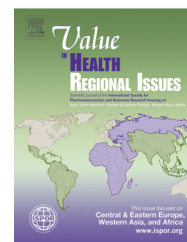




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Health Facility Cost of Buruli Ulcer Wound Treatment in Ghana: A Case Study

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ABSTRACT

Objective: To estimate the wound treatment cost borne by the Buruli Ulcer Treatment Centre of the Amasaman Government Hospital, Ghana. **Methods:** Three different types of data collection approaches were used, namely, 1) observation checklist, 2) in-depth interviews, and 3) expenditure data review. Wound dressing processes were observed. Retrospective health facility cost data of Buruli ulcer (BU) wound treatment for the year 2011 were used. Cost data gathered covered medical and nonmedical items. Cost analyses were carried out to determine the health facility's financial and economic costs. **Results:** The total annual financial cost was US \$121,189.16, of which 99% was recurrent cost. This constitutes about 13% of the expenditure by the Amasaman Government Hospital for the year 2011. The total annual economic cost was US \$143,609.22, of which 93% was recurrent cost. The main cost driver for both financial and economic costs was

personnel. The annual BU wound treatment costs per capita were US \$1615.86 for financial cost and US \$1914.79 for economic cost, respectively. The study did not cover household patient costs. **Conclusions:** The cost of BU wound treatment takes a considerable amount of the hospital's expenditure. This shows the importance of health facility cost as one of the decision-making tools for both resource allocation and mobilization. Hospital management must therefore constantly examine its staffing norms and the associated cost to improve the hospital's resource allocation.

Keywords: Buruli ulcer, economic cost, financial cost, Ghana, wound care.

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Introduction

Buruli ulcer (BU) affects skin, and usually starts as a painless nodule, papule, plaque, or edema. It then commonly advances into a painless ulcer [1]. But BU can result in severe destruction of the skin and soft tissues. This leads to the formation of extensive ulcers, especially on the arms and legs. Affected persons who are not treated can develop lifelong deformities. Management of BU is dependent on the stage of the disease. Antibiotics such as rifampicine and streptomycin are usually used for its management. In complicated ulcers, surgery, which may or may not involve skin grafting, is done [2].

The first case of BU in Ghana was reported in 1971 [3,4] and was brought to public attention in 1993 [5]. Currently, Ghana is the second most endemic BU country with about 17% of the cases globally [6]. The BU burden has both social and economic dimensions [4]. Studies have shown that BU has a strong economic burden on the community and health facilities [7]. In Cameroon, households spend about 25% of their annual earnings on BU treatment [8] and in Ghana 16% of the households borrow money and 27% sell off their assets as medical cost for the treatment of BU [4] while health facility cost was estimated to be about US \$80,000 on BU treatment [9].

In Ghana, the National Buruli Ulcer Control Programme leads and coordinates the control of BU. One of the key strategies in controlling the disease is early detection and treatment [10]. It has been observed that achievement of this strategy would have a great effect on the control of the disease in Ghana [11]. Further development also indicates that African countries affected by the BU endemic, including Ghana, signed the Cotonou Declaration to fight BU by several measures including mobilizing additional resources for its control [12].

Cost data, when available, provide policymakers and management an essential and vital tool but are rare in Ghana [13]. Aboagye et al. [14] also noted that this scarcity in information is because costing studies are not well established in Ghana and Africa as a whole. Amofah [13] further explains that this is so because in Ghana, for example, most health facilities have poor data capturing methods.

Cost have been noted to aid in assessing efficiency; provide indications of cost savings areas; support strategic planning and budgeting; form an essential ingredient for cost projections and setting prices; aid in assessing priorities; provide input in design of financing schemes; aid in determining distribution of the cost burden; and keep track of spending. As Scott et al. [15] observed, however, economic analysis is based on the fundamental notion of efficient use

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of available resources. The two basic points are, first, economics is about resource allocation, and second, efficient use of resources, that is, getting the most from available resources [15]. Thus, a hospital administrator, for example, is faced with the challenge of organizing resources to meet the organization's goals [15]. But the paucity of cost data in developing countries suggests that health economic analysis is not currently being used by a large proportion of the public health researchers and practitioners, which could in part explain the dearth of economic analysis that currently exists in the field [16].

Wound burden is a new concept [17] and currently gaining prominence in public health. Chronic wounds are classified as wounds that fail to heal within 3 months [18]. The World Alliance for Wounds and Lymphedema Care recognizes BU as one of the etiologies of chronic wounds [19]. The worldwide burden of chronic wounds, however, is not known. But the developed world has good records of its economic burden [20]. For instance, in North America, about 6 million chronic wounds occur each year [12]. Furthermore, chronic wounds are a major health burden and their management leads to an enormous drain on health care resources [20–23]. An earlier study in Ghana has also attested to this fact [9]. According to the National Buruli Ulcer Control Programme, more than 60% of the new cases detected in early 2008 were in the ulcerative stages [10]. Wound treatment is thus an essential part of BU case management. Wounds are acknowledged to be a very significant source of cost to both the patient and health care providers [9,24]. Even though wound treatment is a significant source of cost to health facilities, the cost of BU wound treatment to health facilities in Ghana is not known. This article estimated the wound treatment cost borne by the Buruli Ulcer Treatment Centre of the Amasaman Government Hospital, Ghana, one of the few BU wounds management centers in the country.

Conceptual Framework

Health facility cost of BU wound treatment is made up of recurrent and capital expenditure. These costs can be further classified as financial and economic costs. The economic cost component additionally contains the cost of donated items and volunteer services. Fig. 1 is a diagrammatic representation of the conceptual framework for the study.

Methods

Study Area

The study was a cross-sectional cost-of-illness study from the perspective of the health provider. The study was conducted in

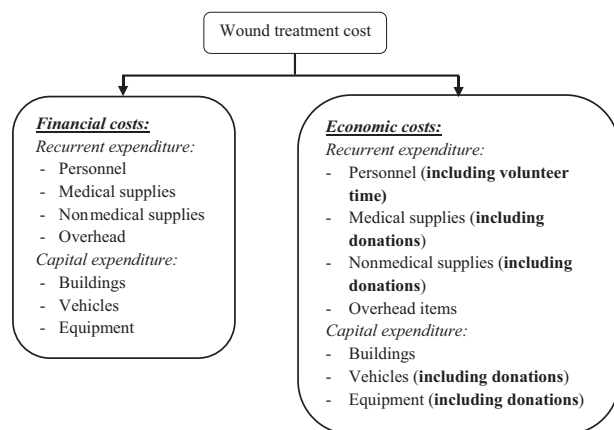


Fig. 1 – Health facility cost of BU wound treatment. BU, Buruli ulcer.

the Amasaman Government Hospital of the Ga West Municipality, Greater Accra Region, Ghana, with the main hospital having a 106-bed capacity. The Amasaman Government Hospital serves as the main municipal hospital and a referral center for the other nine government health facilities in the municipality. In addition, the hospital is one of the BU treatment centers in Ghana, with a BU ward bed capacity of 34. Patients with ulcers are admitted in the ward for daily wound treatment. The Ga West Municipality is ranked fifth in BU endemic areas in Ghana, with a prevalence of about 87.7 per 100,000 persons [4]. The municipality also has the highest number of healed and active lesions of BU countrywide [25]. The study focused on the Buruli Ulcer Treatment Centre.

Data Collection Methods

Observation checklist

A structured observation checklist was used to assess the process of wound dressing. The information collected included the categories and number of medical staff involved in the wound dressing, the type of wound cleaning/dressing agents/solutions used, and the types and numbers of instruments used in the wound dressing.

In-depth interviews

In-depth interviews were held with 1) the nurse in charge of the BU ward, 2) the hospital administrator, and 3) the hospital accountant. The interview guide covered the following areas: type of staff, staff strength of the BU ward, management of the BU ward, hospital's overhead costs, funding sources, donations, and types and number of volunteers who work in the BU ward.

Expenditure data review

Retrospective health facility cost data for the treatment of wounds of patients with BU for the year 2011 were used. The sources of data were the Hospital's Accounts Department, the Stores, and the Electricity Company of Ghana, Amasaman. The recurrent items covered personnel, that is, staff and volunteers, utilities, that is, water and electricity, maintenance, medical supplies and consumables, and nonmedical supplies, that is, stationary, bed, and food supplied. The capital items were building/space, vehicles, medical devices, that is, surgical instruments, stethoscopes, and wound dressing instruments, and nonmedical devices, that is, furniture, televisions, and air conditioners. The replacement costs were used to value items whose prices were not readily available. Floor spaces of the BU ward, that is, surgical and nonsurgical, BU ward kitchen, and Central Sterile Supply Department were measured and valued using the standard Municipal Land Valuation Department cost per square meter. With the assistance of the Hospital's Accounts Department, shared-out ratios for the allocation of joint/share costs were determined.

Data Analysis

All cost data were entered and analyzed in Microsoft Excel, 2010 edition.

Financial cost analysis

The financial capital cost estimation of vehicles and medical and nonmedical devices was based on their quantities multiplied by their replacement costs and divided by the respective working or useful lives of the products. Building cost was obtained by multiplying the total estimated space by the standard Municipal Land Valuation Department cost per square meter. Then, a predetermined share-out ratio was applied to vehicles (4%),

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