Economic Evaluation of NPCR

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CDC

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RTI International

North American Association of Central Cancer Registries
Annual Meeting

June 21, 2011 – Louisville, KY
Outline

- Introduction/Background – Fran Michaud
- Findings: Factors Affecting Registry Operations – Diana Trebino
- Findings: Cost per Case – Maggie Cole Beebe
Introduction and Background
Economic Evaluation Team

**CDC**
- Florence Tangka, PhD
- Fran Michaud, BS, MT, CTR
- Linh Duong, MPH
- Jean Ewing, MSW, MSHyg
- Renita Blake, MBA
- Donatus Ekwueme, PhD

**RTI International**
- Sujha Subramanian, PhD
- Maggie Cole Beebe, PhD
- Diana Trebino, BA
Acknowledgements

- CSB Program consultants
- Registries that hosted site visits
- Registries that pilot tested the CAT
- Registries that provided feedback and suggestions
- All NPCR registries for participating in the reporting and validation of Rounds 1 & 2 data
Goals of Economic Analysis

- Estimate true economic costs of operating a cancer registry
- Evaluate the factors that may affect the efficiency of registry operations
- Identify costs associated with registry activities
- Assess cost-effectiveness of registry operations
Economic Analysis of NPCR

- Initiated by CDC in 2005

- Conducted site visits to 4 registries
  - Assess feasibility of collecting cost data
  - Data collection infrastructure
  - Types of activities performed
  - Other factors that should be assessed

- Developed Cost Assessment Tool (CAT)
  - Pilot-tested with registries reporting data for FY05
Three manuscripts in the Journal of Registry Management:

- Economic assessment of central cancer registry operations.
  - Part I: Methods and conceptual framework.
  - Part II: Developing and testing a cost assessment tool.
  - Part III: Results from five programs.
Cost Assessment Tool (CAT)

- Use web-based CAT to collect 3 years of data, including:
  - All funding sources
  - In-kind contributions
  - Actual (not budgeted) expenditures
  - Resources allocated to specific registry activities
  - Factors affecting registry operations costs

- We have collected 2 rounds of data
  - Round 1 findings presented today
  - Round 2 data currently being cleaned and analyzed
  - Round 3 collection to begin in early 2012
Methods: Analysis

- Allocate expenditures to specific registry activities
- Identify distribution of costs
  - Among Core and Advanced activities
  - Among individual activities
- Calculate average cost per case
  - Overall and for each activity
Factors Affecting Registry Operations

  - Database management software
  - Consolidation effort
  - Number of CTRs in hospital-based registries
  - Quality of facility reporting
Factors Affecting Registry Operations
Round 1 Data

The findings presented here are based on:
- Cost data reported for the period June 30, 2008 to June 29, 2009
  - In-kind funding is excluded from the cost estimates
- Cases diagnosed in 2006
  - Incident cases are defined by in-state resident at time of diagnosis; unduplicated patient and tumor; invasive stage only for all cancers except bladder where in-situ cases are included
- Other reportable cases for in-state residents
Consolidation Effort

- Record abstracts versus incident cases

- Consolidation effort is the effort required to identify an incident case from the records received
  - \[1 - \frac{\text{incidence cases}}{\text{records received}}\]

- The larger the difference between records received and cases reported, the greater the consolidation effort
  - Higher effort = Greater resource use = Higher cost
### Consolidation Effort

<table>
<thead>
<tr>
<th>Level of Effort</th>
<th>Consolidation Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>0–23%</td>
</tr>
<tr>
<td>Medium</td>
<td>24–36%</td>
</tr>
<tr>
<td>High</td>
<td>37–89%</td>
</tr>
<tr>
<td>Average</td>
<td>31%</td>
</tr>
<tr>
<td>Median</td>
<td>29%</td>
</tr>
</tbody>
</table>

*Based on data reported by 45 registries (1 registry did not report cases diagnosed in 2006; 2 registries did not report number of records received).
## CTRs at Hospital Reporting Facilities

<table>
<thead>
<tr>
<th>Range</th>
<th>Number of CTRs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>0–20</td>
</tr>
<tr>
<td>Medium</td>
<td>21–66</td>
</tr>
<tr>
<td>High</td>
<td>67–570</td>
</tr>
<tr>
<td>Average</td>
<td>78</td>
</tr>
<tr>
<td>Median</td>
<td>48</td>
</tr>
</tbody>
</table>

*Based on data reported by 47 registries (1 registry did not report cases diagnosed in 2006).*
Quality of Facility Reporting

- 21 registries require facilities to meet an acceptable error threshold before submitting records

- On average, 80% of facilities pass 90–100% of edits at the time of acceptance
Average Mix of Facilities Passing Edits

- Pass 100% of edits: 49%
- Pass 97-99% of edits: 7%
- Pass 90-96% of edits: 7%
- Pass 80-89% of edits: 6%
- Pass 50-79% of edits: 19%
- Pass 0-50% of edits: 12%
Cost Per Case
(Value of In-Kind contributions not included)
## Cost per Case

<table>
<thead>
<tr>
<th>Cost per Case Reported</th>
<th>NPCR Registries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>$18.30</td>
</tr>
<tr>
<td>Maximum</td>
<td>$184.19</td>
</tr>
<tr>
<td>Average</td>
<td>$58.01</td>
</tr>
<tr>
<td>Median</td>
<td>$49.21</td>
</tr>
</tbody>
</table>

*Based on data reported by 47 registries (1 registry did not report cases diagnosed in 2006).*
# Database Management Software

<table>
<thead>
<tr>
<th>Cost per Case Reported</th>
<th>Database Management Software</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CDC (n=11)</td>
</tr>
<tr>
<td>Total Cost</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>$49.90</td>
</tr>
<tr>
<td>Median</td>
<td>$42.76</td>
</tr>
<tr>
<td>IT Cost</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>$2.49</td>
</tr>
<tr>
<td>Median</td>
<td>$2.09</td>
</tr>
</tbody>
</table>

*Based on data reported by 47 registries (1 registry did not report cases diagnosed in 2006).*
## Consolidation Effort

<table>
<thead>
<tr>
<th>Cost per Case Reported</th>
<th>Consolidation Effort</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Med</td>
</tr>
<tr>
<td>Average</td>
<td>$69.77</td>
<td>$44.70</td>
</tr>
<tr>
<td>Median</td>
<td>$52.62</td>
<td>$34.31</td>
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</table>

*Based on data reported by 45 registries (1 registry did not report cases diagnosed in 2006; 2 registries did not report number of records received).*
### CTRs at Hospital Reporting Facilities

<table>
<thead>
<tr>
<th>Cost per Case Reported</th>
<th># CTRs at Hospital Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Average</td>
<td>$75.28</td>
</tr>
<tr>
<td>Median</td>
<td>$60.74</td>
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</table>

*Based on data reported by 47 registries (1 registry did not report cases diagnosed in 2006).*
## Quality of Facility Reporting

<table>
<thead>
<tr>
<th>Cost per Case Reported</th>
<th>Acceptable Error Threshold Requirement</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Yes (n=21)</td>
</tr>
<tr>
<td>Average</td>
<td>$58.55</td>
</tr>
<tr>
<td>Median</td>
<td>$48.20</td>
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</tbody>
</table>

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Next Steps

- Analyze round 2 data
- Produce reports for CDC and registries
- Update webCAT as needed based on comments received
- Collect round 3 data
- Analyze 3 years of data
- Share findings (presentations and publications)
References


The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention
Questions/Comments?

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