Centers of Excellence in Cancer

Health Systems Components: Breast Cancer as a Model

Benjamin O. Anderson, M.D.
Chair and Director
Breast Health Global Initiative
Fred Hutchinson Cancer Research Center
Professor of Surgery & Global Health Medicine
University of Washington
Seattle, Washington
Health Systems Components

- Measuring the Cancer Burden
- Cancer Control Planning
- Networks and Patient Triage
- Longitudinal Care and Follow-Up
U.S. CANCER INCIDENCE 2015 (EST.)

SOURCE: Seigel C a Cancer J Clin 65:5, 2015 © 2016 BHGI. All rights reserved.

- **1982**
  - "LOCAL" (NODE-NEGATIVE)
  - "REGIONAL" (NODE-POSITIVE)
  - NONINVASIVE (DCIS)
U.S. CANCER MORTALITY 2015 (EST.)

INCREASED SCREENING 1982
DECREASED MORTALITY 1990

Early detection is essential to improving outcome.

Effective early detection requires prompt accurate histologic diagnosis.

To save lives, screening programs must be linked to timely, effective treatment.

Berry, et al. (CISNET), NEJM 353:1784, 2005
GLOBAL BREAST CANCER BURDEN
INCIDENCE AND MORTALITY: 2015-2024

- Most common cancer among women
  - 19.7 million cases in next decade
  - 10.6 million cases in less developed countries
  - By 2020, over 1 million cases per year in LMCs

- Most common cancer killer among women
  - 5.8 million women will die in next decade
  - 3.9 million deaths in less developed countries
  - >1.5 million deaths premature and preventable

SOURCE: Globocan 2012 (IARC)
BREAST CANCER GLOBAL INCIDENCE

SOURCE: Globocan 2012 (IARC)
BREAST CANCER GLOBAL MORTALITY

SOURCE: Globocan 2012 (IARC)
HEALTH SYSTEMS COMPONENTS

- Measuring the Cancer Burden
- Cancer Control Planning
- Networks and Patient Triage
- Longitudinal Care and Follow-Up
# CANCER CONTROL STRATEGIES
## PRIMARY PREVENTION

Population-Attributable Fraction (PAF) reflects potential prevention impact

<table>
<thead>
<tr>
<th>Etiology</th>
<th>Carcinogenic risk factor (associated PAF)</th>
<th>Overall PAF (%)</th>
<th>Risk reduction programs</th>
<th>Key multisectoral partners</th>
<th>Estimated cost-effectiveness</th>
</tr>
</thead>
</table>
| **Infectious etiologies**| HPV (cervical cancer 90–100%)*  
Hepatitis B and C (HCC 77%)*  
*H. pylori (gastric cancer 75%)*| 18              | Vaccinations                                                  | Health care workers  
Pharmaceutical companies  
Legislative bodies                                                     | Very cost-effective                                                                 |
| **Behavioral factors**    | Tobacco (30%)†  
Obesity (20%)†  
Diet (5%)†  
Alcohol (4%)†| 66              | Tobacco cessation  
Exercise programs  
Public education and outreach                                           | General population (health literacy)  
Legislative bodies  
Health care workers                                                      | Very cost-effective                                                                 |
| **Environmental factors** | Air pollution  
Aflatoxins                                                                   | 4               | Environmental regulations                                         | Legislative bodies  
Business sector                                                          | Potentially cost-effective     |
| **Clinical interventions** | Chemoprevention (such as tamoxifen, aspirin, celecoxib, or finasteride)  
Surgical procedures (such as prophylactic mastectomy or prophylactic oophorectomy)| N/A             | Insurance coverage for correctly selected individuals at elevated risk | Health care workers  
Pharmaceutical companies  
General population                                                        | Cost-effective                 |

Ilbawi, Science Trans Med, 7:278cm1, 2015
CANCER CONTROL STRATEGIES
DISEASE-BASED APPROACH

- EARLY DETECTION
- PRIMARY PREVENTION
- DIAGNOSIS
- TREATMENT
CANCER CONTROL STRATEGIES

BREAST CANCER PREVENTION

Health behaviors associated with reduced breast cancer risk

1. Prolonged lactation
2. Regular physical activity
3. Weight control
4. Avoid excess alcohol intake
5. Avoid prolonged use of exogenous hormones
6. Avoid excessive radiation exposure

CANCER CONTROL PLANNING
WORLD HEALTH ORGANIZATION

Practical Guides for Managers
Planning
Prevention
Early detection
Diagnosis and treatment
Palliative care
Policy and advocacy

www.who.int/cancer/publications/cancer_control_planning/en/
International Cancer Control Partnership (ICCP)

ICCP Mission: Assist cancer planners and public health actors in the development, implementation and evaluation of high quality National Cancer Control Plans.

Priorities:
- Develop and promote advocacy at global and local levels to make cancer control a priority;
- Promote a coordinated approach to technical assistance and training;
- Work within the ICCP to coordinate efforts around development and dissemination of evidence-based materials and address data gaps;
- Promote communities of practice on specific areas (the Networks);
- Provide an online one-stop shop of best-practice resources – ICCP Portal.

Knowledge-sharing and TA activities along the Cancer Care Continuum:
What is the ICCP Portal? The ICCP created a Portal that pools together many vital resources to assist countries in implementing commitments from the Global NCD Framework in the cancer field - all in ONE PLACE.

A knowledge-sharing platform featuring:

- Interactive map of cancer & NCD Plans;
- Library of materials & tools;
- Case studies;
- Technical assistance opportunities;
- Prevention campaigns repository;
- Events, Global Initiatives, and more.

www.iccp-portal.org
ICCP Map of Cancer and NCD Plans

- Interactive map and searchable database of publicly available cancer & NCD Plans
  - 127 cancer plans (incl. US states’ plans and other sub-national plans);
  - 30 NCD Plans, integrating a cancer component;
  - In English, French and Spanish;
  - Searchable database helping to identify best practices and lessons learned in other countries;

- Case Studies
  - Cancer planners sharing their experience on specific areas (Morocco, Turkey)
**Health Systems Components**

- Measuring the Cancer Burden
- Cancer Control Planning
- Networks and Patient Triage
- Longitudinal Care and Follow-Up
LMC IMPLEMENTATION RESEARCH

LOWER-MIDDLE INCOME COUNTRY

Peru

Early Detection and Patient Triage
Breast cancer care model

Regional Cancer Institute (Trujillo)
- Mammography
- Pathology
- Surgery
- Chemotherapy
- Radiotherapy

La Fora Reference Hospital
- FNA

Health Centers
- Community education
- CBE

Photos courtesy of Ben Anderson

Slide used with permission from PATH
Two phases

- **Phase 1:**
  - Pilot demonstration of the model of care.

- **Phase 2:**
  - National scale-up of the model.
  - Integration of post-treatment support for patients:
    - Clinical support at the local level for women who need follow-up care and monitoring.
    - Psychosocial support in the community.
BREAST CANCER ASSESSMENT
LOW INCOME COUNTRY

Rwanda

Early Detection Capacity Analysis
BREAST CANCER ASSESSMENT
RWANDA, EAST AFRICA

Globocan 2008 (IARC)
Projected New Breast Cancer Cases in Rwanda

- 2008: 376 cases
- 2015: 456 cases
- 2030: 783 cases
HEALTH FACILITY OVERVIEW
Rwanda, East Africa

Tertiary
• Anatomic pathology / Surgery
• Chemotherapy / hormonal therapy
• Radiotherapy (?)

Secondary
• Clinical Diagnosis
• Tissue Sampling

Primary
• Clinical Breast Exam (CBE)
• Awareness Education

Source: MOH, 2009
HEALTH SYSTEMS COMPONENTS

- Measuring the Cancer Burden
- Cancer Control Planning
- Networks and Patient Triage
- Longitudinal Care and Follow-Up
Biennial mammographic screening (50–70 years) with breast cancer treatment are among “best buys”

Could avert 19% of cancer burden

BUT breast cancer interventions impractical for poorer countries:

- implementation costs
- limited feasibility of treatment in primary care setting in LMCs
LMC IMPLEMENTATION RESEARCH
LOWER-MIDDLE INCOME COUNTRY

Indonesia

CBE training for nurse midwives
METHODS

- 47 nurse midwives and 15 volunteer health workers in 5 districts of Jakarta, Indonesia trained in breath health education, screening and clinical breast examination (CBE)
- Women invited to local health facilities to receive a CBE and independently administered mammogram
- Demographic questionnaire completed by all participants
- Women with suspicious findings on either mammography or CBE underwent diagnostic work-up and fine needle aspiration (FNA) for diagnosis
RESULTS

- 1,179 women underwent both mammography and CBE
  - 289 women (24.5%) were found to have a suspicious finding on CBE, mammography or both
  - 14 women (1.2%) were found to have a breast cancer
    - Of the 14 breast cancers, 13 (93%) appreciated on CBE
    - 167 (14.2%) CBE exams required additional work-up to diagnose 13 of the 14 cancers seen on mammography

RESULTS

- 1,179 women underwent both mammography and CBE
  - 289 women (24.5%) were found to have a suspicious finding on CBE, mammography or both
  - 14 women (1.2%) were found to have a breast cancer
  - 8 of 14 patients (57%) failed to undergo treatment
    - 2 of 14 breast cancer patients refused surgery
    - 6 of 14 breast cancer patients lost to follow-up

METRICS & QUALITY IMPROVEMENT

Patient Factors

PROCESS
- Diagnosis and staging
- Cancer treatment
- Symptom management
- Surveillance

OUTCOME
- Survival
- QOL
- Satisfaction

STRUCTURE
- Resources (e.g. radiation)
- Coverage and reimbursement
HEALTH SYSTEM COMPONENTS

SUMMARY

- Cancer statistics and health metrics determine the cancer burden that needs to be addressed by the health system.
- Individualized cancer control planning provides a framework for organizing cancer management at the country level.
- Cancer treatment requires organized health networks to triage patients effectively from primary care to Centers of Excellence.
- Because cancer treatment protocols must be completed to be effective, the system must follow patients longitudinally over time.
The Breast Health Global Initiative

www.bhgi.info

BCI 2.5
Making breast cancer a global priority

www.BCI25.org