Chapter 1

BURDEN OF BREAST CANCER IN
DEVELOPING AND DEVELOPED COUNTRIES

D. Max Parkin BSc, MD, MRCP (UK), Dip.Soc.Med. (Edin), FFCM
Unit of Descriptive Epidemiology, International Agency for Research on Cancer, Lyon, France

1. INTRODUCTION

This chapter will describe the current burden of breast cancer in year 2000 and the projected burden of breast cancer up to year 2050 for women of African descent. The overall trends and distributions of cancers in developing and developed countries and changes in cancer trends will be described. The impact of an increasing incidence of breast cancer in African populations on the health, economic and social well being of affected populations will be discussed.

1.1 Indices of “burden”

Various statistics are available for assessing the importance (burden) of cancer, and of different types of cancer, in the population, either through quantifying the disease itself (the ‘need’ for services) or the demand that it places upon them (1).

\textit{Incidence} is the number of new cases occurring. It can be expressed as the annual number of cases (the volume of new patients presenting for treatment) or as a rate per 100,000 persons per year. Rates are necessary if we wish to compare the risk of disease between populations (countries, ethnic groups, or different time periods within a country). Changes in incidence of cancer are the appropriate indicator of the impact of primary prevention strategies. Incidence data are produced by population-based
cancer registries (2). Registries may cover national populations or, more often, certain regions. In developing countries in particular, coverage is often confined to the capital city and its environs. It was estimated that, in 1995, about 16.3% of the world population were covered by registries, 52.4% of developed countries and 7.5% of developing countries. The latest volume of "Cancer Incidence in Five Continents" (8th) contains comparable incidence information from 186 registries in 57 countries, mainly over the period 1993-1997 (3).

**Mortality** is the number of deaths occurring, and the mortality rate the number of deaths per 100,000 persons per year. The number of deaths provides an unambiguous measure of the outcome, or impact of cancer. It is the product of incidence and fatality (the inverse of survival) of a given cancer. Mortality rates measure the average risk to the population of dying from a specific cancer, while fatality (1-survival) represents the probability that an individual with cancer will die from it. Mortality data derive from vital registration systems, where the fact and "underlying" cause of death are certified, usually by a medical practitioner. Their great advantage is comprehensive coverage, and availability. By 1995, about 29% of the world population was covered by vital registration systems producing mortality statistics on cancer. This includes all of the developed countries, and many of the developing countries. National level statistics are collated and made available by the WHO (http://www-depdb.iarc.fr/who/menu.htm).

**Survival statistics** are produced by cancer registries; they require follow-up of registered cancer cases, either actively or by matching death certificates against cancer notifications and assuming that unmatched cases are still alive. Population-based figures are published by registries in many developed countries: for example, the SEER program covering 10% of the US population (4), and the EUROCARE II project, including 17 countries of Europe (5). Survival data from populations of China, the Philippines, Thailand, India and Cuba have been published by Sankaranarayanan et al, (6).

**Prevalence** is the proportion of a population that has the disease at a given point in time (7). For many diseases for which the time of onset is imprecise, (e.g., hypertension, diabetes), prevalence may be used as a substitute for incidence in comparative studies between populations. This is not necessary for cancer, and prevalence is not a useful indicator if the focus of interest is disease risk, and its possible causes. Even as an indicator of burden (and need for services) total prevalence ("ever had a cancer") is not useful; the figure will include many persons diagnosed in the past, some of whom have been "cured" and no longer have an excess risk of death. A pragmatic alternative is "partial prevalence" (8), which refers to cases diagnosed within a defined period following diagnosis (one, three and five