Chapter VII
Statistical Measures in Maternity Care

Emma Parry
The University of Auckland, New Zealand

ABSTRACT

Pregnancy is unique in medicine in providing a discrete event with a fixed end. It is well suited to data collection and statistical assessment. This chapter systematically reviews the antenatal, intrapartum, and postnatal (both maternal and neonatal) aspects of care. The range of events that can occur and their classification is discussed. In many cases there is variation in classification around the world and between different organizations. These complexities are discussed. Once data is collected there are a number of ways to analyze it depending on what is wanted. Issues of appropriate numerator and denominator are discussed and the pitfalls which can occur. Use of data, both original and derived, is discussed in terms of type of use: planning, benchmarking, process review and research, and by whom: individual, local unit, country level, or internationally.

INTRODUCTION

Obstetrics lends itself to data collection. Each pregnancy is discrete with a final outcome. The options for most variables are limited. Most obstetric patients are well with no confounding illnesses.

Over the last twenty years there has been a revolution in patient attitude and with it doctors have been called to account for their actions. This has resulted in all disciplines of medicine being required to keep records of the service they are offering. Audit has become an integral part of our training and clinical practice.

Obstetrics as a specialty has responded relatively well to this challenge and most maternity units will be able to quote numbers of deliveries, induction of labor, caesarean section and forceps delivery rates. Increasingly through the necessity of data collection, computers are being introduced

into obstetrics (South and Rhodes 1971; Lilford and Chard 1981; Chard 1987; Horwood and Richards 1988; Kohlenberg 1994).

The data collected can be a small collection of discrete variables or a large number of both discrete and continuous variables. There are many ways to examine and present the data and many ways to effectively use the data. It must always be borne in mind though that the quality of outputs depends on the quality of the data entered and the best outputs have checks of data validity.

In this chapter I will describe the variables of data that can be collected, commonly used definitions within maternity care and an introduction to the range of uses of this data. Other chapters within this book will examine more closely perinatal databases and data use.

MATERNITY VARIABLES

Antenatal

At the time of booking a number of demographic variables will be recorded. These will usually include data on the woman's age, ethnicity, contact details and primary health care physician. Previous pregnancies, their progress and outcome will be recorded. In many 'booking forms' there will be a series of general health questions for the woman and her family eg 'do you have diabetes or is there any history of diabetes in your family?' 'Have you had any surgery?'

There will be a large section of questions devoted to the current pregnancy. These will include information on last menstrual period (LMP), estimated date of delivery (EDD), confirmation of pregnancy method (urine test, scan). Was the pregnancy planned and if so was folic acid or vitamins taken periconceptually in countries where this is recommended? Where there has been a scan is the pregnancy confirmed to be singleton or multiple? Any problems so far?

Information on factors which may affect pregnancy and where modification is advised will usually be included. This includes smoking, alcohol intake and recreational drug use. Adherence to primary health strategies such as pap smears and sexually transmitted diseases (STD) swabs will often be included.

Most booking regimes will include some basic assessment of socio-economic status such as highest level of qualification or postcode/zipcode assessment.

As pregnancy progresses a series of visits will take place and investigations and screening options offered. The visits will usually include regular checks of blood pressure, urinalysis and abdominal palpation (to check the fetal growth and position). The woman's height and weight will often also be recorded. Routine blood tests will usually include a complete blood count (CBC), screening for hepatitis B, syphilis, HIV and checks for blood group and rubella immunity. In many countries women are offered scans and/or blood tests to assess the risk of Trisomy 21 (Down syndrome) and general fetal anatomy. Some countries also offer additional blood tests for screening. Some women may have invasive diagnostic tests such as amniocentesis.

All this information gathering and testing has evolved as part of the management of pregnancy over the last 100 years. For an individual woman it allows detection of problems in a timely fashion to allow appropriate intervention. However, with the advent of computerization, this information gathering has become a powerful tool to provide statistical measurement of many areas of maternity care delivery. Clearly though, the accuracy of the data depends on the care with which it is entered.

Commonly generated data include: pregnancy rate, average age of mothers and range, parity and gravidity, distribution of ethnicity and/or socio-economic group, smoking, drugs and alcohol use rates. Analyses of uptake of screening and diag-