What this Knowledge Summary (KS) covers:

This module covers the major breast cancer early detection strategies including breast cancer awareness (patient, community and health professional education), breast self-exams (BSE), and clinical breast exams (CBE). A description of how to perform a CBE is included in the Early Diagnosis: Signs and Symptoms module. A discussion of breast cancer mammographic screening is provided in the Early Detection: Imaging Modalities module.
KEY POLICY SUMMARY:

Early detection programs

- Detecting breast cancer early in its natural history improves survival, lowers morbidity, and reduces the cost of care.
- Effective early detection programs should focus on:
  - Early diagnosis – through increased breast awareness and reducing barriers to accessing care;
  - Screening by clinical breast exam (CBE) or CBE in conjunction with mammography performed in a cost-effective, resource-sustainable and culturally-appropriate manner;
  - Timely diagnosis for all women found to have abnormal findings and prompt stage-appropriate treatment for all women proven by tissue diagnosis to have breast cancer.

Breast awareness education

- Breast awareness includes public health and professional medical education on the symptoms of breast cancer and the importance of seeking medical evaluation for breast symptoms such as lumps or thickenings that a woman appreciates in her breast.
- Awareness education can have a significant impact on reducing breast cancer morbidity and/or mortality and is an integral part of all early detection programs.
- Breast health messages should emphasize that a woman should promptly seek and receive care when she notices a breast mass, thickening or other new, persistent finding.
- Breast self-examination (BSE) contributes to a woman’s sense of empowerment and awareness about her breast health, although formal training in BSE technique has not been shown to improve breast cancer early detection beyond basic breast awareness education.
- Collaboration with advocacy and community groups is crucial for the effective creation and dissemination of breast awareness messages.

Clinical breast examination

- Clinical breast exam (CBE) performed by a trained healthcare provider involves a physical examination of the breasts and underarm. CBE is a basic element of breast health care and should be offered to any woman with a breast finding that she identifies as abnormal for her.
- CBE should be incorporated into standard medical school curricula and training programs.
- Quality assurance measures should be in place to ensure that health professionals are proficient in CBE and know how women with an abnormal CBE can access diagnosis services.
- CBE can be performed by trained non-physician providers in low resource settings.

Interventions across the continuum of care according to resource level

- In addition to using CBE to evaluate breast complaints, CBE can be used to screen for breast cancers as part of a breast awareness education program targeting women around age 30.
- CBE screening is a lower cost, less resource intensive screening approach than is mammographic screening and is appropriate for previously unscreened populations.
- Mammographic screening has been shown to reduce breast cancer mortality in high-resource settings (See Early Detection: Imaging Modalities module), but CBE is an acceptable screening method when mammographic screening is unavailable, unaffordable or unrealistic.
- Ultrasound imaging is not recommended as a screening modality but is important as a diagnostic tool for evaluating breast findings like masses or thickenings.

Breast cancer programs in low-and middle-income countries (LMICs) should follow a defined care pathway in line with available resources and capacities to allow for coordinated incremental program improvement across the continuum of care (see Table 1).
INTRODUCTION & THE CHALLENGE

Breast cancer early detection requires early diagnosis of women with breast cancer symptoms, and in addition can include more intensive breast cancer screening in which women without recognized cancer symptoms are tested for disease. Both early diagnosis efforts and early detection screening programs can contribute to data collection on breast cancer incidence and mortality in a community or region. When well collected and properly documented in hospital-based, regional or national cancer registries, these data regarding tumor size and stage at diagnosis inform breast cancer control programs about the current effectiveness of early detection efforts. Both early diagnosis and screening programs should consider the cultural context of the community served, the resources available for program support and the sustainability of such efforts over time (see Table 2).

Early diagnosis of symptomatic women relies on breast cancer awareness by patients, their community, and frontline health professionals. It requires women to have timely access to breast evaluations, follow-up diagnostic services (imaging, biopsy and pathology) and breast cancer treatment as appropriate for the stage of disease. Health systems require trained frontline personnel competent in CBE and breast health counseling to coordinate care through a referral network for timely breast cancer diagnosis and treatment. Centralized diagnosis and treatment facilities are resource-efficient if patients can reliably be triaged for care (see Early Detection: Breast Cancer Signs and Symptoms and Policy and Advocacy: Access to Breast Cancer Care modules.)

The challenge is to provide health services using sustainable resources to optimize finding breast cancers early in their course and then provide appropriate treatment that minimizes the chances of cancer spread (metastasis).

The World Health Organization (WHO) emphasizes the value of a strategy called “stage-shifting” or “down-staging”, meaning the establishment of early detection programs to reduce the proportion of patients presenting with advanced (“late stage”) breast cancer. When linked to effective treatment, stage-shifting improves breast cancer survival rates. Although the gold standard for early detection programs in high-income settings is mammographic screening, clinical breast exams (CBE) in lower income settings have been used successfully and are a necessary tool in any breast health system for frontline evaluation of patients with breast symptoms. Early detection screening programs can be opportunistic, i.e., initiated during routine patient visits or organized, i.e., initiated by invitation sent to a targeted at-risk patient population (see Table 3).

POLICY IMPACT

PREPLANNING

Establish goals

• The goal of breast cancer early detection is to diagnose cancer at earlier tumor stages, which allows for simpler and more cost-effective treatment to reduce both morbidity and mortality.
• Breast awareness education and clinical breast exams (CBEs) should be a standard part of breast cancer awareness efforts.
• When women find lumps or thickenings in the breast, they need access to facilities where they can undergo a diagnostic work-up to determine if it is a benign or malignant process.

Establish priorities

• Early detection programs should include an early diagnosis component (e.g., programs to increase awareness, reduce access barriers to diagnostic and treatment facilities), and a screening component (i.e., CBE or mammography; opportunistic or organized).
• Programs should be designed to be culturally sensitive and appropriate.

Establish a resource-stratified pathway approach

• Early detection programs can be developed in low resource settings and be incrementally improved as more resources are allocated to the program using a resource-stratified pathway (see Table 1).
WHAT DO WE KNOW

Breast awareness programs

Breast cancer early detection: In many LMICs, and sometimes in high income countries, women delay seeking medical evaluation of breast changes for months or even years, especially when they do not hurt or cause lifestyle problems. Early cancers are generally painless lumps, while advanced cancers progress to become large, painful and/or ulcerated tumors. The goal of breast awareness is to educate women about the importance of diagnosing cancer at early stages when treatment is easier and outcome is better. Advanced cancers demand more extensive therapies and are more likely to spread (“metastasize”) to other organs at which point they no longer can be cured.

Educational targets: Breast awareness efforts include teaching about breast cancer symptoms, e.g., palpable lumps or asymmetric thickening, skin and/or nipple changes, especially those that worsen over time (see Early Detection: Signs and Symptoms module). The importance of timely medical evaluation is emphasized. Because most women in LMICs (and 1 in 6 in high income countries) have advanced cancers at diagnosis, programmatic goals include 1) heightened cancer awareness in the community, 2) increased breast evaluation training for frontline clinical staff, and 3) improved access for breast cancer testing and treatment, which together can reduce mortality. Even before the introduction of screening programs in the UK, over 50% of the decreased mortality in women younger than 65 years of age was associated with an increase in breast cancer awareness and earlier staged cancer diagnosis.

Cultural context: Breast cancer awareness messages are more effective if they are culturally appropriate and developed with community input. Messages should emphasize that breast cancer can be treated best if treated early, and the majority of women treated for early breast cancer will recover after treatment to live healthy and productive lives. While effective treatment and care options can still help those with advanced disease, early diagnosis allows for less morbid treatments, including breast conservation surgery rather than mastectomy (if radiation treatment is also available). Community input can help identify general misconceptions about breast cancer detection, diagnosis, treatment and/or outcomes. For example, if in a community there is reported fear of breast disfiguration during diagnosis, it might be important to stress that breast cancer is diagnosed by a small biopsy not by breast removal. If in another community, breast cancer is reported to be considered an incurable disease, it might be important to provide examples of women who have recovered from breast cancer after treatment (breast cancer survivors). Breast cancer advocates, including but not limited to breast cancer survivors, can play an important role in breast cancer awareness programs. Efforts to increase general public awareness and openness, and reduce stigma about breast cancer can result in more women who have breast cancer symptoms or breast concerns seeking expeditious and reliable care (see Policy and Advocacy: Cultural Context module).

Breast self-exam (BSE) as part of breast awareness

Most breast tumors are discovered by women themselves, whether through formal or informal breast self-exams (BSEs). Teaching breast self-exams can be part of breast awareness teaching, although no specific BSE technique is considered superior to another. The critical components are visual examination of the breast and palpation of the entire breast, preferably with the finger pads of the three middle fingers in an effective search pattern. Health professionals should be prepared as part of breast health education to instruct a woman using a culturally sensitive approach on how to examine her breasts. BSE can improve a woman’s breast knowledge and her willingness to present for evaluation and care for a breast concern. Teaching BSE may be part of breast awareness and early diagnosis strategies but is not recommend by itself as an early detection screening method. Studies suggest that the BSE may decrease late-staged cancer presentation, increase early cancer detection, and improve utilization of health system resources. However, studies that focused heavily on formal BSE training as a screening method showed that BSE led to increased breast biopsies without improving mortality.

CBE as a diagnostic tool

Clinical breast exams (CBEs) are a necessary component of early detection efforts. CBE should be part of routine breast health care, and part of any evaluation for a woman who presents with a breast concern (e.g., breast mass, skin or nipple change). A CBE should include an axillary (underarm) lymph node examination. Adequate time is required for a CBE (6 to 10 minutes), especially when imaging is not routinely employed. There is no clear superiority of any one CBE technique. Critical components of a CBE include a visual inspection of the breasts, proper positioning of the patient for breast palpitation in both the upright-seated and lying-on-the-back positions, and thoroughness (use of a vertical-strip or concentric circle search pattern) with proper position and movement of the fingers. With proper training, health professionals, including non-physicians, can achieve proficiency in CBE. Quality assurance protocols are required to ensure continued health professional competency in CBE (see Early Detection: Signs and Symptoms module for details on CBE techniques, training, and quality assurance).

Cultural context: A culturally sensitive approach to breast exams and breast health counseling can reduce a woman’s discomfort and anxiety during a breast health visit, and allow her to make informed decisions about her preferred breast health care.

Effectiveness of CBE: Studies on the effectiveness of CBE report a wide range of data and suggest that CBE can find masses not reported by women (asymptomatic cancers), but may also miss small tumors detectable by imaging modalities (see Early Detection: Imaging Modalities module). Certain groups of women, such as obese women or younger women with more nodular breast tissue, may receive less benefit from CBE.
CBE as a screening tool

As a screening modality, CBE requires fewer resources compared to mammography and can be implemented in settings where mammography is not feasible. When used for screening, CBE is often started among women at age 30 as a breast health awareness education tool to help familiarize women with their own breasts. CBE can be used as a transitional screening method during the introduction of a mammography screening program; CBE pilot screening projects can help inform larger screening projects about the patient population and effective recruitment strategies. Successful implementation of CBE screening is dependent on resource allocations for trained staff and access to follow-up services or facilities for pathology, diagnosis and treatment, as well as cultural considerations. Studies have shown CBE screening to be associated with lower stage tumor at diagnosis and improved age-standardized incidence rates for advanced-stage breast cancer, which in turn is associated with improved breast cancer mortality rates. However, CBE screening does not find as many of the very earliest stage cancers as does screening mammography.

Community support: Community support for participation in early detection screening programs must be matched by community support for follow-up diagnosis and treatment. Studies have shown that barriers to early treatment include health system obstacles such as lack of access to care, high cost of care, and patient issues such as fear of diagnosis and treatment (see Policy and Advocacy: Access to Care and Policy and Advocacy: Cultural Context and Psychosocial Impact of Breast Cancer modules).

Opportunistic versus organized screening: CBE can be an effective opportunistic or organized screening method. Opportunistic screening can occur during any health care visit if the health system has prepared providers (through reimbursement and protocols) to perform breast health exams and refer patients for further screening tests (ie. imaging), if appropriate. In opportunistic screening, additional diagnostic services and care is coordinated by the woman and her health care team. Opportunistic screening differs from organized screening in that organized screening invites a specific at-risk population to participate outside of routine health care visits, and has preset screening intervals (e.g. every two years). Both opportunistic and organized screening programs require quality control measures, including data on false-positive, false-negative and recall rates (see Early Detection: Imaging Modalities chapter for a detailed discussion of quality measures).

Cost and effectiveness: CBE is a less expensive screening modality than mammography. However, the exact cost of early detection programs will vary by region and depends on the breast cancer incidence rate, available resources and provider expertise. Cost-effectiveness studies of CBE early detection programs continue to be reported from LMICs. Studies in Ghana, Peru, Central America (Costa Rica and Mexico), sub-Saharan Africa and East Asia, India, and the Ukraine suggest screening with CBE may reduce breast cancer deaths with estimated mortality reductions of 12-55%.
POLICY IMPACT
PLANNING STEP 1:
WHERE ARE WE NOW?

Assess the burden of breast cancer
- Information on the stage of disease at diagnosis is required to determine the focus of early detection programs. Cancer registries provide the best region-specific data. If no registry is available, hospital data can be used, with the limitation that institution-specific data suffers from patient selection bias.

Assess existing early diagnosis and early detection programs
- Determine what breast cancer awareness efforts are ongoing at a national, regional or local level by the health system as well as advocacy and community groups.
- Determine what early detection efforts are currently being implemented at a national, regional or hospital-based level.
- Assess the size of the population to serve in the early detection program and confirm services are in place to meet the diagnostic and treatment requirements as well as screening needs.

Assess barriers to early detection
- Identify potential health system, patient and community barriers to early diagnosis and screening programs.
- Consider using focus group discussion or interviews with key stakeholders (e.g., patients, patient advocates, health professionals, community leaders).

Assess cost and potential effectiveness of CBE screening programs
- The costs of CBE screening include cost of training personnel, delivery of the services and evaluations.
- The potential effectiveness will depend on breast cancer incidence rate and target population, health professional expertise and availability, and available health system, patient, and community resources to support programs.

Assess health system capacity
- Early detection programs require the additional support of diagnostic and treatment facilities.
- Development or expansion of early detection programs should be coordinated with the development or expansion of diagnostic and treatment programs using coordinated resource-stratified pathways.

Assess evaluation capacity
- Early detection programs should be evaluated routinely to ensure high-quality, reliable screening tests are being performed safely.
WHAT WORKS AND WHAT DOES NOT WORK

Breast cancer awareness

From a patient and community perspective: Breast cancer awareness efforts targeted to women and their communities can augment early diagnosis efforts and increase participation in early detection screening programs. Involving breast cancer survivors or women undergoing breast cancer treatment in breast cancer awareness planning efforts can provide insight into effective messages and help identify barriers to breast cancer early detection; including breast cancer survivor stories in awareness messages can provide hope to women who suspected they have breast cancer, and encourage women to participate in early diagnosis or early detection screening programs (see “Policy and Advocacy: Cultural Context and Psychosocial Impact of Breast Cancer Diagnosis for a full discussion on community outreach).

From a health professional perspective: Breast cancer awareness efforts targeted to health professionals, especially those who will be the point of contact for women who seek breast health care, should include training in CBE (including the signs and symptoms of breast cancer), and breast health counseling (see Early Detection: Signs and Symptoms module).

CBE screening programs

For any early detection program to be successful, it must be well-organized and sustainable, target a well-defined at-risk population, and establish coordination and quality across the continuum of care. Because CBE screening programs are generally linked to breast awareness education and possibly cervical cancer screening, the age of initial CBE screening is younger than what is recommended for mammographic screening. While mammographic screening programs are not initiated until ages 40, 45 or 50, CBE screening can be provided to women in their 30s.

CBE screening programs should collect and contribute data on breast cancer tumor stage, breast cancer incidence rates, and other pre-identified program metrics. Participants in screening programs, including pilot programs, should be fully informed about potential benefits and harms of tests, including possible increased anxiety, the possible need for additional tests and, if cancer is detected, the available treatment options (also see Early Detection: Imaging Modalities module). To see a group effect of screening, effective programs should attempt to screen at least 70% of the target population. With CBE screening, between 10 and 20% of women will have findings warranting diagnostic work-up, most of which will be benign findings like cysts, fibroadenomas, or palpably asymmetric but normal breast tissue responding to hormonal cycling. Even in high-risk populations, less than 1-2% of screened asymptomatic women will be found to have cancer. For these reasons, screening programs of any type must provide access to women for diagnostic work-up of abnormalities identified during screening.

Opportunistic versus organized screening (Table 3): Opportunistic programs provide screening to women who are accessing the healthcare system for some other purpose and find themselves available for screening, while organized programs provide outreach to all women in the targeted subgroup at heightened risk in the population. From a public health perspective, organized screening is superior to opportunistic screening, because 1) it has greater potential to reduce cancer mortality rates (by reaching more people); 2) it provides more equitable access to care (since participation is usually not dependent on patient payment or transportation); 3) it provides population-level approach to protecting patients from the potential harms of screening (since quality control may be easier); and 4) it decreases overall cost of individual screening (economy of scale). However, significant challenges exist to organized screening, particularly in LMICs or regions with decentralized care and limited available resources. Organized CBE screening programs require 1) data to identify at-risk target populations, 2) resources and processes to guarantee high coverage and participation of the target population, 3) available health professionals with expertise in CBE, 4) an effective referral system for diagnosis and treatment, and 5) a process to monitor and evaluate the program.

Long-term planning requires quality control and data collection: All early detection programs should be monitored for quality of screening techniques, false-negative, false-positive and recall rates, timeliness and quality of follow-up diagnostic and treatment procedures. Data should be systematically collected, validated, reviewed, and reported, and used to identify deficiencies and improve program performance.

Coordination of care across the continuum: Early detection only works when diagnostic and treatment resources are also available. Thus, investing in higher level resources for screening (e.g., population-wide, organized mammography screening) requires parallel investment in quality control efforts, follow-up tissue sampling and pathology for suspicious findings, and timely treatment for confirmed diagnosis subjects women to a potential diagnosis without available care, and places a financial burden on the health system. When resources are limited, CBE screening is the best initial approach for starting an early detection program.
**HOW DO WE GET THERE?**

**Public awareness:** Public awareness education supports early diagnosis goals and prepares a community to support early detection efforts. At an individual level, advocacy can impact a woman’s decisions about whether to take part in screening and help shape her understanding about the risks and benefits of screening. National breast cancer public awareness campaigns can be customized for a local community (see Policy and Advocacy modules).

**Collaborative efforts:** Determining the most appropriate early detection method requires joint efforts by hospital systems, regional centers, and Ministries of Health. Considerations should include how to optimize existing early detection efforts by reducing patient and system barriers to accessing care, improving the quality and cultural sensitivity of existing programs, and augmenting diagnostic and treatment services to support new early detection efforts. Pilot projects can be used to identify sustainable practices and inform policy decisions. Deciding between optimizing existing programs and investing in new resource initiatives should consider local needs, regional expertise, current program effectiveness, and resource availability.

**Optimizing primary care visits:** Studies from LMICs suggest that women without regular primary care providers have lower cancer awareness and are less likely to participate in cancer screening activities. Programs that improve access to primary care providers and expand referral networks can improve early breast cancer detection, assuming that primary care providers are educated in early detection techniques such as CBE and also are able to provide access to breast diagnostic services for patients with abnormal breast findings.

**Optimizing referral services:** Efficient referrals are a key component of the WHO Framework for Health Systems Performance Assessment. If not optimized by a health system, they can be expensive for individuals and health systems. Studies in LMICs have observed protracted referral times to specialty care resulting in long delays and multiple visits (7.9 clinic visits on average) before existing cancers are diagnosed and treatment is initiated. Such delays and unnecessary clinic visits result in increased tumor size, worsened outcomes, and increased patient and health system costs. Improving referral networks, communication between providers, and timely access to care is one important method to optimize early detection efforts.

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**POLICY IMPACT**

**PLANNING STEP 2:** WHERE DO WE WANT TO BE?

**Choose your target service population and approach**

- The at-risk population should be defined by the local breast cancer incidence rate and demographics.
- While certain demographics (age, reproductive history, family history) help define groups at heightened risk, early detection and screening program selection criteria are primarily based on gender and age (e.g., women starting mammographic screening beginning at a certain age (40, 45 or 50) and at defined intervals (every 1-2 years) as determined by local factors, resources and programmatic choices by local decision-makers.
- Criteria for the target population may vary by the type of program (opportunistic or organized), screening tool used (CBE with or without mammography), and the program scope (pilot program or large scale coverage).

**Anticipate health system, community and patient barriers to program activities**

- Health system barriers can include location of program activities and transportation issues, timely referral system, equipment and human resource capacity issues, quality of care of the health services, sex of the provider.
- Community barriers can include local social, cultural and political norms.
- Patient barriers can include language barriers, lack of financial support, lack of access to care (e.g., transportation), cultural beliefs (e.g., fatalism), social fears (e.g., fear of being ostracized), or preference for traditional healers.

**Set achievable objectives**

- Objectives could include increasing breast awareness, effective training of relevant staff in breast awareness counseling and CBE, and increasing availability of appropriate diagnostic and treatment modalities.
- Consider assessing feasibility of program objectives through demonstration or pilot projects.
- Follow a resource-stratified pathway for program development that identifies available resources across the continuum of care.
Mixed methods for early detection: In some countries, mixed screening strategies may be appropriate based on differences in local availability of resources and expertise. For example, a rural setting may be able to implement breast awareness programs, tissue biopsy followed by mastectomy for definitive surgical treatment, while synchronous implementation in urban, higher resource settings of the same country could include mammographic screening, core needle biopsy followed by breast conservation therapy with lumpectomy followed by radiation therapy for definitive local cancer control. Mobile screening units may decrease inequities in access to care, however, this approach can substantially increase the overall cost of screening programs. Other studies have found that the scaling-up availability of effective early detection programs can result in substantial improvement in overall health at a relatively low overall cost.

Data collection: Health professionals and health ministers must work together to support the collection and consolidation of data and tracking of indicators based on national standards and goals. Collaborative efforts can help decentralized systems develop organized breast screening programs (see Case Study #1).

Resource-stratified care pathways: Using a resource-stratified pathway allows programs to begin with breast cancer awareness, and diagnostic CBE, and move along the pathway toward organized mammography screening as more resources become available (see Table 1).

POLICY IMPACT
PLANNING STEP 3: HOW DO WE GET THERE?

Bridge gaps and overcome existing barriers
- Programs should address known structural (e.g., social factors), organizational (e.g., access for ethnic or minority groups), psychological (e.g., fear of cancer and perceived resultant fatality), sociocultural (e.g., woman’s status as decision-maker), financial (e.g., cost of care) barriers that preclude women from using breast-screening services.

Partnerships and financing
- Regional, national and international advocacy groups are key strategic partners in the development and advancement of early detection programs, including fundraising.

Coordination of care
- Health care systems are central to coordination of care and optimal use of available resources. Centralized cancer facilities can serve as referral centers where more advanced screening, registries and monitoring, diagnosis, and treatment can be performed with less fragmentation of care.
- National and regional policy makers must consider concerns about access for low-resource communities with screening and treatment facilities available at centralized cancer centers.

Monitor and evaluate
- Predefined metrics should be established at the beginning of the program to measure its relevance, effectiveness, and impact; impact measures include tumor size at presentation and participation rates.
- The quality and safety of screening programs must be monitored (e.g., education, training and expertise of personnel, standardization of protocols, time from referral for diagnosis to diagnosis, time from positive diagnosis to treatment).
CONCLUSIONS

Breast cancer awareness is a key component of early diagnosis efforts. Women need to know the most common symptoms associated with breast cancer, such as lumps and thickenings, they need to understand that prompt evaluation and early detection improves outcome, they need to have access to health facilities that can provide accurate diagnosis, and they must be empowered to access these services in a timely fashion. Breast awareness should include the full range of stakeholders: women, men, community at large (the public), health professionals, health system administrators and policymakers. Advocacy groups can provide valuable support and influence public and political awareness. At a minimum, healthy systems must be prepared to evaluate women who present with breast complaints, and refer them for timely diagnosis and treatment. Health professionals need to be trained in clinical breast exams (CBE) and breast health counseling, including culturally sensitive patient-clinician communication strategies.

Early detection screening methods should realistically match available resources (staff, equipment, facilities) and community support and access to care. CBE provides a lower-cost screening modality than mammography and requires fewer resources to implement and is most appropriate in settings where early detection has not previously been made available to the public. In LMICs, CBE can function as a transitional screening modality along a resource-stratified pathway before introduction of screening mammography, which may or may not be implemented depending on existing resources and current cancer stage at diagnosis. Structural, organizational, psychological, sociocultural, and financial barriers that preclude women from utilizing available breast cancer services must be overcome to improve breast cancer early detection. Implementation research on breast cancer awareness efforts, particularly those studies performed in developing countries, should continue to inform and guide program development. Successful implementation of early detection program, cognizant of local barriers, can result in downsizing of breast cancer and improved overall health outcomes.

Table 1. Resource-stratified pathway for breast cancer early detection and screening programs.

<table>
<thead>
<tr>
<th>Level of Available Resources</th>
<th>Basic (Level 1)</th>
<th>Limited (Level 2)</th>
<th>Enhanced (Level 3)</th>
<th>Maximal (Level 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Education and Awareness</td>
<td>Development of culturally sensitive, linguistically appropriate local education programs for target populations to teach value of early detection, breast cancer risk factors and breast health awareness (education + self-examination)</td>
<td>Culturally and linguistically appropriate targeted outreach/education encouraging CBE for age groups at higher risk administered at district/provincial level using healthcare providers in the field</td>
<td>Regional awareness programs regarding breast health linked to general health and women's health programs</td>
<td>National awareness campaigns regarding breast health using media</td>
</tr>
<tr>
<td>Detection Method</td>
<td>Clinical history and CBE</td>
<td>Diagnostic breast US +/- diagnostic mammography in women with positive CBE</td>
<td>Mammographic screening every 2 years in women ages 50-69</td>
<td>Consider mammographic screening in women ages 40 and older</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mammographic screening of target group</td>
<td>Consider mammographic screening every 12-18 months in women ages 40-49</td>
<td>Other imaging technologies as appropriate for high-risk groups</td>
</tr>
<tr>
<td>Evaluation Goal</td>
<td>Breast health awareness regarding value of early detection in improving breast cancer outcome</td>
<td>Downsizing of symptomatic disease</td>
<td>Downsizing and/or downstaging of asymptomatic disease in women in highest yield target groups</td>
<td>Downsizing and/or downstaging of asymptomatic disease in women in all risk groups</td>
</tr>
</tbody>
</table>

Adapted from the Breast Health Global Initiative (BHGI) guidelines, 2008

DEFINITIONS: Basic (level 1) resources are core resources or fundamental services absolutely necessary for any breast health care system to function; basic-level services are typically applied in a single clinical interaction. Limited (level 2) resources are attainable with limited financial means and modest infrastructure. Enhanced (level 3) resources are optional but important, and improve options and outcomes. The maximal (level 4) resource-allocations are lower-priority, higher-cost options, and are generally not recommended in low or limited resource settings.
### Table 2. Early detection efforts versus screening programs: definitions, impact, requirement and benefit.

<table>
<thead>
<tr>
<th>Early Detection</th>
<th>Screening</th>
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</thead>
<tbody>
<tr>
<td><strong>Definition</strong></td>
<td>Signs or symptoms of breast cancer in an early disease stage identified by a woman or her health care team.</td>
</tr>
<tr>
<td><strong>Impact</strong></td>
<td>Improved survival rates with appropriate treatment independent of screening efforts.</td>
</tr>
<tr>
<td><strong>Requirement</strong></td>
<td>Breast cancer awareness by patient and community; breast health awareness by health care team; access to health care. Competent health providers in CBE, counseling, mammography</td>
</tr>
<tr>
<td><strong>Benefit</strong></td>
<td>Improved health and quality of life, lower cost of care, less complex care for some patients.</td>
</tr>
</tbody>
</table>

### Table 3. Opportunistic versus Organized Screening with CBE: target population, process, requirements, impact.

<table>
<thead>
<tr>
<th>Opportunistic Screening</th>
<th>Organized Screening</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target</strong></td>
<td>Individuals during clinical encounter</td>
</tr>
<tr>
<td><strong>Process</strong></td>
<td>Signs and symptoms of breast cancer identified by a woman and/or her health team during a clinical visit; referral for imaging, biopsy and pathology as needed</td>
</tr>
<tr>
<td><strong>Requirements</strong></td>
<td>Breast health awareness by women and front-line health professionals Reduced barriers to follow-up care within individual healthcare system</td>
</tr>
<tr>
<td><strong>Health system impact</strong></td>
<td>Lower cost Less complex health system coordination Impact at individual patient level Less equity as it favors patients who already have healthcare system access</td>
</tr>
</tbody>
</table>
Case Study 1: Using a national tracking system to implement a systematic mammography screening program.

BHGI 2010 GLOBAL SUMMIT: HEALTH POLICY AND EARLY DETECTION, BRAZIL

Background:
A national survey found that 75% of Brazilian women age 40 years or older had undergone CBE at least once in their lives, and 40% within one year prior to the survey. There were notable regional differences, as well as differences related to household income: 52% of women from low-income households compared to 96% of women from high-income households reported having undergone a CBE. In addition, 71% of women age 50-69 years reported having undergone mammography at least once in their lives, and 54% within 2 years. Mammography coverage was greater in the South and lower in the North. While there were no significant regional differences in mammography coverage overall, there were important regional differences within the low-income population, with a mammography coverage 28% in the North, 56% in the South, and 67%, in the Southeast.

Study:
Although Brazil's National Program for Early Detection of Breast Cancer recommends annual CBE for all women starting at age 40 years old and mammography every 2 years for women at age 50-69 years old. To date, only one municipality, Curitiba, in late 2009, has established organized breast cancer screening.

Outcome:
A new program to track publicly-financed mammograms and breast biopsies, ‘SISMAMA’, was launched in December 2008 that requires a government facility, a contracted private imaging center or a pathology laboratory to provide certain standardized information that is recorded in SISMAMA prior to reimbursement. Over 1.5 million mammograms have been conducted nationally and entered into SISMAMA to be analyzed.