Early Diagnosis Policy Strategies

Raúl Murillo, MD, MPH
Centro Oncológico Javeriano (Colombia)
No conflicts of interest to declare
Content

• Evidence-based policies: from efficacy to effectiveness
• Policy development: definition of the screening program
• Policy development: program implementation
Evidence-based policies: which evidence?
A systematic review of reviews on effects and harms of BCS

Mandrik O et al. Submitted
Breast cancer mortality trends in selected countries with different screening policy

Global Cancer Observatory
WHO-IARC Cancer Mortality Database
Accessed 01-10-2018
Breast cancer screening programs in the European Union - 2016

Causes of heterogeneity of breast cancer screening outcomes

A. Mammography sensitivity and BC mortality in RCT

B. Screening coverage and BC mortality in Europe

Chen TH et al: Effect of attendance rates on screening performance in RCT
(Attendance rate from 61.3% to 90.4%)

1. BC mortality
   RR 0.995 (95%CI 0.973-1.017)

1. Advanced disease
   RR 0.923 (95%CI 0.905-0.939)

Source: European Commission.
Cancer screening in Europe; 2017

Chen TH et al. Medicine (Baltimore); 2017
Supplemental content
## Delays in diagnosis and treatment of breast cancer:
### a multinational study (months)

<table>
<thead>
<tr>
<th>Country</th>
<th>N</th>
<th>Mean PDT (SE)</th>
<th>N</th>
<th>Mean SDT (SE)</th>
<th>N</th>
<th>Mean TDT (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BGR</td>
<td>448</td>
<td>4.83 (0.22)</td>
<td>644</td>
<td>12.51 (0.53)</td>
<td>644</td>
<td>15.87 (0.62)</td>
</tr>
<tr>
<td>HUN</td>
<td>167</td>
<td>3.44 (0.30)</td>
<td>350</td>
<td>14.47 (0.59)</td>
<td>350</td>
<td>16.12 (0.66)</td>
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<tr>
<td>IND</td>
<td>207</td>
<td>6.10 (0.33)</td>
<td>268</td>
<td>24.69 (1.22)</td>
<td>268</td>
<td>29.41 (1.37)</td>
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<tr>
<td>LVA</td>
<td>111</td>
<td>6.17 (0.47)</td>
<td>156</td>
<td>13.14 (0.72)</td>
<td>156</td>
<td>17.53 (0.89)</td>
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<tr>
<td>LTU</td>
<td>368</td>
<td>4.85 (0.25)</td>
<td>458</td>
<td>8.27 (0.37)</td>
<td>458</td>
<td>12.16 (0.45)</td>
</tr>
<tr>
<td>POL</td>
<td>557</td>
<td>3.61 (0.17)</td>
<td>1000</td>
<td>9.49 (0.22)</td>
<td>1000</td>
<td>11.50 (0.25)</td>
</tr>
<tr>
<td>ROU</td>
<td>271</td>
<td>6.02 (0.28)</td>
<td>319</td>
<td>20.42 (0.75)</td>
<td>319</td>
<td>25.54 (0.92)</td>
</tr>
<tr>
<td>RUS</td>
<td>718</td>
<td>4.81 (0.17)</td>
<td>1059</td>
<td>12.42 (0.37)</td>
<td>1059</td>
<td>15.68 (0.43)</td>
</tr>
<tr>
<td>SVK</td>
<td>154</td>
<td>4.00 (0.35)</td>
<td>253</td>
<td>10.72 (0.50)</td>
<td>253</td>
<td>13.15 (0.60)</td>
</tr>
<tr>
<td>SRB</td>
<td>663</td>
<td>4.47 (0.19)</td>
<td>800</td>
<td>9.16 (0.27)</td>
<td>800</td>
<td>12.86 (0.38)</td>
</tr>
<tr>
<td>TUR</td>
<td>694</td>
<td>4.84 (0.18)</td>
<td>1031</td>
<td>10.49 (0.32)</td>
<td>1031</td>
<td>13.75 (0.38)</td>
</tr>
<tr>
<td>HRV</td>
<td>167</td>
<td>4.88 (0.39)</td>
<td>248</td>
<td>10.23 (0.65)</td>
<td>248</td>
<td>13.51 (0.85)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4525</strong></td>
<td><strong>4.71 (0.07)</strong></td>
<td><strong>6586</strong></td>
<td><strong>11.86 (0.14)</strong></td>
<td><strong>6586</strong></td>
<td><strong>15.10 (0.16)</strong></td>
</tr>
</tbody>
</table>

*a: Country: Bulgaria (BGR), Hungary (HUN), India (IND), Latvia (LVA), Lithuania (LTU), Poland (POL), Romania (ROU), Russia (RUS), Slovakia (SVK), Serbia (SRB), Turkey (TUR) and Croatia (HRV).
SE, standard error.

Major elements for policy development

• Definition of the screening program
  • Target population
  • Screening tests
  • Screening intensity (interval)

• Implementation
  • Screening coverage (geographic, cultural, and economic access)
  • Quality of screening tests (detection rates, false positives)
  • Access to diagnosis and treatment (follow-up)
  • Rollout
Content

• Evidence-based policies: from efficacy to effectiveness
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Breast cancer incident cases by age

Source: Global Cancer Observatory 2018
Breast cancer screening policies for women under 50 years old in Europe and the Americas region

Sources:
IARC Handbook of Cancer Prevention Vol 15; 2017
Screening accuracy and screening intensity

Regular screening

<table>
<thead>
<tr>
<th></th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-intensity screening</td>
<td>70% - 80%</td>
<td>90% - 95%</td>
</tr>
<tr>
<td>High-intensity screening</td>
<td>90% - 95%</td>
<td>95% - 100%</td>
</tr>
</tbody>
</table>
### Accuracy of mammography and CBE in the implementation of breast cancer screening in Colombia

<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity % (95%CI)</th>
<th>Specificity % (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Single tests</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mammography</td>
<td>78.3 (77.3–79.3)</td>
<td>99.4 (99.2–99.6)</td>
</tr>
<tr>
<td>CBE</td>
<td>39.1 (37.9–40.3)</td>
<td>83.4 (82.6–84.3)</td>
</tr>
<tr>
<td><strong>Combined mammography &amp; CBE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parallel</td>
<td>95.6 (95.1–96.2)</td>
<td>83.1 (82.2–84.0)</td>
</tr>
<tr>
<td>Serial</td>
<td>13.0 (12.2–13.9)</td>
<td>99.9 (99.9–100.0)</td>
</tr>
</tbody>
</table>

Alba LH et al. Prev Med 2018
Content

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UHC: service coverage index by country, 2015

# Financial protection: several challenges

<table>
<thead>
<tr>
<th>Screening</th>
<th>Coverage (2 yr)</th>
<th>Breast cancer care</th>
<th>Identified effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>• USA: Mostly private</td>
<td>40-74 yr: 78.3% BRFSS 2014</td>
<td>• User fees</td>
<td>Utilization preventive and curative services differ</td>
</tr>
<tr>
<td>• Brazil: Universal health</td>
<td>50-69 yr: 60.0% PNS 2013</td>
<td>• Public insurance</td>
<td>Improves equity, reduces OOP</td>
</tr>
<tr>
<td>• Chile: Two providers (FONASA-ISAPRE) and special protection for women 50-59 (GES)</td>
<td>50-59 yr: 60.0% CASEN 2011</td>
<td>• Public hospitals</td>
<td>ND</td>
</tr>
<tr>
<td>• Colombia: Insurance based (Two insurance plans: Contributory-Subsidized)</td>
<td>50-69 yr: 62.5% ENDS 2015</td>
<td>• Community-based insurance</td>
<td>Increases health services utilization, no evidence on health outcomes or OOP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Catastrophic health insurance</td>
<td>Improves equity, reduces OOP</td>
</tr>
</tbody>
</table>

Coverage 2 yr: mammography in the previous 2 years to the survey. OOP: out-of-pocket expenditure

Wiysonge CS et al. Cochrane Database 2017

Coverage (2 yr): mammography in the previous 2 years to the survey. OOP: out-of-pocket expenditure
**Cost-effectiveness and affordability**

**Selected cost-effectiveness analyses in LMIC**

- Vietnam: annual CBE (40+ yr)
- Korea: MMG (45-65 yr)
- Hong Kong: biennial MMG (40-69 yr)
- India: Screening (40-60 yr)
  - Single CBE (50 yr)
  - CBE every 5 yr
  - Biennial CBE
  - Annual CBE
  - Biennial MMG

<table>
<thead>
<tr>
<th>Country</th>
<th>CBE Frequency</th>
<th>Cost-effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vietnam</td>
<td>Annual</td>
<td>Y</td>
</tr>
<tr>
<td>Korea</td>
<td>Annual</td>
<td>V</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>Biennial</td>
<td>N</td>
</tr>
<tr>
<td>India</td>
<td>Biennial MMG</td>
<td>V</td>
</tr>
</tbody>
</table>

ICER interpretation: V- very cost-effective, Y- cost-effective, N- not cost-effective

TORA: Tax and official resources available. SPF: Social protection floor

International Labour Organization. EES-Working paper No. 58; 2017

DCP3, 2016
Follow-up: a needed balance between test accuracy, recall rates, and number of visits

Alba LH et al. Prev Med 2018
Breast cancer downstaging in facility based screening in Colombia: A randomized trial

Summary: phased implementation

Target population (disease burden)

- Age range
- Geographical area

Best available evidence and economic considerations (cost-effectiveness and affordability)
Gracias