Cancer: Can we Afford the Cure? Current Trends in Oncology Treatment

Julie Kennerly-Shah, PharmD, MS, MHA, BCPS
May 30, 2018
Session Objectives

- Describe recent advances in oncology and newly approved anti-cancer agents
- Review the unsustainable trend in the cost of cancer care
- Review novel strategies for high quality and high value cancer care
Recent Advances in Cancer

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WEXNER MEDICAL CENTER
Changing Landscape

Effective
No Effect
Adverse Effect

Effective
Effective
Effective

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### 2006

#### Histological Testing

<table>
<thead>
<tr>
<th>Squamous cell carcinoma</th>
<th>Non-squamous cell carcinoma</th>
<th>Biomarker testing</th>
</tr>
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#### First Line | Second Line

<table>
<thead>
<tr>
<th>Squamous cell carcinoma</th>
<th>Chemotherapy</th>
<th>Chemotherapy</th>
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<table>
<thead>
<tr>
<th>Non-squamous cell carcinoma</th>
<th>EGFR+ve</th>
<th>Erlotinib</th>
<th>Chemotherapy</th>
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<tbody>
<tr>
<td>EGFR+ve</td>
<td>Bevacizumab based therapies</td>
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<td>263</td>
<td>Chemotherapy</td>
<td>Erlotinib</td>
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### 2016

#### Histological Testing

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<tr>
<th>Squamous cell carcinoma</th>
<th>Biomarker testing</th>
<th>EGFR+ve</th>
<th>Gefitinib</th>
<th>EGFR790M testing</th>
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<tr>
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<td>Afatinib</td>
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<tr>
<td>Portrazza</td>
<td>Nivolumab</td>
<td>Chemotherapy</td>
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<table>
<thead>
<tr>
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<th>Crizotinib</th>
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<tbody>
<tr>
<td>Biomarker testing</td>
<td>EGFR-ve/ALK-ve/PD1-ve</td>
<td>Pembrolizumab</td>
<td>Nivolumab</td>
<td>Atezolizumab</td>
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<tr>
<td>Pembrolizumab*</td>
<td>Pembrolizumab*</td>
<td>Pembrolizumab*</td>
<td>Nivolumab</td>
<td>Atezolizumab</td>
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<table>
<thead>
<tr>
<th>Biomarker testing</th>
<th>PD-L1+</th>
<th>Pembrolizumab</th>
<th>Nivolumab</th>
<th>Atezolizumab</th>
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<tbody>
<tr>
<td>Chemotherapy</td>
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</table>

QuintileIMS, Oncology Institute Report; Mar 2017
Changing Landscape

[Graph showing the percentage of patients across different lines of therapy for 2011 and 2015, with median duration of therapy (days) on the x-axis and percentage of patients on the y-axis.]
Incidence and epidemiology

March 2007: **Eculizumab** for paroxysmal nocturnal hemoglobinuria $450k/yr


April 2010: **Sipuleucel-T** hormone resistant prostate cancer $93k/course

March 2011: **Ipilimumab** for melanoma $96k/course

June 2012: **Pertuzumab** for Her-2 pos Breast Cancer $90k/course

Jan 2012: **Glucarpidase** for methotrexate toxicity $112k/treatment

March 2011: **Brentuximab** for Hodgkin lymphoma/anaplastic large cell lymphoma $216k/course

Sept. 2014: **Pembrolizumab** for melanoma $150k/yr

Dec. 2014: **Nivolumab** for melanoma $150k/yr

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Sept. 2014: **Pembrolizumab** for melanoma $150k/yr

Dec. 2014: **Nivolumab** for melanoma $150k/yr

2015: **Daratumumab** for multiple myeloma $135k/yr

Dec 2014: **Blinatumomab** for relapsed/refractory ALL $178k/yr

Nov 2015: **Elotuzumab** for multiple myeloma $142k/yr

2015: **Daratumumab** for multiple myeloma $135k/yr

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Incidence and epidemiology

2015

- Sept 2015: Uridine triacetate for fluorouracil or capecitabine overdose $75k/dose
- March 2015: Nivolumab for squamous cell NSCLC $150k/yr

2016

- Oct 2015: Talimogene laherparepvec for recurrent melanoma lesions $65k/yr
- March 2016: Defibrotide Hepatic Veno-occlusive disease $156k/yr
- Oct 2016: Atezolizumab for urothelial carcinoma $150k/yr
- Oct 2016: Atezolizumab for urothelial carcinoma $180k/yr

2017

- May 2017: Durvalumab for urothelial carcinoma $180k/yr
- Oct 2017: Axicabtagene ciloleucel for relapsed or refractory large B-cell lymphoma $373k/course
- March 2017: Avelumab for Merkel cell carcinoma
- Oct 2016: Defibrotide Hepatic Veno-occlusive disease $156k/yr
- March 2015: Nivolumab for squamous cell NSCLC $150k/yr

2018

- Aug 2017: Tisagenlecleucel for relapsed/refractory B-cell precursor ALL $475k/course
Trends in Costs of Cancer

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91%

% of Americans who think the cost of cancer drugs is too high
Cost is Biggest Barrier to Care

- For those who are themselves or have a loved one going through treatment, more than two in five (44%) are concerned about the mounting cost.
- Of those who have had cancer or have a loved one with cancer, most have taken no steps to reduce the cost of cancer treatment (73%).
- However, the cost barrier leads to risky behaviors for some of those with personal cancer experience who take ill-advised (and potentially dangerous) steps to bring down the cost of treatment.
Actions Taken to Reduce Treatment Cost

- Skipped Appointments: 9%
- Refused Treatment: 8%
- Postponed/Didn't Fill RX: 8%
- Skipped Doses: 8%
- Cut Pills in Half: 7%
- Ordered Non-US Meds: 5%
- Other: 6%

ASCO National Cancer Opinion Survey

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Cancer Drugs Cost

Monthly and Median Costs of Cancer Drugs at the Time of FDA Approval
1965-2016

Source: Peter B. Bach, MD, Memorial Sloan Kettering Cancer Center
## Post-market cost changes

<table>
<thead>
<tr>
<th>Drug</th>
<th>Cumulative Inflation Adjusted % change</th>
<th>Drug</th>
<th>Cumulative Inflation Adjusted % change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic trioxide</td>
<td>+57</td>
<td>Liposomal vincristine</td>
<td>+18</td>
</tr>
<tr>
<td>Bendamustine</td>
<td>+32</td>
<td>NAB-paclitaxel</td>
<td>+3</td>
</tr>
<tr>
<td>Bevacizumab</td>
<td>+4</td>
<td>Nelarabine</td>
<td>+55</td>
</tr>
<tr>
<td>Bortezomib</td>
<td>+31</td>
<td>Ofatumumab</td>
<td>+8</td>
</tr>
<tr>
<td>Brentuximab</td>
<td>+20</td>
<td>Panitumumab</td>
<td>+14</td>
</tr>
<tr>
<td>Cabazitaxel</td>
<td>+9</td>
<td>Pemetrexed</td>
<td>+27</td>
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<tr>
<td>Cetuximab</td>
<td>-8</td>
<td>Pertuzumab</td>
<td>+4</td>
</tr>
<tr>
<td>Clofarabine</td>
<td>+8</td>
<td>Rituximab</td>
<td>+49</td>
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<tr>
<td>Denosumab</td>
<td>+8</td>
<td>Temsirolimus</td>
<td>+24</td>
</tr>
<tr>
<td>Eribulin</td>
<td>+13</td>
<td>Trastuzumab</td>
<td>+44</td>
</tr>
<tr>
<td>Ipilimumab</td>
<td>+8</td>
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Cost

Cancer Drug Price per Life Year Gained at Approval (in 2013 USD)

Howard et al. 2015
Pharmaceutical Spending, Total, % of GDP

OECD, Health expenditure and financing: Health expenditure indicators
Pharmaceutical Spending, USD per Capita

OECD, Health expenditure and financing: Health expenditure indicators

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Health Spending, USD per Capita

OECD, Health expenditure and financing: Health expenditure indicators
$9892 - $1162 = $8730

Next lowest health spending (USD/Capita is $7919)
Utilization rates are similar
- Exception: cross sectional imaging

Labor
- Salaries
- Administrative costs

Goods
- Pharmaceutical costs

“It’s not that we’re buying more pizzas, we’re just paying more for each pie. But that doesn’t mean that you can’t still buy fewer pizzas.” Ashish Jha, MD, MPH
Strategies for High Quality and Value Care

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Strategies for High Quality and Value

- Utilize outpatient treatment setting when possible
  - Typically advantageous reimbursement
  - Lower overall cost
  - Utilize policy for inpatient administration of chemotherapy

- Conserve every drop
  - Dose rounding
  - Utilization of closed system transfer devices
  - Bill for waste
Strategies for High Quality and Value

- **High-Dollar Chemotherapy Process**
  - Require pre-certification regardless of payer policy
  - Utilize database to track claims
  - Proactively identify patients who qualify for medication assistance

- **Treatment pathways**
  - Standardize treatment and supportive care regimens
  - Control high-cost regimens
    - Value of brentuximab in stage III or IV classical Hodgkin lymphoma
Strategies for High Quality and Value

- Off-label request policy
  - Data-driven
  - Medical and financial leadership support
- Alternative funding sources
  - Manufacturer assistance programs
  - Foundation support
    - Calendar year funding
- Invest in personnel
  - More effective and more efficient
Strategies for High Quality and Value

- Biosimilars
  - Trastuzumab
  - Bevacizumab
  - Additional in the pipeline

- Contract Management
  - Class of Trade
  - Restricted Distribution
  - Rebates
  - Portfolio vs individual drugs
Strategies for High Quality and Value

- Oncology Care Model
  - Episode-based payment model
  - Goals to improve care and lower costs
  - Medicare + 14 commercial payers

- Cost effectiveness models
  - Institute for Clinical and Economic Review
    - Chimeric Antigen Receptor T-Cell Therapy for B Cell Cancers: Effectiveness and Value
      - Tisagenlecleucel - $46,000 per QALY gained and approximately $42,000 per LY gained compared to clofarabine
      - Axicabtagene - $136,000 per QALY gained and approximately $112,000 per LY gained
Take Home Points

- Recent advances in Oncology are allowing patients to live longer and higher quality lives.
- The increases in the cost of cancer care are greater than the increases in the associated life years gained.
- Government and commercial payers are moving towards value based reimbursement for oncology care.
Thank You