



Review

Public health oncology in practice: The Amader Gram Rampal Project in rural Bangladesh



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ABSTRACT

The science-grounded goals for public health oncology—cancer medicine for populations—across the prevention, early detection, diagnosis, treatment and palliative care spectrum, are well-described. How to optimally address these goals, particularly in populations where cancer mortality is high, is poorly defined.

We propose creation of a 160,000 population-targeting “laboratory” in a rural Bangladeshi upazila in which to develop, introduce, carefully analyze and modify based on data, strategies and models for implementing public health oncology in practice. Critical activities of this project are: (1) strengthening the local primary health care system using a community and allopathic and traditional medicine health care worker relationship-building and social mobilization model. (2) Establishment in the upazila for all inhabitants of a longitudinal database of (i) demographic characteristics; (ii) health status and major risk factors for disease; (iii) disease episodes and their treatment; (iv) a cancer registry; (v) recording of deaths and cancer-cause-specific deaths; and (vi) numbers and types of traditional medicine practitioners. (3) Complete population coverage with interventions addressing major avoidable risk factors for cancer. (4) Development of affordable cancer diagnosis and treatment facilities, for example with extensive use of point-of-contact ultrasound for cancer diagnosis and basic staging; and innovative business models to allow affordable care. (5) Tele-home hospice-regular symptom and performance status reporting, and management using a cell phone application for palliative care patients.

The goal of this project is to demonstrate that optimal cancer health for local circumstances as a human right can be achieved sustainably and affordably.

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Introduction

Greater attention is being given to non-communicable diseases including cancer in low- and middle-income countries (LMIC)

[1,2]. The challenges are to develop country and community-specific strategies to address the growing disease burdens. We have suggested framing the situation for cancer in public health terms—public health oncology—cancer medicine for populations—and have proposed the kinds of activities that deserve exploration based on current scientific evidence [3]. While in some circumstances in LMIC useful national policies can be envisioned, as an example for tobacco abuse based on the WHO framework convention on tobacco control, the history of such development activities

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suggests that they are all too often unsuccessful over time because they ignore or pay but lip service to individual human rights [4]. Individual local, often disease-specific intervention/improvisation projects are helping to move forward the knowledge base in implementation science for better cancer control, but there is skepticism that the financial resources and broad knowledge to effect measurable changes in adverse outcomes for populations are available. While the degree to which cutting-edge cancer medicine, in particular newer systemic therapies with their attendant extremely high costs, is contributing to this perception is uncertain, there is a need to make clear that seeking better results for populations should not be ignored because of current inability to deliver “the perfect”. Further it is becoming clear that access to care—universal health coverage—very much a priority concern in LMIC, is not enough and is not necessarily associated with measurable improvements in patient outcomes [5]. Care needs to be of sufficiently high quality with six key features: safe, effective, patient-centered, efficient, timely and equitable to achieve measurable patient outcome improvements [6]. Finally, there is a major need to address the significant prevalence of traditional and complementary (T&CM) medical practice in many LMIC [7]. The WHO has called for greater efforts to describe the extent, types and details of traditional medical practices in member states, followed by greater integration of T&CM into general health care delivery services [7].

In summary there are needs for strategies, models and interventions addressing increase access to care and improvisation using widely proven approaches to move the state-of-the-art from *concepts* of public health oncology to the *practice* of public health oncology. In this communication we propose one major LMIC effort to address this challenge, and justify the components of our proposal.

The Amader Gram Rampal Project: Setting and critical descriptive data

We propose creation of 160,000 population-targeting public health oncology “laboratory” in rural Bangladesh—The Amader Gram Rampal Project. The target population of approximately 37,518 households is within a geographic sub-district of Bangladesh, the Rampal upazila, in the southern part of the Khulna division, which has 138 villages in 11 unions (Fig. 1). In a case-finding study of 8 randomly-selected of these villages, half of the average 5-person households reported having less than \$3 to spend per day; 93% had less than \$5 for the entire household [8]. The majority of inhabitants are engaged in agriculture or fishing work. There are no major employers. Unlike for many other countries in the Asian region, there is limited rural–urban migration from this region.

The allopathic primary health system for this upazila consists of a small, 50 bed health complex/hospital with 21 assigned physicians with 4 positions only filled; regular X-ray capacity only (but in 2013 one of two machines was non-functional and often there was no radiology technician to use the equipment). In 2013 there were 25,184 outpatient visits and 3939 admissions to this facility with 85% bed occupancy. Of the admissions, 19% were for gastrointestinal infections, 12% for “drug” toxicities, 9% for appendicitis, 6% for asthma, and 4% for hypertensive and associated renal conditions. Among the 35 deaths, causes were distributed across acute infectious (approximately 1/3rd) and chronic causes [9]. Additional upazila health care facilities and workers include: 1 union sub-center with 11,870 visits; 9 union health and family welfare centers with 50,363 visits; 23 community health clinics and 102,891 visits; 38 health assistants (HA) (male and female); 9 Family Welfare Visitors (FWVs) (all female), and 3 trained Traditional Birth Attendants (TBAs). While 10 additional physician positions are approved

Table 1

Estimated relative frequencies of nine most common major cancers in Bangladesh.

| | |
|-------------------------|-----|
| Lung cancer | 17% |
| Uterine cervical cancer | 11% |
| Breast cancer | 11% |
| Lymphoma | 8% |
| Larynx cancer | 5% |
| Oral-pharyngeal cancer | 4% |
| Stomach cancer | 5% |
| Esophagus cancer | 4% |
| Liver cancer | 3% |

for these facilities other than the health complex, none of these positions are filled. Thus the major challenges for the upazila is understaffing, but additionally poor governance of these resources is very evident.

There are demographic and health survey data for Bangladesh and this upazila but these are essentially confined to maternal and child health issues; there are no mortality or cancer and detailed adult health descriptive data other than the indicated data from the health complex inpatient experience [9,10]. There are no upazila data in Bangladesh regarding availability and types of traditional medicine practitioners and services.

Best estimates of cancer incidence come from the adjacent Kolkata (India) cancer registry, where data from 20 years ago suggest age-adjusted incidence rates of about 100–114/100,000 [11]. From these data and more recent National Cancer Research Institute and Hospital (NCRI&H) Cancer Registry reports from Bangladesh itself, the top nine major malignancies and their relative frequencies can be estimated (Table 1) [12].

Based on the NCRI&H Cancer Registry data, and experience with breast cancer in southern rural Bangladesh, it appears that at present the majority of individuals who develop cancer first seek allopathic medical assistance when the disease process is very advanced and incurable, and thus cancer mortality is likely to approximate cancer incidence [12,13]. Among smoking Bangladeshi men, as a cause of death, cancer is responsible for the highest attributable fraction—38% [14].

Major addressable risk factors for these malignancies in this region include tobacco smoking (in an ICDDR,B study of Bangladeshi men 45–64, only 15% were former smokers; 63% were current smokers-14), indoor smoke (cooking) exposure, and betel nut chewing; and hepatitis B (HBV), and human papilloma virus (HPV) infection [3]. Because of lower rates of tobacco growing in the Rampal area and lower per capita income, rates of tobacco smoking in this area may be lower than those in the ICDDR,B study.

Facilities for cancer care in southern Khulna division are very limited. There are currently two facilities that can provide limited care for patients with cancer in the central and southern portion of Khulna Division: Khulna Medical College and Hospital (KMCH); and Sheikh Abu Naser Specialized Hospital (in development). Both are government hospitals and are located in Khulna city, 25 miles from our target upazila. Neither facility has radiation therapy capacity; in fact there is no radiation therapy capacity in the entire Khulna division (15 million population). It can be estimated that 70% of patients with cancer in Bangladesh could benefit from radiation therapy treatments. In Khulna division very few patients ever get such therapy, and for those who do get such treatment, this is only because they have financial resources to seek care in private facilities in Dhaka (an 8–10 h journey distant) or abroad.

Newer information and diagnostic technology development globally has not yet had impact on health activities in rural Bangladesh. A web-based electronic medical record system (EMR) has been piloted in an Amader Gram Breast Care Center but otherwise generally records are in paper systems. Private hospital EMR systems are operationally most used for billing. Cell phone

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