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Economic analysis of the Nairobi Cancer Registry: Implications for expanding and enhancing cancer registration in Kenya

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ABSTRACT

Introduction: Cancer registration is an important activity for informing cancer control activities. Cancer registries in Sub-Saharan Africa have limited resources to effectively operate because of competing priorities. To date, there has not been an assessment of the resources and funding needed to perform all the activities essential for cancer registration in Kenya. Evidence will help registries to quantify and advocate for the funds needed to sustain, enhance, and expand high quality cancer registration in Kenya.
Methods: In this study, we used the Centers for Disease Control and Prevention's (CDC's) International Registry Costing Tool (*IntRegCosting Tool*) to evaluate the funding, cost, and labor resources used to perform the cancer registry operations in Nairobi County for two annual periods between July 2012 and June 2014.
Results: Funding from grants, research studies, and international organizations provided 70% of the registry operations' cost. For both time periods, the most-costly registry activities were related to administration, management, and training, along with data acquisition activities such as data abstraction, entry, and validation. Even among these core registry activities, however, substantial variations existed.
Conclusions: Stable funding for cancer registry operations is necessary to sustain core registry activities in other to deliver high-quality data, which in turn is necessary to foster evidence-based policies to improve cancer outcomes. As stakeholders look into expanding the Nairobi Cancer Registry into a national program, the cost data provided in this study will help justify the funding required for sustaining and expanding registry activities.

1. Introduction

In Kenya, cancer is ranked third as a cause of death, after infectious and cardiovascular diseases, accounting for approximately 7% of the total national mortality [1]. Although national data about cancer are not available, GLOBOCAN estimates that approximately 41,000 new cases of cancer occurred in Kenya in 2012, with 28,453 deaths [2]. The overall cancer incidence rate was 167.2 per 100,000 for men and 196.6 per 100,000 for women [2]. In low and middle income countries (LMIC), the problem of rising cancer rates is compounded by poor prevention, lack of early

Abbreviations: AFCRN, Africa Cancer Registry Network; ASR, age-standardized rate; CDC, Centers for Disease Control and Prevention; CI5, Cancer Incidence in Five Continents; CIA, Central Intelligence Agency; FTE, full-time equivalent; IARC, International Agency for Research on Cancer; ICD-O, International Classification of Diseases for Oncology; *IntRegCosting Tool*, International Registry Costing Tool; INCTR, International Network for Cancer Treatment and Research; IT, information technology; KEMRI, Centre for Clinical Research at Kenya Medical Research Institute; LMIC, low- and middle-income country.

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detection, and health care facilities that could lead to early treatment interventions.

Timely dissemination of cancer surveillance data to the policy makers and scientists responsible for designing, implementing, and evaluating cancer prevention and control activities is vital [3]. Population-based cancer registries collect information on cancers in a defined population; these data are needed to calculate cancer incidence, mortality, prevalence, and survival trends, show distribution of stage at diagnosis and treatments received, help inform and evaluate cancer prevention, control and treatment efforts, and to generate hypotheses for further research.

Despite the importance of cancer registration for producing data needed to inform decisions about cancer control activities, obtaining the resources required to operate and sustain quality registries remains a major challenge in Sub-Saharan Africa, where health priorities compete for limited resources. These challenges are compounded by a lack of information about the resources required to effectively run all the activities essential for cancer registration. Without such evidence, it is difficult to advocate for the funding needed to sustain high quality cancer registration in Kenya.

Kenya is an East African country bordered by the Indian Ocean, Somali, Uganda, Rwanda and Ethiopia. It has three main population-based cancer registries, located in Nairobi, Eldoret, and Kisumu (Fig. 1). These registries are described in Table 1. The Nairobi Cancer Registry was established after consultations between the United States National Cancer Institute (US NCI), the International Agency for Research on Cancer (IARC), the Kenya Ministry of Health, and KEMRI. The establishment of the registry was approved by the Scientific Steering Committee and the Ethics Research Committee of KEMRI and endorsed by the Kenya Ministry of Health and the World Health Organization. The registry has maintained its role as a recognized key player in cancer registration in Africa. By fostering relationships with both local and international cancer control stakeholders, the registry has mobilized resources to maintain its operation. The registry offers technical support to newly established hospital-based and population-based registries in Kenya and facilitates trainings for cancer registries in other parts of Africa in collaboration with the Africa Cancer Registry Network (AFCRN).

The Eldoret Cancer Registry is a population-based cancer registry that operates within the Hemato-Oncology department of Moi University and is located in the same complex as the Moi Teaching and Referral Hospital; it's main source of data. Some of the registry's staff members (such as the Director and the Secretary) are employees of Moi University, and others are volunteers who serve for short time periods. Moi University students occasionally help (as volunteers or are given a small stipend) with data collection from hospitals, pathology laboratories, and registries of vital statistics.

The Kisumu Cancer Registry, which is a population-based cancer registry located within the Kisian Campus of KEMRI in Kisumu, captures unique, well-documented data on HIV-related malignancies; Kaposi Sarcorma and Non-Hodgkins Lymphoma, in addition to the standard cancer registry data.

The aims of this study were to 1. Determine the economic costs of running a cancer registry in Kenya, 2. Understand the factors that affect the collection of high-quality data, and 3. Quantify the costs associated with each activity performed by the registry. The Nairobi Cancer Registry was selected as the main site for the

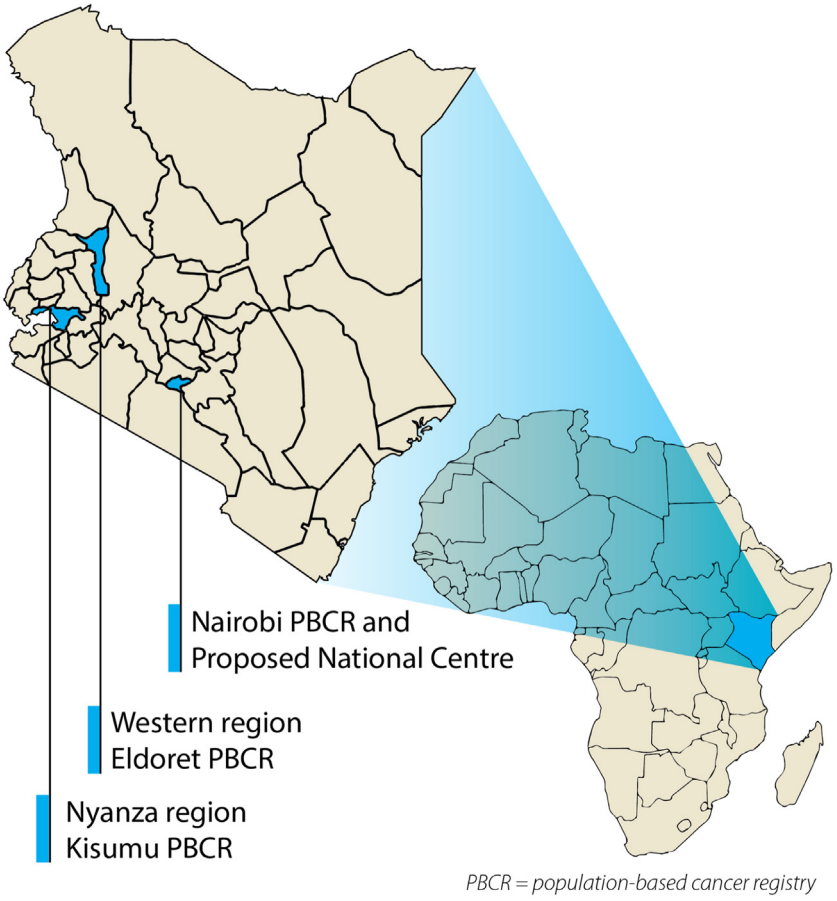

Fig. 1. Map of Kenya showing the location of the Nairobi, Kisumu, and Eldoret Cancer Registries.