A few disclaimers….

1. I have no relevant disclosures.

2. I am an oncologist, and all I know is cancer care.

3. I worked for Aetna for 4 years, but I no longer work for them.

4. I believe big data can transform healthcare so now I work for Flatiron.

5. The opinions expressed are mine and mine alone.
My career

Outline

1. Why are we talking about oncology?
2. What is going on today.
3. The OCM and its impact on cancer care.
4. Challenges
Why is cancer so challenging for the health plan?

Challenge #1: Expense

• Cancer treatments cost $137B in medical spend and growing.¹
• The bulk of costs are driven by care delivered during diagnosis and end-of-life phases.²
• There is no obvious relationship between cost and quality

Challenge #2: Delivery

• Despite more efficient care at lower costs in the community setting, an increasing percent of care is being delivered in the hospital outpatient department.³
• New care delivery models, like medical homes, can improve quality and reduce costs but may be challenging for practices to implement.⁴


Medical cost trend is the problem in oncology

Cancer care is the leading edge of medical cost trend.

For patients receiving chemotherapy, over 40% of the total cost of care is the chemotherapy itself
According to the payers, what are the sources of the cost problem?

- the cost of chemo
- poor end of life care
- unnecessary hospitalizations and ER visits

Cancer drugs are crazy expensive

---

ASCO State of Oncology, JOP, 2014
But it’s not just sticker price...

<table>
<thead>
<tr>
<th>Progression-Free Survival</th>
<th>Overall survival</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="#" alt="Graph A" /></td>
<td><img src="#" alt="Graph B" /></td>
</tr>
</tbody>
</table>

From: Five Years of Cancer Drug Approvals: Innovation, Efficacy, and Costs
JAMA Oncol. Published online April 02, 2015. doi:10.1001/jamaoncol.2015.0373

Is this how you would want to be treated?

<table>
<thead>
<tr>
<th>Table: National trends in selected measures of the care of cancer patients near the end of life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Number of deaths among cancer ill patients*</td>
</tr>
<tr>
<td>Hospital utilization</td>
</tr>
<tr>
<td>Percent of deaths occurring in hospital</td>
</tr>
<tr>
<td>Percent hospitalized, last month of life</td>
</tr>
<tr>
<td>All hospital days per patient, last month of life</td>
</tr>
<tr>
<td>Percent admitted to ICU, last month of life</td>
</tr>
<tr>
<td>ICU days per patient, last month of life</td>
</tr>
<tr>
<td>Cancer treatment</td>
</tr>
<tr>
<td>Percent receiving life-sustaining treatment, last month of life</td>
</tr>
<tr>
<td>Percent receiving chemotherapy, last two weeks of life</td>
</tr>
<tr>
<td>Supportive care</td>
</tr>
<tr>
<td>Percent enrolled in hospice, last month of life</td>
</tr>
<tr>
<td>Hospice days per patient</td>
</tr>
<tr>
<td>Percent enrolled in hospice within three days of death</td>
</tr>
<tr>
<td>Physician utilization</td>
</tr>
<tr>
<td>Percent seeing 10 or more physicians, last six months of life</td>
</tr>
</tbody>
</table>

Source: Dartmouth Atlas
End-of-life costs of care

There ARE avoidable ER and inpatient visits by cancer patients receiving chemotherapy

Source: Chastek et al, J Oncol Prac, July 2012
Fair or not, oncologists are held responsible for the cost problem

Clinical Pathways programs remain the most common value-based contracting program
Payers Have Few Options in Managing Cancer Drugs

1. CMS has set a precedent (ie FDA approval, compendia listing)

1. “Coverage policy” is dictated by state insurance laws

1. Cancer drugs have been a “protected class”

1. Non-coverage is a consumer non-starter

1. Health Technology Assessment (HTA) does not currently exist

Why pathways make sense

![Graphs showing survival and time to progression](image-url)
**Study:** Adhering to evidence-based guidelines decrease cost without negatively impacting treatment efficacy

**Purpose:**
Evaluate the cost effectiveness of evidence-based treatment pathways for NSCLC patients.

**Conclusion:**
Results of this study suggest that treating patients according to evidence-based guidelines is a cost-effective strategy for delivering care to those with NSCLC.

Study: “Cost Effectiveness of Evidence-Based Treatment Guidelines for the Treatment of Non–Small-Cell Lung Cancer in the Community Setting.”
Journal of Oncology Practice (ASCO Peer Reviewed Journal), 1/19/2010

And opportunities still exist...

**Cost of chemotherapy for metastatic colorectal cancer with either bevacizumab or cetuximab: Economic analysis of CALGB/SWOG 80405.**

<table>
<thead>
<tr>
<th>Mean Costs of treatment for participants in CALGB 80405</th>
<th>Chemo+B</th>
<th>Chemo+C</th>
<th>Difference (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=559</td>
<td>$37,124</td>
<td>$75,845</td>
<td>$38,720 (-45,699 to -31,740)</td>
</tr>
<tr>
<td>Protocol-directed</td>
<td>$28,951</td>
<td>$29,494</td>
<td>$-543 (-2831 to +1,745)</td>
</tr>
<tr>
<td>chemotherapy Acute</td>
<td>$65,076</td>
<td>$105,339</td>
<td>$-39,264 (-46,521 to -32,005)</td>
</tr>
<tr>
<td>care on study</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemo and acute care costs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Authors:**
Deborah Schrag, Amylou C. Ducek, Michelle Joy Naughton, Donna Nieder Wiecki, Craig Earle, James Edward Shaw, Axel Grothey, Howard S. Hochster, Charles David Blonko, Alan P. Venook, Dana-Farber Cancer Institute, Boston, MA; Alliance Statistics and Data Center, Mayo Clinic, Scottsdale, AZ; Wake Forest University, School of Medicine, Winston-Salem, NC; Duke University, Cary, NC; Institute for Clinical Evaluative Sciences, Toronto, ON, Canada; Medstar Washington Hosp Ctr, Washington, DC; Mayo Clinic, Rochester, MN; Department of Medical Oncology, Yale University School of Medicine, New Haven, CT; Oregon Health & Science University, Portland, OR; University of California, San Francisco, San Francisco, CA.
Do physicians follow pathways?

What do pathways require?

- Evidentiary and operational process
- Measurement and reporting
How are pathways developed?

1. **Major Compendia**
   - Regimen A
   - Regimen B
   - Regimen C
   - Regimen D
   - Regimen E
   - Regimen F

2. **Equal Efficacy**
   - (NCCN Categories 1, 2A)
   - Regimen A
   - Regimen B
   - Regimen C
   - Regimen D
   - Regimen E
   - Regimen F

3. **Side Effect Profile**
   - Regimen C
   - Regimen D
   - Regimen E
   - Regimen F

4. **Cost**
   - Regimen D
   - Regimen E
   - Regimen F

Preferred Pathways

**Portal data entry**
Provider-level reporting

The pathways space
Anthem Program Is Fundamentally a Pathway

The Anthem Proposal
## Positives/Negatives – Anthem Pathway

<table>
<thead>
<tr>
<th>POSITIVES</th>
<th>NEGATIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rollout of program was fairly efficient</td>
<td>Portal is bally</td>
</tr>
<tr>
<td>Touches many providers “at scale”</td>
<td>Not in physician workflow</td>
</tr>
<tr>
<td>Expansion beyond breast, colon and lung cancers to many</td>
<td>Market backlash around content</td>
</tr>
<tr>
<td>Other payers are buying AIM product</td>
<td>May not be financially sustainable for Anthem</td>
</tr>
</tbody>
</table>

Aetna and Cigna are pursuing medical home pilots
What are the PCMH joint principles?

- **Personal physician**
  - Each patient has an ongoing relationship with a personal physician
  - Personal physician leads a team of individuals that take responsibility for the ongoing care of patients
  - Personal physician is responsible for providing for all the patient’s health care needs or arranging care with other qualified professionals

- **Care is coordinated** across health care system

- **Quality and safety** are hallmarks of the medical home

- **Enhanced access to care** is available through systems such as open scheduling, expanded hours and new options for communication

- Payment recognizes the added value provided to patients who have a patient-centered medical home

How does this apply to oncology?

- Evidence-based medicine
- Enhanced access
- Shared decision making
- Coordination of care
- Quality reporting
- Payment reform
A Disease Management Pilot Program in a Medicare-age Population with Cancer

Two-year Results

<table>
<thead>
<tr>
<th>Chemotherapy and Supportive Care</th>
<th>Inpatient</th>
<th>ER</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benchmark Cost</td>
<td>$11,926,588</td>
<td>$4,150,803</td>
<td>$330,724</td>
</tr>
<tr>
<td>Actual Cost</td>
<td>$9,507,239</td>
<td>$3,550,114</td>
<td>$308,907</td>
</tr>
<tr>
<td>Savings Percent</td>
<td>20.29%</td>
<td>14.47%</td>
<td>6.60%</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>18.54%</td>
</tr>
</tbody>
</table>

Neubauer, M; Hoverman, JR; Jameson, M; Hayes, J; Abdullahpour, M; Haydon, W; Sipala, M; Supraner, A; Kolodziej, M; and Verrilli, D.
Proc ASCO 2015, Abstract 6505

Positives/Negatives – OMH Programs

**POSITIVES**

- Enthusiastic response from providers
- Savings were generated
- Aligns with Oncology Care Model
- In expansion phase

**NEGATIVES**

- Can it be scaled?
- Lack of transformation playbook
- Analytic lift is substantial
- Requires multi-payer involvement to be successful
Changing Physician Incentives for Affordable, Quality Cancer Care: Results of an Episode Payment Model

By Lee N. Newcomer, MD, Bruce Gould, MD, Ray D. Page, DO, PhD, Sheila A. Donelan, MS, and Monica Perkins, PhD

UnitedHealthcare, Minnetonka, MN; Northwest Georgia Oncology Centers, Marietta, GA; and Center for Blood and Cancer Disorders, Fort Worth, TX

UnitedHealth Program More Case Management for Chemotherapy Than Episode Payment

- 5 practices participated from 2009-2012
- 810 patients with breast, colon and lung cancer
- UnitedHealth imposed controls
- Provided fixed chemotherapy margin

<table>
<thead>
<tr>
<th>Table 1. Episode Payment Categories and Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cancer Type</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Breast</td>
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<tr>
<td></td>
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<tr>
<td>Colon</td>
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<tr>
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<tr>
<td>Lung</td>
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<tr>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: ER, estrogen receptor; HER, human epidermal growth factor receptor; PR, progesterone receptor.
UnitedHealth Pilot
Reduced Total Cost of Care

34% ↓ 179% ↑
TOTAL COST OF CARE INCREASE IN CHEMO SPEND

<table>
<thead>
<tr>
<th></th>
<th>TOTAL COST</th>
<th>COST PER CASE</th>
<th>CHEMOTHERAPY COST</th>
<th>CHEMOTHERAPY COST PER CASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTROL</td>
<td>$98,121,388</td>
<td>$121,137</td>
<td>$7,519,504</td>
<td>$9,283</td>
</tr>
<tr>
<td>EPISODE GROUP</td>
<td>$64,760,116</td>
<td>$79,950</td>
<td>$20,979,417</td>
<td>$25,900</td>
</tr>
</tbody>
</table>

Positives/Negatives – UnitedHealth Pilot

**POSITIVES**

- Savings were generated
- Tremendously positive press
- The general analytic paradigm is attractive

**NEGATIVES**

- Is this believable?
- Huge administrative burden for both parties
- Does not address cost of drugs
- Probably cannot be scaled
- This is NOT an episode of care
The UnitedHealth project proved a management fee can be paid in lieu of buy and bill

THIS IS HUGE

The programs being executed by local health plans are poorly catalogued
Thank you CMMI

Medicare Oncology Care Model Is a Medical Home Program

Payment Model Overview

1. **Fee-for-Service Payment**
   - Participating practices continue to earn fee-for-service payments for services to Medicare beneficiaries
   - Drugs continue to be reimbursed at ASP + mark-up

2. **PBPM Payment**
   - Upon initiation of chemotherapy, practice bills for PBPM and receives $160 PBPM payment for six months
   - If the patient continues or resumes chemotherapy after the initial six-month episode, practice can trigger a second episode

3. **Performance-Based Payment**
   - Practice is eligible to receive performance-based payment if it reduces beneficiaries’ total Medicare billings and meets threshold for quality performance
   - Quality measures yet to be finalized
   - Cost performance is evaluated against the practice’s historical performance

Features of Medicare OCM

▪ Management fee, plus shared savings
▪ All cancers
▪ 6-month episode
▪ Requirements
  ▪ Navigator
  ▪ IOM care plan
  ▪ 24-hour coverage
▪ Data used for quality improvement/guideline adherence
▪ Stage 2 meaningful use

Aetna
Blue Cross Blue Shield of Michigan/Blue Care Network
Blue Cross Blue Shield of New Mexico
Blue Cross Blue Shield of Oklahoma
Blue Cross Blue Shield of Texas
BlueCross BlueShield of South Carolina
Capital BlueCross, Inc.
Cigna Life & Health Insurance Company
EmblemHealth
Health Alliance Plan
Highmark, Inc.
Priority Health
SummaCare
The University of Arizona Health Plans
UPMC Health Plan
VIVA Health, Inc.
Why didn’t more payers participate?

1. Commercial payers aren’t that interested in oncology yet.
2. Oncologists have a credibility problem.
3. The OCM did not address their pain.
4. The application process was a pain in the neck.
5. Payers could not execute the prescribed model.

Preliminary Observations

Participating practices have three challenges: data collection and reporting, care delivery reform, and management of analytics.

Success in the model will require mastery of all three. This is a HEAVY lift. Practices are struggling with the buy or build options for developing competencies.

Although about 200 practices are participating, this is really only a small percent of all oncology practices.

MIPS is hanging over the heads of the rest of the oncology world.

Few commercial payers have chosen to participate.

BUT Medicare is an important payer for every oncology practice.
Overlap equals potential success

Provider success will require process improvement
The common thread to payer pilot programs is data

All models allow payers to obtain clinical data that they can marry to claims data.

The goal is “personalized care”
Episodes of care are coming to oncology

• Care occurs in discrete episodes
• There is variability that does not impact quality
• Bundling in the form of “episode payments” has worked for other medical conditions

Determinants of modifier:
ED visits, Hospitalizations, Generic Prescribing, Hospice Enrollment
Community oncology practices become medical homes
ACO contracts with transformed oncology practices to optimize cancer care

Oncology care is not an island

Hospitals will need to evolve

Average Total Cost by Setting and Type of Cancer After Risk Adjustment

<table>
<thead>
<tr>
<th>Type</th>
<th>Average Total Cost</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>$103,345</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Colon</td>
<td>$133,360</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Lung</td>
<td>$129,932</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Other Cancer</td>
<td>$111,367</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total Cancer</td>
<td>$113,247</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Hospital: $71,974, Office: $96,651, $80,360, $67,466, $70,696
It is a Long Road to the Optimal Integrated Model

- Cancer care just too lucrative for hospitals for them to want to change – 340B is a big reason

- When patients are attributed to ACOs, they become cost centers rather than revenue centers

- Transformed oncology practices will be well positioned to be preferred providers for the ACO at risk

- Payment will certainly be episode based

Innovation is expensive
Figure 1. The Most Prevalent Genomic Alterations in 125 Samples of Adenocarcinomas of Unknown Primary Site

- TP53
- KRAS
- CDKN2A
- AKT1/2/3
- FGFR3
- MCL1
- FBXW7
- SMAD4
- PTEN
- MSH6
- STK11
- ATM
- SMARC4
- BRCA1
- PIK3CA
- NOTCH1
- ARID1A
- ERBB2
- CCNE1

Legend:
- Substitution/Indel
- Gene amplification
- Somatic homozygous deletion
- Truncation

Figure shows alterations present in at least 4% of samples. "Long tail" presentation of the frequency and type of genomic alterations is shown in eFigure 1 in the Supplement.
Vemurafenib in Multiple Nonmelanoma Cancers with BRAF V600 Mutations

David M. Hyman, M.D., Igor Puzanov, M.D., Vivek Subbiah, M.D., Jason E. Faris, M.D., Ian Chau, M.D., Jean-Yves Blay, M.D., Ph.D., Jürgen S. Wolf, M.D., Ph.D., Noopur S. Raje, M.D., Eli L. Diamond, M.D., Antoine Hollebecque, M.D., Radj Gervais, M.D., Maria Elena Elez-Fernandez, M.D., Antoine Italiano, M.D., Ph.D., Ralf-Dieter Hofheinz, M.D., Manuel Hidalgo, M.D., Ph.D., Emily Chan, M.D., Ph.D., Martin Schuler, M.D., Susan Frances Lassere, M.Sc., Martina Makrutzki, M.D., Florin Sirzen, M.D., Ph.D., Maria Luisa Veronesi, M.D., Josep Tabernero, M.D., Ph.D., and José Baselga, M.D., Ph.D.

Preliminary Best Response According to Cohort

<table>
<thead>
<tr>
<th>Variable</th>
<th>NSCLC (N=20)</th>
<th>Colorectal Cancer</th>
<th>Cholangiocarcinoma (N=8)</th>
<th>ECD or LCH (N=18)</th>
<th>Anaplastic Thyroid Cancer (N=7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with ≥1 postbaseline assessment — no.</td>
<td>19 (100%)</td>
<td>10 (100%)</td>
<td>26 (100%)</td>
<td>8 (100%)</td>
<td>14 (100%)</td>
</tr>
<tr>
<td>Complete response — no. (%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (7%)</td>
</tr>
<tr>
<td>Partial response — no. (%)</td>
<td>8 (42%)</td>
<td>0 (0%)</td>
<td>1 (4%)</td>
<td>1 (12%)</td>
<td>5 (36%)</td>
</tr>
<tr>
<td>Stable disease — no. (%)</td>
<td>8 (42%)</td>
<td>5 (50%)</td>
<td>18 (69%)</td>
<td>4 (50%)</td>
<td>8 (57%)</td>
</tr>
<tr>
<td>Progressive disease — no. (%)</td>
<td>2 (11%)</td>
<td>5 (50%)</td>
<td>7 (27%)</td>
<td>3 (38%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Missing data — no. (%)†</td>
<td>1 (5%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Overall response — no. (%) [95% CI]</td>
<td>8 (42%) [20–67]</td>
<td>0 (0%)</td>
<td>1 (4%) [≤1–20]</td>
<td>1 (12%) [≤1–53]</td>
<td>6 (43%) [18–71]</td>
</tr>
</tbody>
</table>

* The denominator for patients with a complete or partial response, stable disease, or progressive disease is the number of patients with a postbaseline assessment or early withdrawal. Of the 19 patients in the NSCLC cohort, 1 patient withdrew before the assessment of response but was included in the denominator for the efficacy assessment (as having had no response).
† All patients with missing data withdrew early.
Conclusions

1. Payers are getting involved in oncology management.
2. Interesting things are happening in oncology reimbursement.
3. All current models are transitional.
4. CMMI has been a profound catalyst for change.
5. Integration and innovation will continue to be challenges in the future.
WE CANNOT SOLVE OUR PROBLEMS WITH THE SAME THINKING WE USED WHEN WE CREATED THEM

-Albert Einstein