Projections of the Costs Associated with Cancer Care in the United States

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Overview

- Temporal cost patterns in cancer patients
- National estimates and projections
- Considerations in evaluating cost drivers
- Challenges in projecting cancer care costs
- Opportunities for improving cost estimates and projections
Monthly Medicare Payments for Colorectal Cancer Patients by Length of Survival

Phase of Care Approach for Estimating Cancer Costs

- Trajectory from diagnosis to death divided into clinically relevant periods or phases of care where flow of costs relatively homogeneous
  - Initial
  - Continuing
  - Last year of life
- Phases can be predefined or determined empirically
- Can be used with longitudinal monthly survival probabilities to model incidence costs for a specific cohort
- **Can be used with modeled prevalence by phase of care to estimate or project prevalence costs in a given year**
Estimating and Projecting National Cancer Costs

- Dynamic U.S. population projections from Census
  - Population aging and growing

- Incidence and survival rates projected based on most recent years of SEER data by cancer site and gender
  - Incidence mostly declining
  - Survival mostly improving

- Prevalence estimated and projected by phase of care for each cancer site by age and gender

- Linked SEER-Medicare data used to estimate net cost of care by cancer site, gender, and phase of care based on most recent data

Scenarios for Projecting National Cancer Care Costs

– Base case: constant current incidence, survival, cost based on most recent data

– Recent incidence and survival trend and assumptions about cost trends
  • 2% increase annually in costs in initial and last year of life phases
  • 5% increase annually in costs in initial and last year of life phases

Observed and projected SEER incidence rates

Observed and Projected Current
Continuing Trend

Estimated National Expenditures for Cancer Care in 2010 by Site (in billion $)

Total Cancer Expenditure in 2010: $124.57 Billion in 2010 dollars

Estimated Proportion of National Expenditures for Cancer Care in 2010, by Site and Phase of Care

Projected Increase in National Expenditures in 2020 by Cancer Site (in billion $): Population Changes Only

Total Cancer Expenditure in 2020, Base Scenario: $157.77 Billion in 2010 dollars

Projections of National Cancer Care Expenditures in 2020

Recent incidence and survival trends, and
- 2% increase annually in costs in initial and last year of life phases
  $172.8 B (39% increase from 2010)
- 5% increase annually in costs in initial and last year of life phases
  $206.6 B (66% increase from 2010)

Considerations when Evaluating Simultaneous Cost Drivers

- Population changes
- Incidence trends
- Stage Distribution at Diagnosis
- Survival trends
- Changes in use of services
  - Targeted therapy
  - Imaging
  - Hematopoietic growth factors
  - Hospice
- Changes in frequency and/or unit cost per service
- Hospitalizations
Figure 1. Monthly and Median Costs of Cancer Drugs at the Time of Approval by the Food and Drug Administration (FDA), from 1965 through 2008.

Shown are costs for 1 month of cancer treatment for a person who weighs 70 kg or has a body-surface area of 1.7 m². The red line indicates median prices during a 5-year period. Prices have been adjusted to 2007 dollars and reflect the total price for the drug at the time of approval, including both the amount of Medicare reimbursement and the amount paid by the patient or by a secondary payer. (For details about the costs of individual drugs, see the Supplementary Appendix, available with the full text of this article at NEJM.org.)

Percentage of Total Medicare Payments in Year Following Diagnosis by Type of Service in 2002

Proportion of Net Medicare Payments due to Hospitalizations in Elderly Cancer Patients, Initial Phase of Care

Tumor Site

- Brain & ONS
- Female Breast
- Cervix
- Colorectal
- Corpus uteri
- Esophagus
- Gastric
- Head and Neck
- Leukemia
- Liver
- Lung
- Lymphoma
- Melanoma
- Ovary
- Pancreas
- Prostate
- Renal
- Urinary Bladder

Proportion

Proportion of Net Medicare Payments due to Hospitalizations in Elderly Cancer Patients, Last Year of Life Phase of Care

Tumor Site

- Brain & ONS
- Female Breast
- Cervix
- Colorectal
- Corpus uteri
- Esophagus
- Gastric
- Head and Neck
- Leukemia
- Liver
- Lung
- Lymphoma
- Melanoma
- Ovary
- Pancreas
- Prostate
- Renal
- Urinary Bladder

Proportion

Challenges for Estimating and Projecting Cancer Costs

- Data completeness
  - Care trajectory
  - All payers by type, including out of pocket
  - Under age 65
  - National

- Data comparability
  - Population differences
  - Methods for identifying cancer patients
  - Type of data (Claims, encounter data, discharge, survey-based)

- Estimating and projecting treatment patterns
  - Prevalence changes relatively slowly, but treatment patterns can change rapidly
Opportunities for Improving Cost Estimates and Projections

- Improved Data
  - State-based linkage efforts
  - Medical Expenditure Panel Survey (MEPS) Experiences with Cancer Survivorship Supplement

- Ongoing evaluation of trends
  - Patterns of care
  - Costs

- Comparative studies
  - Cancer Research Network – care and costs in managed care and fee-for-service elderly
  - Patterns of care and costs in other countries
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