Chemical Resuscitation						
		10) NICU at Delivery						
	METHOD OF DELIVERY BABY E	Method of Delivery	CHOES					
		Choices: 1) Vaginal						
		2) C. Section						
	VBAC STATISTICS BABY E	VAGINAL BIRTH AFTER C/S (VBAC)	CHOES					
		Choices: 1) Successful						
		2) Failed						
	VAGINAL DELIVERY TYPE, BABY E	Vaginal Delivery Type	CHOES					
		Choices: 1) Normal Spont. Delivery						
		2) Vacuum Extraction Delivery						
		3) Vacuum/ Forceps Delivery						
		4) Outlet Forceps						
		5) Low Forceps						
		6) Mid Forceps						
		7) Rotation with Forceps						
		8) Spontaneous Breech						
		9) Assisted Breech						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		10) Assisted Breech with Aftercoming Head Forceps						
		11) Breech Extraction						
		12) Breech Extraction with Aftercoming Head Forceps						
	FETAL PRESENTATION BABY E	Fetal Presentation	CHOES					
		Choices: 1) Vertex						
		2) Military						
		3) Brow						
		4) Face						
		5) Compound						
		6) Frank Breech						
		7) Complete Breech						
		8) Single Footing						
		9) Double Footing						
		10) Shoulder						
		11) Transverse Lie						
		12) Other, Please Annotate	VCHAR	500	x(500)			
	INFANT DELIVERY DATE BABY E	Delivery Date/Time	FCHAR	8	MM/DD/YY			
	PLACE OF BIRTH BABY E	Place of Birth E	CHOES					
		Choices: 1) East 4						
		2) Born Outside Hospital						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
		3) Born other than E4 – Annotate	VCHAR	200	x(200)			
	INFANT SEX BABY E	Infant Sex	CHOES					
		Choices: 1) Male						
		2) Female						
		3) Undetermined						
	INFANT BIRTHWEIGHT BABY E	Birthweight (Grams)	FCHAR	2	0-99			
	INFANT CORD pH BABY E ARTERIAL	Cord pH	FCHAR	2	0-14			
	IUFD BABY E	Intrauterine Fetal Demise (IUFD)	CHOES					
		Choices: 1) Antapartum						
		2) Intrapartum						
		3) <28 weeks						
		4) >28 weeks						
	NEONATAL DEATH BABY E	Neonatal Death Date/Time	DATE	8	MM/DD/YY			
	APGAR SCORE 1 BABY E	Apgar Score 1	FCHAR	1				
	APGAR SCORE 5 BABY E	Apgar Score 5	FCHAR	1				
	APGAR SCORE 10 BABY E	Apgar Score 10	FCHAR	1				
	DISPOSITION OF INFANT E	Disposition of Infant	CHOES					
		Choices: 1) With Mother						
		2) Newborn Nursery						
		3) NICU						
		4) Morgue						

Table Name	Attribute Name	Contents	Type	Length	Format	Range of Choices	Key Required	(PK or FK)
	RESUSCITATION EFFORT BABY E	Resuscitation Effort	CHOES					
		Choices: 1) None						
		2) Tactile Stimulation						
		3) Blowby O2						
		4) Bulb Suction						
		5) Deep Suction						
		6) Bag and Mask						
		7) Intubation						
		8) Chest Compression						
		9) Chemical Resuscitation						
		10) NICU at Delivery						

Note:

FK = Foreign key VCHAR = Variable Character Length DECML = Decimal CHOES = Choices

PK = Primary key FCHAR = Fixed Character Length DATE = Date

* When a format is too large to fit the allotted space, a COBOL notation is used. Thus 9(6).99 denotes six nines before the decimal: 999999.99

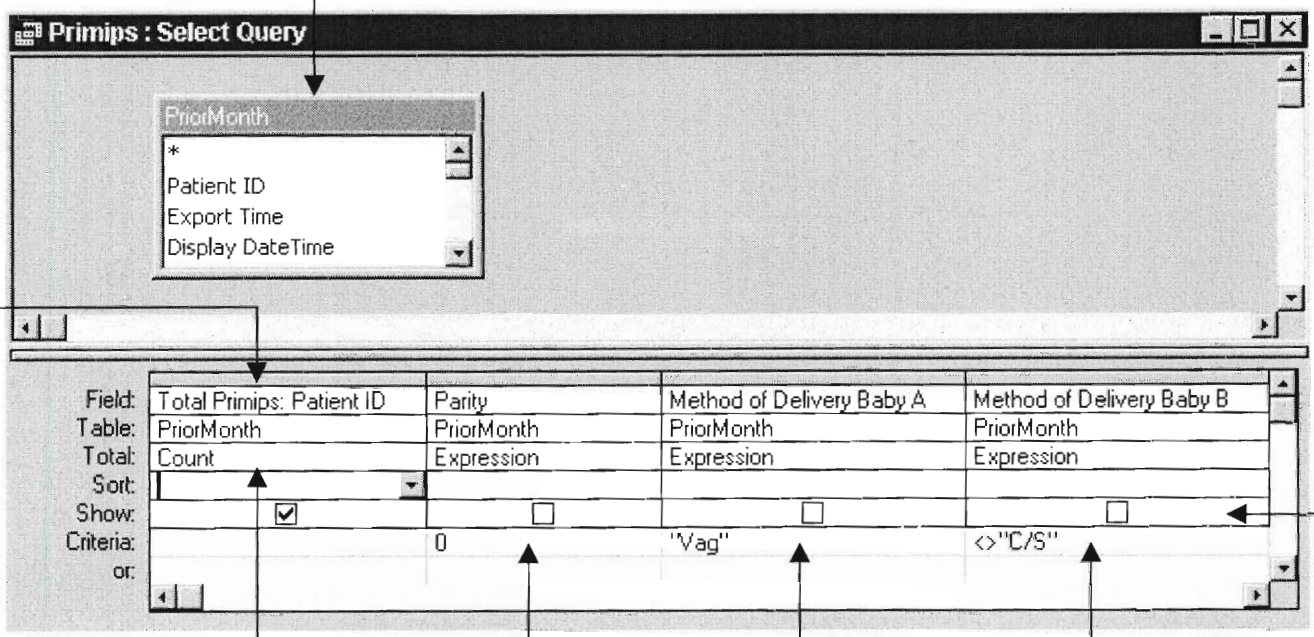
Addendum

Additional Queries

Interpreting Queries:

Table or query from which data elements are taken for this query.

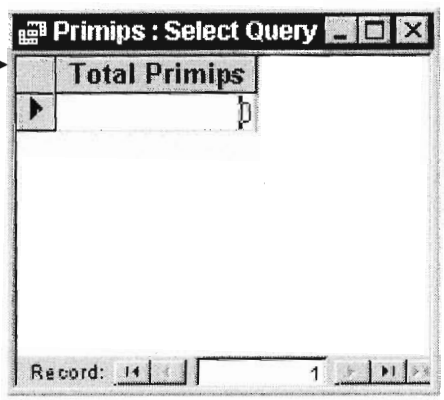
Check the "Show" option to specify that the field should be shown in the query.



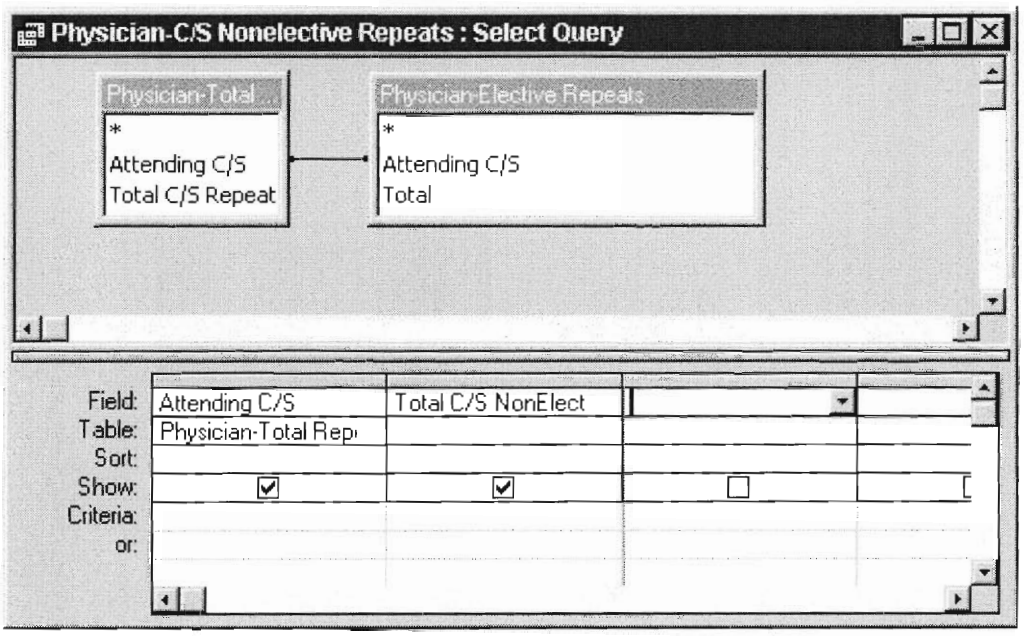
Specify Count to tally up the total number of Patient ID's that meet all the criteria.

Specify the criteria that these fields must have in order to be taken into account by the query. Here, Parity must be 0, Method of Delivery A must be "Vag" and Method of Delivery Baby B must not be "C/S"

Format is **"user specified name" : "Actual field name"**
The optional user specified name is what is displayed when the query is run. Please see the diagram to the right.



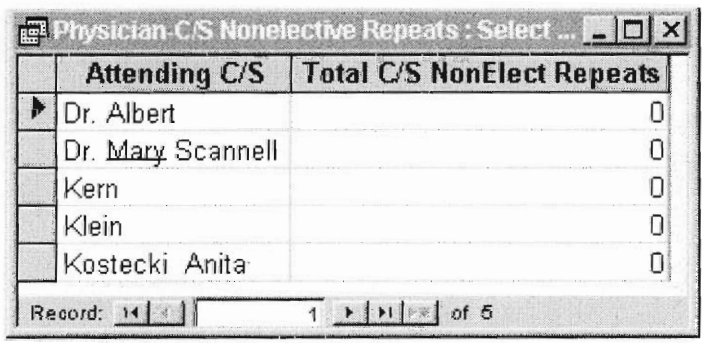
Physician-NonElective Repeats



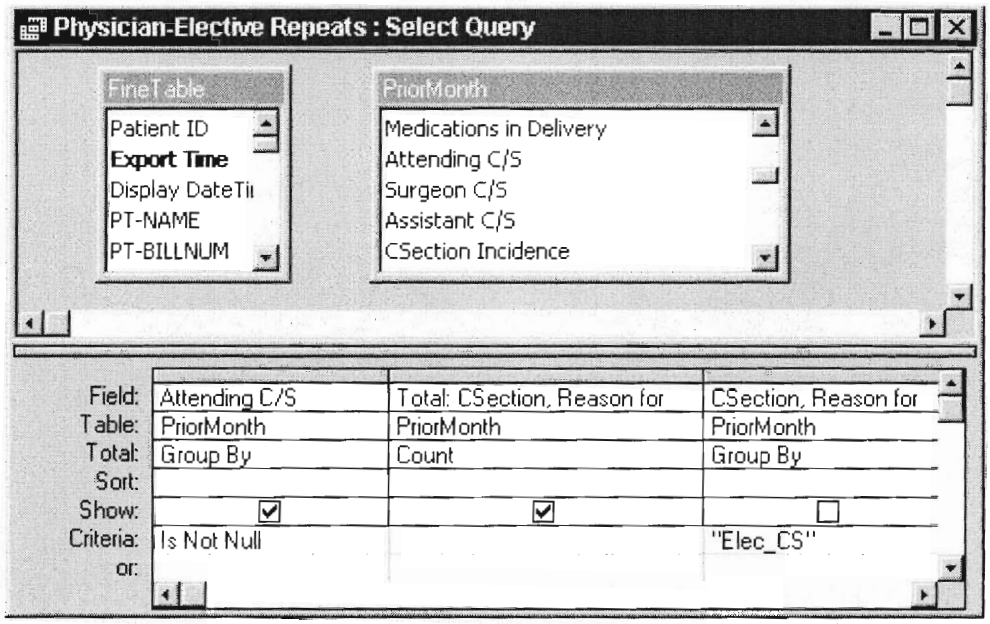
SQL Code 1:

```
SELECT DISTINCTROW [Physician-Total Repeats].[Attending C/S], [Physician-Total
Repeats]![Total C/S Repeats]-[Physician-Elective Repeats]![Total] AS [Total C/S NonElect
Repeats]
FROM [Physician-Total Repeats] INNER JOIN [Physician-Elective Repeats] ON [Physician-
Total Repeats].[Attending C/S] = [Physician-Elective Repeats].[Attending C/S];
```

Description: This query subtracts the Elective Repeats from the Total repeats for each doctor to obtain the total nonelective repeats.



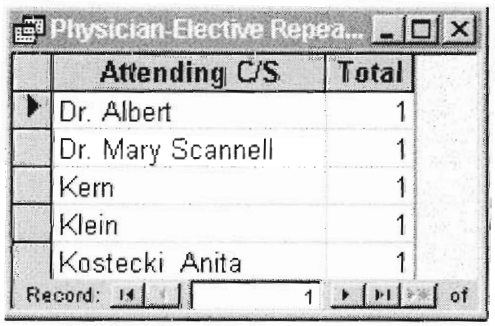
Physician-Elective Repeats



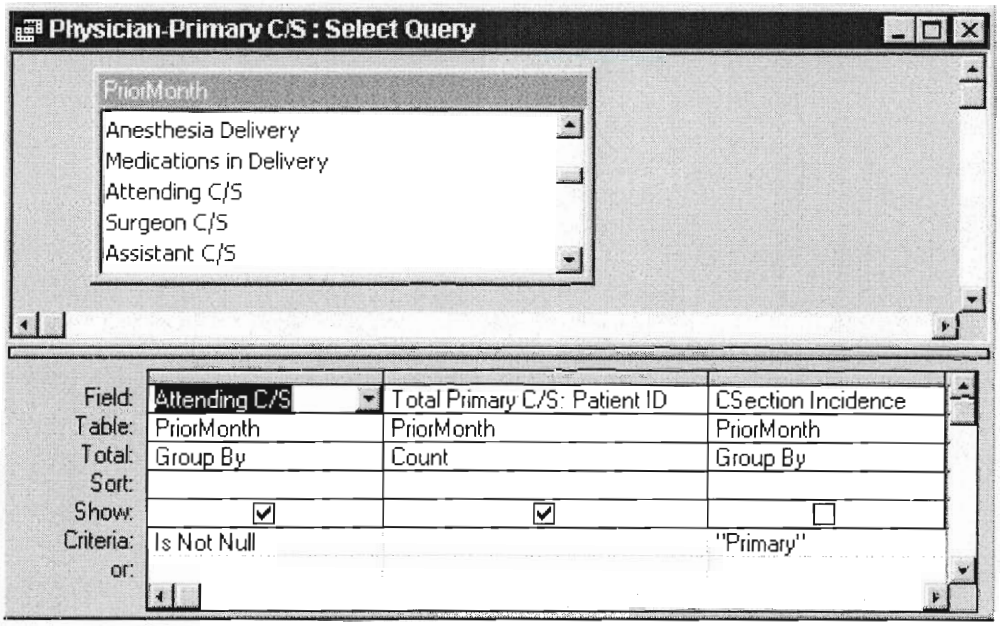
SQL Code 2:

```
SELECT DISTINCTROW PriorMonth.[Attending C/S], Count(PriorMonth.[CSection, Reason
for]) AS Total
FROM FineTable, PriorMonth
GROUP BY PriorMonth.[Attending C/S], PriorMonth.[CSection, Reason for]
HAVING (((PriorMonth.[Attending C/S]) Is Not Null) AND ((PriorMonth.[CSection, Reason
for])="Elec_CS"));
```

Description: This query tallies up how many elective repeats each doctor has done. It does this by examining the "Csection, Reason for" field for each doctor and checks whether it is "Elect_CS".



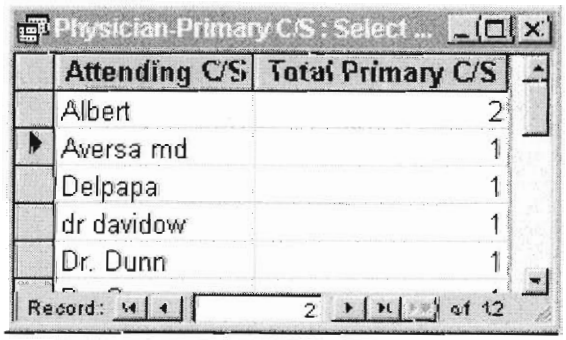
Physician-Primary C/S



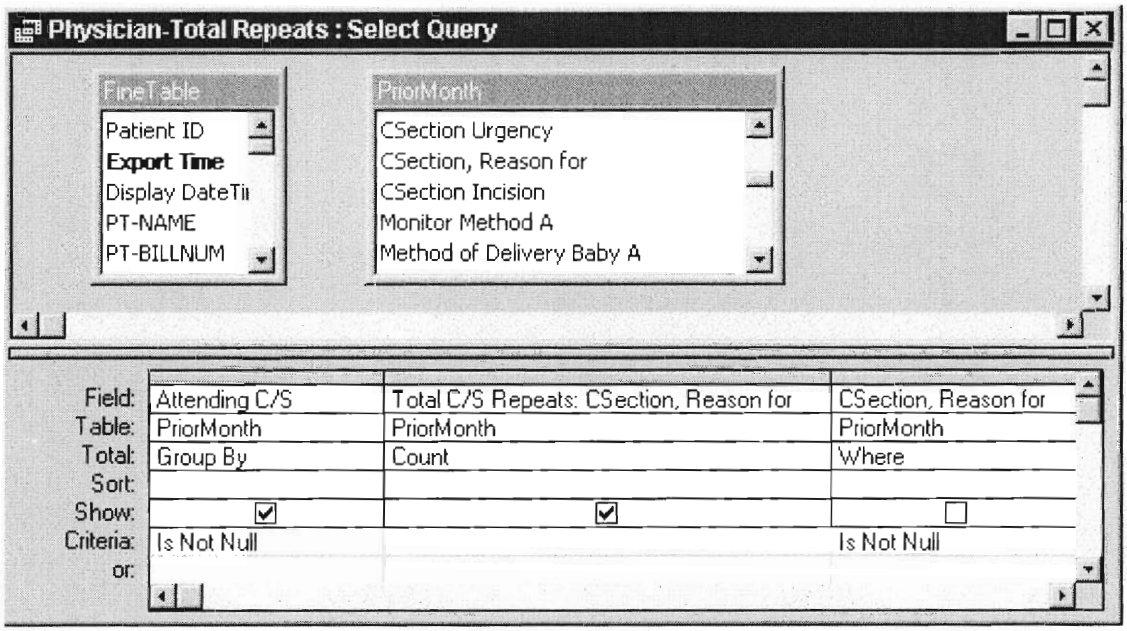
SQL Code 3:

```
SELECT DISTINCTROW PriorMonth.[Attending C/S], Count(PriorMonth.[Patient ID]) AS
[Total Primary C/S]
FROM PriorMonth
GROUP BY PriorMonth.[Attending C/S], PriorMonth.[CSection Incidence]
HAVING (((PriorMonth.[Attending C/S]) Is Not Null) AND ((PriorMonth.[CSection
Incidence])="Primary"));
```

Description: This query calculates the total number of primary cesarean sections each doctor has performed. It checks that the "Csection Incidence" field is "Primary" and that the doctor's name is not NULL.



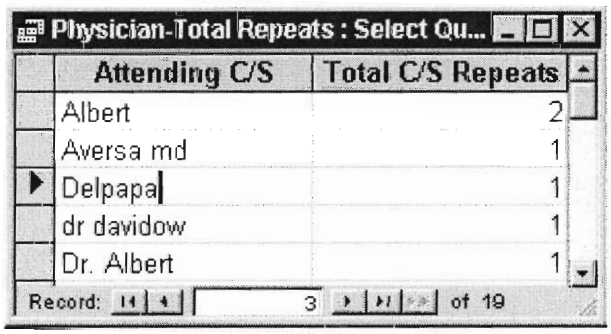
Physician-Total Repeats



SQL Code 4:

```
SELECT DISTINCTROW PriorMonth.[Attending C/S], Count(PriorMonth.[CSection, Reason
for]) AS [Total C/S Repeats]
FROM FineTable, PriorMonth
WHERE (((PriorMonth.[CSection, Reason for]) Is Not Null))
GROUP BY PriorMonth.[Attending C/S]
HAVING (((PriorMonth.[Attending C/S]) Is Not Null));
```

Description: This query calculates the total C/S Repeats performed by each physician by checking that the "Csection, Reason for" contains some value. Furthermore, it also checks that the physician name is not null.



User's Guide

To assure that the database works correctly the user needs ftp-access. This access is required so that the user can get data from the Archive Server. The user also needs to make sure that the Archive Server is up and running when the database opens up.

Following the steps outlined below the user can open up the database and collect the required information:

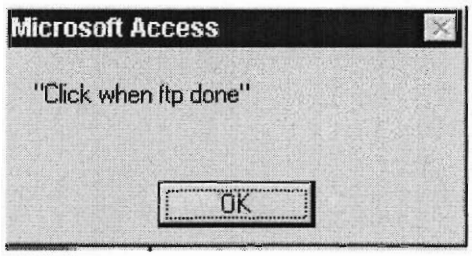
1) Open up Microsoft Access
2) Select PrenatalV1.mdb
3) Click ok.

Retrieve Data

In order to get data from the archive server follow these steps:

1) Open the database
2) Click on Retrieve Data

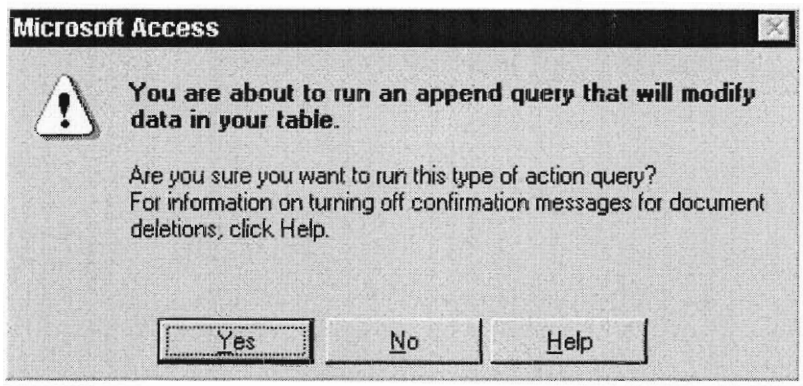
An ftp session opens up, and closes automatically
A screen that asks you to "click ok, when ftp closes" pops up.



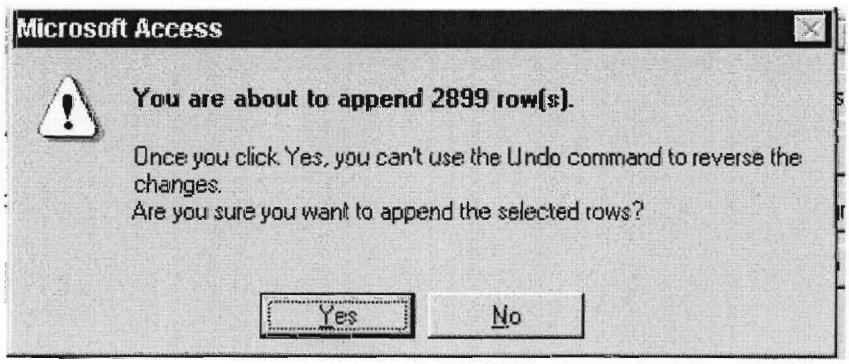
i) Click Ok

The next screen looks like this

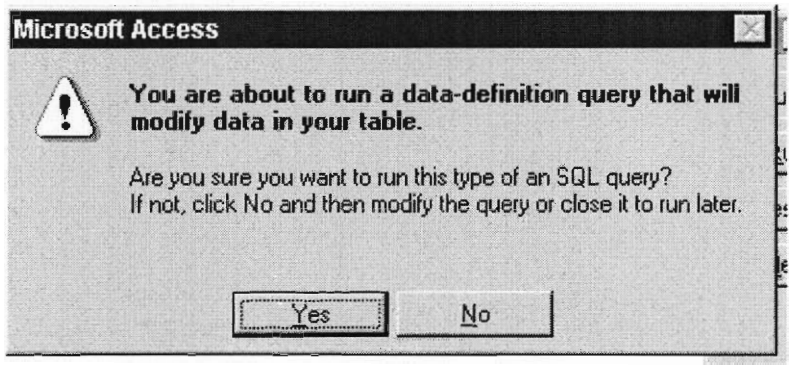
Click Yes



Another screen tells you that you are Appending records to a table.

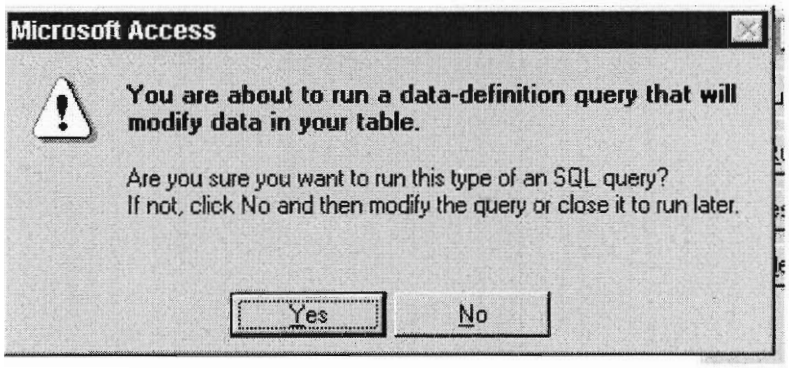


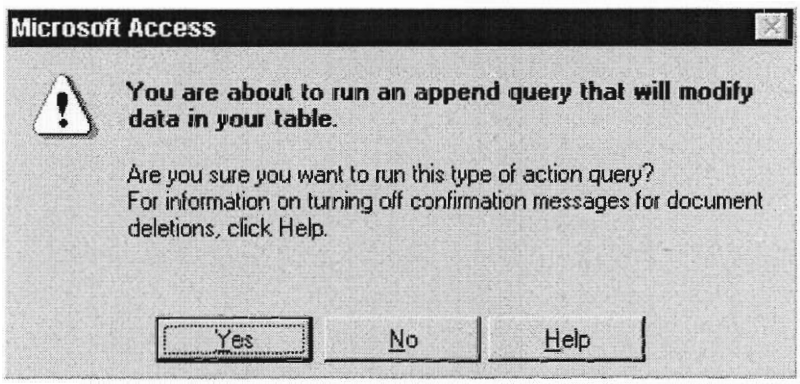
Click Yes. The values shown here might not be representative of the value shown in your screens but do not worry. The last screen in this section looks like this



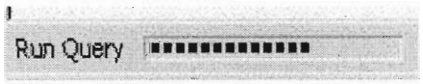
Process Data

Now that you have retrieved data from the Archive data, click on the process data button. When you do so, the next shots show the screens that should appear, in sequence.

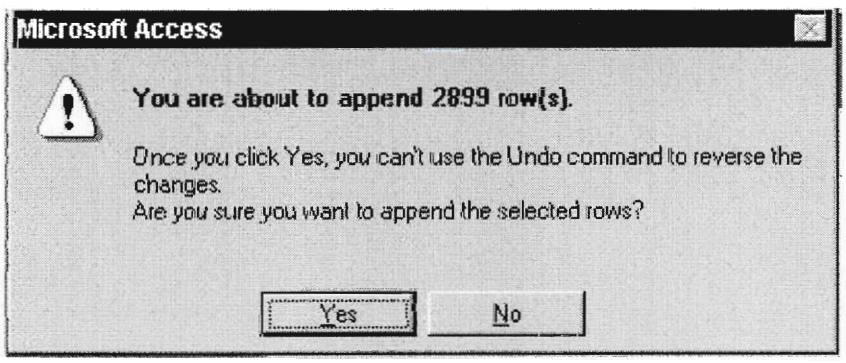


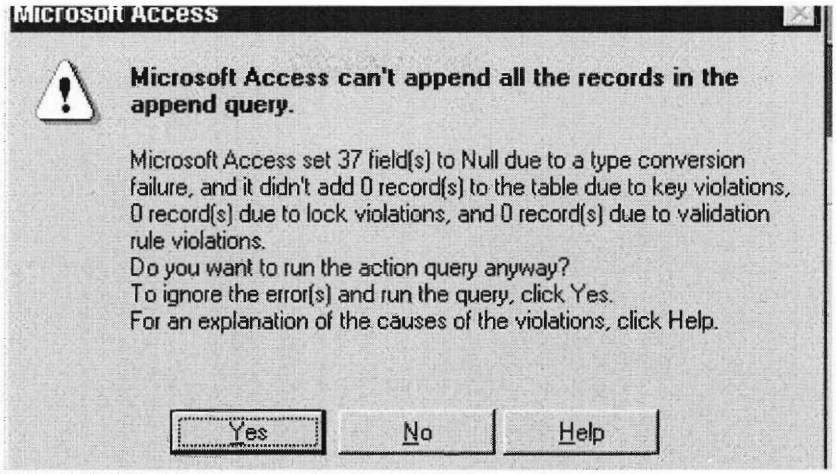


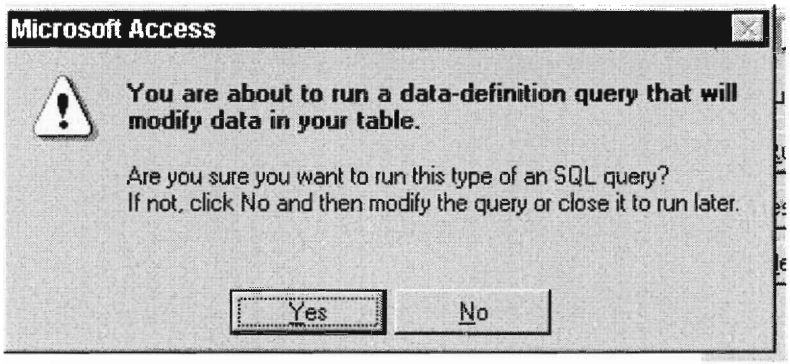
Wait until the box shown below has reached capacity. The box is located in the bottom, left-hand corner of the screen.

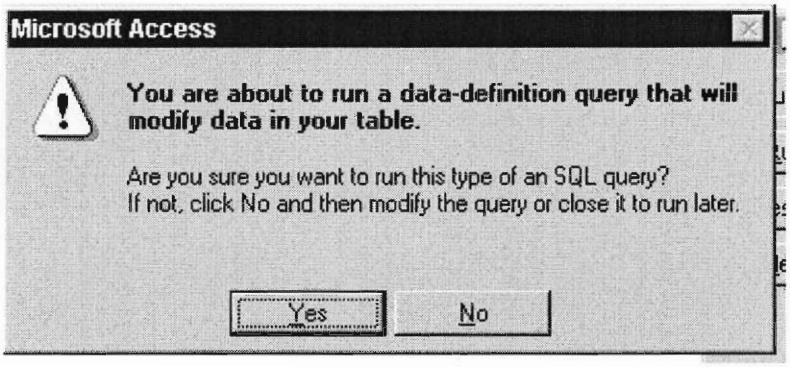


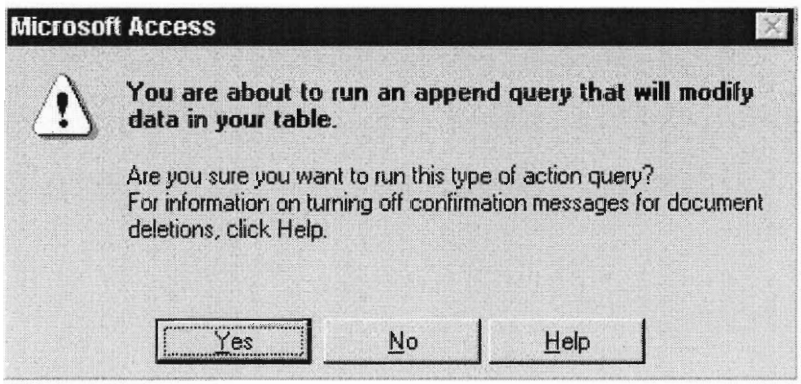
Next, the following screen shows up. Remember, the values shown in this screen are not representative of the values on your screen.



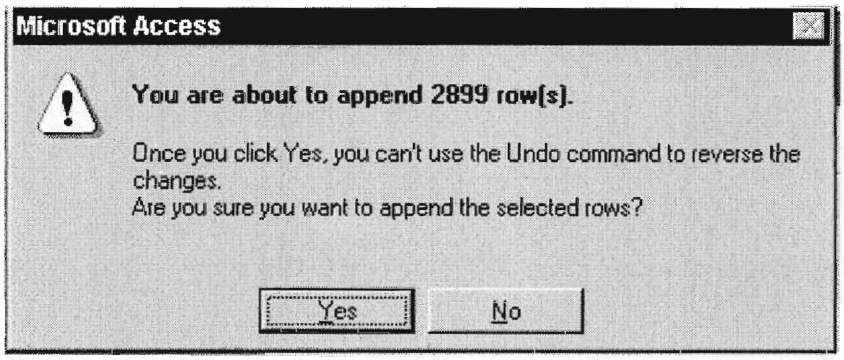

Microsoft Access
Microsoft Access can't append all the records in the append query.
Microsoft Access set 37 field(s) to Null due to a type conversion failure, and it didn't add 0 record(s) to the table due to key violations, 0 record(s) due to lock violations, and 0 record(s) due to validation rule violations.
Do you want to run the action query anyway?
To ignore the error(s) and run the query, click Yes.
For an explanation of the causes of the violations, click Help.
Yes
No
Help

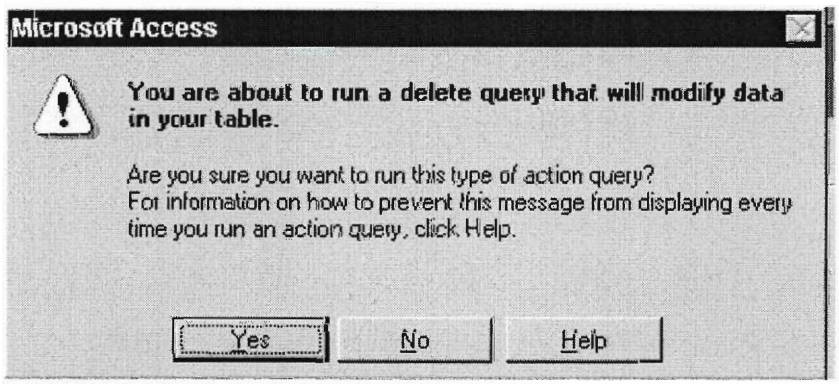

Microsoft Access
You are about to run a data-definition query that will modify data in your table.
Are you sure you want to run this type of an SQL query?
If not, click No and then modify the query or close it to run later.
Yes
No


Microsoft Access
You are about to run a data-definition query that will modify data in your table.
Are you sure you want to run this type of an SQL query?
If not, click No and then modify the query or close it to run later.
Yes
No

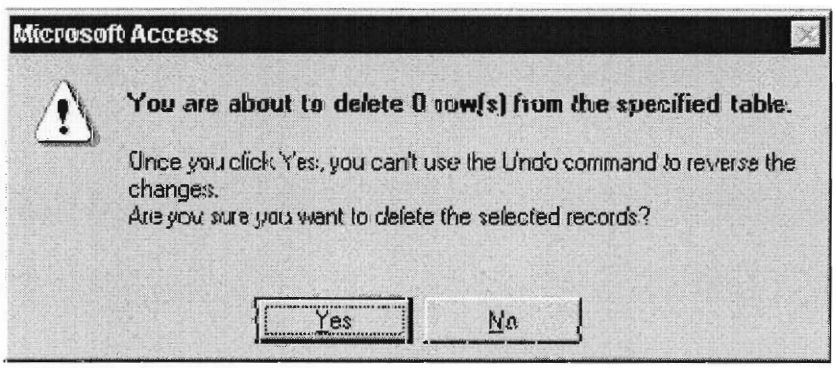

Microsoft Access
You are about to run an append query that will modify data in your table.
Are you sure you want to run this type of action query?
For information on turning off confirmation messages for document deletions, click Help.
Yes
No
Help

Wait until the box in the lower, left-hand corer of the screen is completed again.

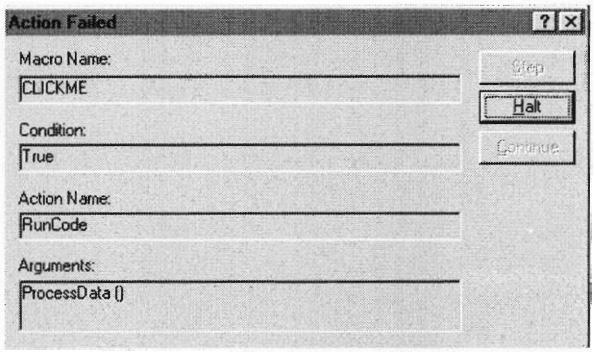


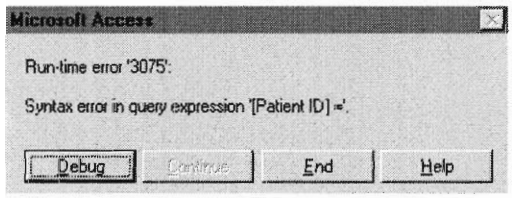


The value in the next shot might be different than the one on your screen.



The following two screen shots might and might not occur, depending on the data set. If they occur follow the instructions on the next page. Otherwise, click on "Reports..." to view the statistics.





1) Click on Halt
2) Click on Cleanup Prenatal Database
3) Click on Exit to Prenatal Database
4) Select TestTable, double click the name of the table
5) Select the patients to delete, namely the ones who have invalid patient ID's.
6) Save the file
7) Goto "Forms"
8) Open the switchboard
9) Click on process data, and you will see the same screen shots as before, except the Action Fail screen, unless all the invalid data was not removed.

Backup Data

The following instructions detail how to backup data from the FineTable:

1) Click on the "Exit to Prenatal button"
2) Select the FineTable
3) Click on the database symbol, upper left hand corner
4) Click on File
5) Select Save As/Export
6) Select To an External Database
7) Click Ok
8) Give the file an appropriate name
9) Select Excel 5-7, in the Save As Type selection
10) Click on Export

How to Retrieve Data

When importing data from previous months, ***do NOT*** *click on the following buttons:*

1) Retrieve Data
2) Process Data
3) Cleanup Archive Server
4) Cleanup Prenatal Database

Do the following to retrieve past data:

1) Click on Exit to prenatal
2) Click on File
3) Select Get External Data
4) Import
5) Select the filename
6) Click on Import
7) Click Next
8) Check the box: First Row contains column headings
9) Click Next
10) Click Next
11) Click Next
12) Select No Primary Key
13) Click Next
14) In the "Import To Table" selection , type FineTable
15) Click on Finish

Please note, when retrieving data for a previous month, change the date on the local machine to the month following the month that the data was imported for. Also note that the FineTable has to be manually deleted by the user after the reports are generated.

Viewing Patients Having Missing Data:

The statistics being generated by the database can only be as good as the input it is receiving. If all the data is not being entered, the statistics may not be as accurate. The user may obtain a listing of patients who have missing data by opening the "Missing Fields Query." Follow the steps below to view this list of patients:

1) Click on the "Queries" tab
2) Select "Missing Fields" query and double click
3) The listing of patients with missing data is displayed.