Chapter 13. Screening for Cancer: Considerations for Low- and Middle-Income Countries

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Abstract
In this chapter, we review the core issues to be considered in determining the merits of introducing a cancer screening program in low- and middle-income countries (LMICs). We describe the challenges of balancing potential benefits and harms, and we highlight the conditions necessary for successful implementation. Candidates for mass screening are presented for consideration along with the need for local capacity to diagnose, treat, follow up, and mobilize complex policy action in LMICs.
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Introduction
The general objectives of cancer screening are to detect pathologically confirmed cancer at a point at which it may be more curable than it would be if the patient waited for symptoms to develop, and to detect precancerous lesions that can be treated to prevent cancer from developing. This chapter briefly describes the principles and pitfalls of cancer screening based on experiences largely from high-income countries (HICs), summarizes the evidence for screening “best buys” relevant to low- and middle-income countries (LMICs), and highlights opportunities to avoid some of the costly and vexatious problems associated with screening in both HICs and LMICs. It focuses principally on existing projects and recent literature on cancer screening in LMICs. The cost-effectiveness of screening is summarized in chapter 14.

Definitions of and Criteria for Cancer Screening

Opportunistic versus Organized Screening

*Opportunistic screening or case finding* occurs when an individual either actively seeks out a screening procedure, or a health professional offers a screening test to an asymptomatic individual.

*Organized screening* occurs when there is an organized, population-based program with a structured public health approach. Organized screening has six elements (IARC 2005):

- An explicit policy that specifies eligible age categories, methods, and screening intervals
- A defined target population
- A dedicated and responsible management team responsible for implementation
- Associated teams for decision and care
- Specified methods for quality assurance
- Screening methods to identify cancer occurrence in the target population.

In *population-based screening*, the elements of the screening pathway are planned for an entire population and are delivered, monitored, and evaluated for quality to ensure that benefits are maximized in a cost-effective way. While the approach to implementation may be phased or staged geographically or by age intervals, the intention for population screening is to capture all individuals in the appropriate age interval. Organized screening is expensive and can succeed only if adequate resources exist to achieve the full trajectory of screening, with program quality assurance, including effective reach to all in the target population group (appropriate age, gender, and risk category) and follow-up for disease assessment, diagnosis, and treatment if disease is discovered.

*High-risk screening* targets known subpopulations of men or women who may be at considerably higher risk for specific cancer because of their genetic or risk exposure backgrounds. In HICs, such high-risk screening has included known single-gene mutations associated with breast or ovarian cancer (such as BRCA1 and BRCA2 mutations, or family history of breast or ovarian cancer) as well as similarly rare forms of hereditary colon cancers. In LMICs, screening of high-
risk groups for oral cancer could apply to heavy smokers and drinkers who chew betel, areca nut, paan, and gutka.

Most genetic and cytogenetic testing for single-gene mutations is not feasible at present for the poorest LMICs. While the laboratory infrastructure testing is expensive, newer low-cost and simple predictive tools for high risk screening and chemo prevention are emerging which may have wider application in LMICs (Amir and others, 2003) It is important to consider potential sources of bias when evaluating the effectiveness of organized cancer screening programs. Two sources are lead-time bias and overdiagnosis.

- **Lead-time bias**
  Survival time for cancer patients is usually measured from the day the cancer is diagnosed until the day they die. Patients are often diagnosed after they have symptoms. If a screening test leads to a diagnosis before symptoms develop, the survival time is increased because the date of diagnosis is earlier. This increase in survival time makes it seem as though screened patients are living longer when that may not be the case. This is called *lead-time bias*. Screened patients may die at the same time they would have without the screening test.

- **Overdiagnosis**
  Some screening tests find cancers that are not problematic because they would have gone away on their own or not have caused any symptoms. These cancers would never have been detected if not for the screening test. Detecting these cancers is *overdiagnosis*. Overdiagnosis can make it appear that more people are surviving cancer longer; in reality, these are people who would not have died from their cancer.

Interest in cancer screening in LMICs is growing at a time when concerns about costly overdiagnosis and overtreatment for some forms of more indolent cancer are increasingly a matter of concern in HICs. This concern is especially relevant for for breast and prostate cancer. (Esserman, Thomson, and Reid 2013; Welch, Schwartz, and Woloshin 2011). With continued screening, more “early disease” is eventually discovered, which may well never progress to clinical significance and may cause no health problem to the individual.

Lead-time bias has been a particular challenge for screening with prostate specific antigen (PSA) in HICs. As part of the American Board of Internal Medicine’s Choosing Wisely campaign, the American Society of Clinical Oncology recently added prostate screening to its updated “Top Five List” of oncology practices that should be stopped, because they are not supported by the evidence and/or are considered wasteful (Schnipper and others 2013).

Another important debate in HICs is about how much screening causes harm, including from overdiagnosis and from a false positive screening test. The latter often leads to significant wait-times for additional imaging tests and/or a tissue biopsy, for what ultimately proves to be a benign finding. False-positive screens and overdiagnosis are harms which must balanced against the benefits conferred by finding screen-detected cancers that genuinely extend survival. This debate is of particular relevance to breast cancer screening, where it is estimated that from 10 percent to 30 percent of breast cancer detected through population-based screening may never
have resulted in clinically significant disease. The Independent UK Panel on Breast Cancer Screening (2012) concluded that for 10,000 women in the United Kingdom over age 50 who were screened every three years for 20 years, 681 cancers would be found; of these, 129 would represent overdiagnosis, and 43 deaths would be prevented. Put another way, beginning at age 50 years, a woman who undergoes mammographic screening for 20 years has a 1 percent chance of being overdiagnosed.

In the view of the independent panel report, the best available reviews show that the breast-screening program in the United Kingdom extends lives and that the benefits outweigh the harms.

Criteria for Cancer Screening
Screening for cancer can be effective if the criteria are met. The Wilson-Junger (1968) criteria (box 13.1) set out a series of considerations that, notwithstanding updates in an era of molecular and genetic diagnostics, remain worthy criteria to help make an assessment. Modern variants of the criteria extend to the consideration of genetic susceptibility in addition to preclinical disease or precursors (Goel 2001).

<table>
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<tr>
<th>Box 13.1 Principles of Early Disease Detection</th>
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<tr>
<td><strong>Condition</strong></td>
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<td>● The condition should be an important health problem.</td>
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<td>● There should be a recognizable latent or early symptomatic stage.</td>
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<td>● The natural history of the condition, including development from latent to declared disease, should be adequately understood.</td>
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<td><strong>Test</strong></td>
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<td>● There should be a suitable test or examination.</td>
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<td>● The test should be acceptable to the population.</td>
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<td><strong>Treatment</strong></td>
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<td>● There should be an accepted treatment for patients with recognized disease.</td>
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<td><strong>Screening Program</strong></td>
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<td>● There should be an established policy on whom to treat as patients.</td>
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<td>● Facilities for diagnosis and treatment should be available.</td>
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<td>The cost of case-finding (including diagnosis and treatment of patients) should be economically balanced in relation to possible expenditure on medical care as a whole.</td>
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<td>● Case-finding should be a continuing process rather than a “once and for all” project.</td>
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System Requirements for Organized Cancer Screening

Infrastructure, Education, and Advocacy

The reality in many LMICs is quite different from that in HICs with longstanding cancer health promotion efforts and organized screening programs. Delayed presentation for cancer is the norm in many LMICs and within low-resource or geographically remote regions in upper-middle-income countries (UMICs). This delay exists for a variety of structural, equity, and sociocultural reasons (Knaul, Frenk, and Shulman 2011; Story and others 2012). Structural obstacles include the following:

- Poor health infrastructure, for example, the lack of available human and technical resources for proper diagnosis and management
- Long distances and poor road conditions that render proper care inaccessible
- Sociocultural barriers, including extreme poverty, myths, and stigma about cancer
- Gender inequity, which is especially relevant to breast and cervical cancer (Errico and Rowden 2006; Ginsburg 2013; Price and others 2011; Vorobiof, Sitas, and Vorobiof 2001).

Such obstacles underscore the need for LMICs to incorporate a range of decisions within LMICs to inform the optimal approach to screening. Options vary from an opportunistic case-finding approach, to a population-based screening model, to a high-risk screening approach. This nature of the screening approach will turn on the prevalence of the target cancer, local capacity and access to primary and specialty care, and diagnostic and treatment resources, as well as public health capacity infrastructure for organization and intervention. Decisions regarding the choice of cancer sites, screening strategies, and target populations should be informed not only by cost considerations but also by an understanding of the local burden of disease, sociocultural contexts, health systems, infrastructure, human resource capacity, community acceptability, and local political will.

Irrespective of the approach to screening, in order to scale up organized screening projects, initial plans require rigorous evaluation as well as knowledge translation and exchange to all relevant stakeholders, including community agencies and patient advocacy groups, where these exist. Whether in low-, middle-, or high-income settings, key factors for community acceptance and success include early and high levels of engagement with community and medical leaders, education, advocacy, and the establishment of adequate infrastructure and information systems to promote screening and to capture initial diagnosis, treatment, and active follow-up information. Follow-up for those with a positive (e.g. abnormal) screening test should include a well-developed care pathway to ensure timely referrals for further evaluation which may include another imaging modality (e.g. breast ultrasound), a biopsy and/or surgery, as well as a timely and accurate pathology result. For those with a cancer diagnosis, appropriate referral for evidence-based and resource-appropriate treatment planning is essential. Those with a negative screening test should be offered “invitations” for their next round of screening, according to local guidelines (e.g. in the case of a woman aged 60, who is of average, population-risk, can be invited by mail or telephone to schedule her next screening mammogram 2 years from the last negative screen).
Cost-Effectiveness Considerations
Cost-effectiveness analysis should also consider the opportunity costs of not screening, specifically for cancers where early detection and appropriate treatment may significantly improve survival rates, such as breast, cervical, and colorectal cancer. Cost considerations should include excess direct and indirect health care expenditures for cancers detected at an advanced stage, including out-of-pocket expenses and caregivers’ time away from work. Any analysis should also consider the case for such investment, describing macroeconomic cost models and potential savings from treatment and prevention of cancer sites for which prevention or early detection can have the largest impact on morbidity and mortality (Knaul, Frenk, and Schulman 2011). Estimated losses are presented with more- or less-conservative estimates of avoidable deaths. According to these models for 2010, global investments in cancer care and control might have saved from US$10 to US$230 million in disability-adjusted life-years (DALYs), or US$531 to almost US$1 trillion in Value of Statistical Life (VSL). Further, Frenk, and Schulman (2011) highlight greater cost savings from adopting a prevention/early detection-and-treatment approach versus a treatment-only approach for breast and cervical cancer. Cancer screening policy may be framed in terms of investments, although the timeline to downstream benefits (such as DALYs saved or citizens remaining in the workforce longer) will certainly outspan the political cycle and will depend on how robust and how effective the screening program becomes.

Ethical Considerations
In addition to economic considerations, ethical obligations require jurisdictions to ensure that benefits outweigh harms and that the diagnostic and treatment resources are sufficient to justify from the outset the initiation of a screening program. Recently, some investigators have suggested that the informed populations’ preference should also be a factor in making such deliberations (Harris, Sawaya, and Moyer 2011). They may have a fair point in the design and buy-in for new screening programs, but countries with established cancer screening policies may find it problematic to separate informed preferences from the popular view that earlier detection is invariably better.

This viewpoint is attributable in part to what Gilbert Welch refers to as the popularity paradox, whereby the very modest benefits of some forms of screening are interpreted by the individuals who have detected early-stage disease as having had their disease cured or survival improved as a function of screening (Welch, in Raffle and Gray, 2007: p xiii). Few cancer care professionals and few screening policy makers will counter this view publicly because there is no simple way other than the fullness of time to fully determine whether the disease is ‘cured’. Nor is there much compassion to be earned for calling into question patients who optimistically but in many cases mistakenly believe they have had their disease cured. Counterintuitively, the greater the extent of overdiagnosis and overtreatment, the greater the number of screened individuals who believe they owe their lives to the screening program. While the popularity paradox has been identified in HICs, this experience may provide cautionary advice to LMICs that are contemplating establishing screening programs. By contrast, high-risk areas in LMICs consist of specific countries, regions, and subpopulations that bear the disproportionate burden of
premature mortality in a range of lethal cancers, including liver, stomach, esophagus, and oral cancer.

**Cancer Screening Candidates in LMICs**

Overall and site-specific cancer mortality rates can be gender-specific. For women in LICs, LIMCs, and UMICs, breast and cervical cancer are the leading causes of cancer death, followed by lung, stomach, and liver cancer. For men in these geographical areas, lung, liver, stomach, esophagus, and colon cancer represent the highest mortality burden. The following sections explore the value of screening among several of these candidate conditions.

**Breast Cancer**

Breast cancer, the most common cancer in women worldwide, is the leading cause of cancer deaths in women in most jurisdictions with reliable data. More than half of breast cancer deaths occur in LMICs. These rates will continue to grow with development, which to date has gone hand in hand with the Westernization of diets and reproductive patterns – fewer children, later first childbirth and shorter breastfeeding periods. These are factors which raise the risk of breast cancer (Corbex, Burton, and Sancho-Garnier 2012; Porter 2008).

Self-screening or breast self-examination (BSE) in LMICs appears to present greater harms than benefits based on one large Asian trial (Thomas, Gao, and Ray 2002) and a smattering of additional evidence. A lower risk of mortality or advanced breast cancer was found in a meta-analysis of BSE only in studies of women with breast cancer who reported practising before diagnosis (Hackshaw and Paul, 2003). There was in this analysis no difference in death rate in studies on women who detected their cancer during an examination. Despite conflicting evidence for clinical breast examination (CBE) in some low- and lower-middle income country settings (Pisani and others 2006; Nguyen and others 2013), Anderson and others in chapter 3 of this volume note that a case remains to be made for CBE as a means of stage shifting, especially in populations where the average tumor size at presentation is considerably larger than that in most of the breast screening studies to date. Reasonable evidence suggests that formal training in CBE for primary care professionals can improve the sensitivity of the procedure and reduce the number of false positives (Vetto and others 2002).

Mass screening for breast cancer using mammography requires expensive machinery, with its own measurable risk, adequate distribution of radiologists and radiographers, and complex quality controls. Moreover, as overall incidence rates remain lower in LMICs relative to HICs, and the average age of women with breast cancer is lower than in HICs, the overall benefit-to-harm ratio will be correspondingly lower whether mammographic methods or simpler techniques, such as CBE with a skilled trainee, are used.

A recent systematic review of economic analyses of breast cancer control in LMICs concludes that the evidence base for guidance on screening modality (for example, CBE versus mammography), the frequency of screening, and the target population is limited and of poor quality (Zelle and Baltussen 2013). Anderson and others in chapter 3 explore in detail the most
promising of the early detection studies reviewed by Zelle and Baltussen and recommend that early detection programs in LMICs be carefully designed to facilitate early phase evaluation.

The Breast Health Global Initiative (BHGI) has developed an evidence-based, resource-stratified approach to early detection and screening, as well as diagnosis, treatment, and most recently, supportive care and quality of life (Anderson 2013). Recommendations for resource allocation include not only the screening modalities such as CBE, mammography, and diagnostic ultrasound, but also “culturally-sensitive, linguistically-appropriate local education programs to teach value of early detection” as well as risk factors and breast health (Anderson 2013, 39). Evaluation goals are included for each resource level for public education and awareness, as well as detection methods. Recognizing that great differences in health systems and infrastructure often exist within countries, most notably from urban centers to rural areas, stratification is based on on-the-ground capacities, rather than a single country-level determination, such as gross domestic product (GDP) per capita.

**Cervical Cancer**

Cervical screening may have the greatest potential for screening-detected reductions in cancer mortality in less developed regions, where about 86 percent of all new cases and 88 percent of deaths from cervical cancer occur (Globocan 2010). Visual inspection with acetic acid (VIA) in combination with cryotherapy (screen-and-treat) was trialed in a demonstration project in Ghana was well accepted by the communities involved (Blumenthal and others, 2007). This effort underlines the value of simple and effective technologies for low-resource settings despite inadequate coverage and significant numbers lost to follow-up. A one-time screening at 35 years of age with VIA or human papillomavirus (HPV) testing reduced the lifetime risk of cervical cancer by approximately 25 to 36 percent and cost less than US$500 per year of life saved (Goldie and others, 2005).

Two exciting trials reporting on test-and-treat treat models in India (Sankaranarayanan and others 2009) and South Africa (Denny and others 2010) have highlighted the superiority of a screen-and-treat approach using relatively more expensive HPV testing over VIA, whether followed by colposcopy in the Indian trial or cryotherapy in the South African trial. The Indian trial showed that a single round of HPV testing can reduce the incidence of advanced cancers and deaths from cervical cancer. The South African study showed benefits in the VIA group, but HPV DNA testing most effectively reduced the incidence of advanced invasive cancer that developed more than 12 months after cryotherapy. HPV DNA testing, with or without VIA, shows the greatest promise; however, given the current state of pathology infrastructure and cost considerations for less developed regions and, in particular, for rural populations in LICs and LMICs, the introduction of mass screening with VIA may be the most prudent real-world approach. In addition, several combination modes of preventive HPV vaccination in preadolescent girls, combined with various screening measures in adult women, appear promising as a comprehensive method to reduce the burden of cervical cancer and reduce HPV infection.

**Colorectal Cancer**

Lambert, Sauvaget, and Sankaranaryanan (2009) advance a strong argument that the burden of colorectal cancer, while high and growing in HIC regions (about 12 percent of deaths from
cancer), remains low on the list of common cancers and primary causes of cancer-related mortality in less developed regions (about 6 percent of deaths from cancer). Lambert and others argue that the expense of mounting a mass screening effort in most LMICs is not currently justified, given the significant costs of colonoscopy and follow-up services. The authors do allow that the growth of western lifestyle in large urban centers in higher middle income countries may represent areas where colon screening may be more justifiable.

By contrast, as noted in chapter 14 of this volume, at least one report suggests that screening colonoscopy may be cost-effective in Sub-Saharan Africa (Ginsberg and others 2012), at least in the urban areas of UMICs, where CRC incidence is increasing because of population aging and the adoption of Western lifestyles.

The International Colon Cancer Screening Network (2013), which works to document and standardize the best jurisdictional approaches to colorectal screening, identifies the need for screening program experience in every continent, although membership is currently limited to more developed regions. Research in progress may offer a range of promising and less invasive methods to detect early-stage colon cancer, which may offer better options to reduce the prevalence in LMICs.

**Stomach Cancer**

Stomach cancer accounts for about 12 percent of all cancer deaths in less developed regions; a large fraction is attributable to infection with *H. pylori*, as well as dietary and other factors. Rates are highest in the Republic of Korea, followed by Mongolia, Japan, and China. While these are clearly not all low income countries, they do perhaps allow us to examine what is possible in screening for stomach cancer or the infectious precursor to stomach cancer. A large prospective cohort in Japan (Lee and others 2006) showed a twofold reduction in mortality rates among screened subjects compared with unscreened subjects. The study also showed a reduction in later-stage disease among the screened group, suggesting that gastric cancer screening is associated with reduced risk of death from gastric cancer. Serious efforts are underway in Japan to screen for this cancer (Asaka 2013).

A recent trial from the Republic of Korea produced a compelling report of benefit (Kim and others 2013).

An organized screening program was compared to opportunistic screening in adults over age 40 years. Higher rates of early-stage gastric cancer were detected in the organized program, but compliance with a regular screening interval proved most important in detecting early-stage disease in both groups. Given the expensive diagnostic equipment and specialty care providers required for stomach cancer screening, mass or opportunistic screening using a test-and-treat approach for *H. pylori* infection remains appealing. Eradication of *H. pylori* offers the promise of reduced deaths from gastric cancer, but the benefits and feasibility in LMICs will vary according to a range of test-and-treatment variables. There has been an evolving and sophisticated stratification of antibiotic options, as well as second-line treatments and alternatives to triple and quadruple therapy regimens, owing to regional differences in *H. pylori* resistance to antibiotics and to eradication failures (Malfertheiner and others 2012; Morgan and others 2013).

Relatively inexpensive and non-invasive tests with reasonably good sensitivity and specificity are available: serology, stool antigen, and urea breath tests. Conventional antibiotic therapy is
also relatively inexpensive; however, the evolving antibiotic resistance must be monitored regionally to guide antibiotic treatment choices, as well as the development of new agents for treatment (Gatta and others 2013).

The most interesting recent large-scale evaluation of *H. pylori* detection and treatment in the prevention of gastric cancer was completed in China (Wong and others 2004), which has more cases of gastric cancer than elsewhere in the world. In the subset of subjects without gastric lesions who carried *H. pylori*, the relationship between *H. pylori* eradication and gastric cancer reduction was confirmed.

With respect to cost-effectiveness studies on *H. pylori* screening, the most promising look comes from Yeh and others (2009), who explored a model based on data from China. They modeled the benefit for treating a cohort of 20-year-old individuals on the reduction in the lifetime risk for gastric cancer. The estimated risk reduction was 14.5 percent in men and 26.6 % for women The incremental cost-effectiveness ratio was US$1,230 per life year saved (LYS) for screening once per lifetime compared to no screening. Since China’s per capita GDP is approximately US$1,700, once-per-lifetime screening would be cost-effective, and once-per-lifetime treatment would be cost-effective.

While the case for a mass screening for *H. pylori* using the test-and-treat approach in low-prevalence HICs is hard to make (Sullivan and others 2004), the affordability of such an intervention in a country like China with high rates of infection and elevated gastric cancer rates remains a salient issue to be addressed by local policy makers, particularly in high-risk regions.

**Oral Cancer**

Simple visual screening methods in high-risk areas have been successfully tested in randomized trials to screen for oral cancers (Sankaranarayanan and others 2005). These cancers are highly linked to tobacco and alcohol, as well as to chewing betel and areca nut and paan and gutka (see chapter 5 in this volume). Increasing evidence suggests that HPV is a risk factor in oral, head, and neck cancers. While most cost-effectiveness studies come from HICs, one key study from India suggests that oral cancer screening by visual inspection has an incremental cost-effectiveness ratio of US$835 per LYS (Subramanian and others 2009). Further, the authors note that the most prudent approach for limited resource settings should include only higher risk populations, such as heavy users of tobacco and alcohol. A recent HIC assessment from the U.S. Preventive Services Task Force has concluded that the case for mass screening for oral cancers in the United States is insufficient to justify the harms of mass screening of asymptomatic adults (Moyer and others, 2013).

**Special Considerations for Cancer Screening in LMICs**

**Best Buys for Cancer Screening**

Promising cancer screening candidates in each region of the less developed world warrant attention. The joint report of the World Economic Forum/Harvard School of Public Health and the World Health Organization highlights a set of “affordable, feasible, and cost-effective intervention strategies” to reduce the economic impact of noncommunicable diseases in LMICs (World Economic Forum 2011, 4). The most promising evidence in LMICs to date suggests that
the best buys are breast and cervical cancer screening, possibly followed by colorectal cancer or stomach cancer screening, if programmatic infrastructure can be established in a stepwise fashion. Carefully planned programs for breast screening, according to local context and resource capacity as highlighted in the BHGI documents, and VIA with cryosurgery or colposcopy (with or without HPV testing, where available) can appropriately be recommended as first cancer screening priorities in LMICs.

**Role of Innovation**

Many opportunities already exist to exploit the potential impact of programs for early detection and screening. Considering a given screening strategy for which locally-sourced evidence demonstrates at least proof of concept in terms of efficacy and cost-effectiveness, transition-to-scale projects can take advantage of a variety of innovative approaches to optimize participation, follow-up for an abnormal screening, as well as monitoring for treatment-related toxicities and survivorship care. These approaches include telemedicine; telepathology; institutional twinning; task-shifting; and “mHealth” (WHO 2011a, b), models of care enhanced by the use of mobile phones, which are widely available and affordable in most LMICs (Ginsburg 2013). Large technical platforms can now give way to cloud applications, which allow for easy and secure storage and compilation of information for screening programs.

Similarly, not all screening activity needs to involve only primary care physicians or specialty care providers, if reliable evidence is used to build from project-to-scale programs. In this fashion, trained community care workers, nurses, and other care providers can assist in building capacity, promoting screening activities, and being effective screening agents in LMICs.

**Diagonal Approach To Strengthen Health Systems**

From a programmatic perspective, the breast and cervical cancer studies also suggest some merit in an integrated approach to screening under the umbrella of maternal or reproductive health policy, as suggested in both the trial in Mumbai and the approach taken in Morocco. The Global Task Force on Expanded Access to Cancer Care and Control has championed this diagonal approach, “the proactive, supply-driven provision of a set of highly cost-effective interventions on a large scale that bridges health clinics and homes” (Sepulveda, 2006). While the age intervals best chosen for a first screening intervention may not be an exact match, for women undergoing simultaneous screening efforts, there is at least the prospect of having both screening procedures performed during the same visit, a predictor of better participation than multiple visits, an observation now being mimicked in HICs. “Pink Ribbon Red Ribbon” (UNAIDS 2011) is an example of a program that added breast and cervical cancer screening to an existing program for another health condition, namely, HIV. HIV-positive women have a greater chance of developing invasive cervical cancer and higher mortality rates than their HIV-negative counterparts. This type of program can address the needs of a group at particularly high risk, with a low marginal cost.

Such a diagonal approach is not limited to women’s health services. Integrating cancer screening into existing health programs can also help to build primary care capacity. Harnessing the synergies between traditionally vertical programs can build platforms onto which additional preventive and wellness care (such as vaccinations, smoking cessation, and nutritional counseling) may be added to reduce the incidence and mortality from other cancers (such as lung, stomach, or oral), as well as other high-burden chronic noncommunicable diseases.
Modeling such programs can also help to convince policy makers that cancer screening and cancer control in general will not necessarily siphon off scarce resources from competing health priorities.

References


