Miracle Medications: Can we afford the cure?

Steve Miller, MD
Chief Medical Officer

May 5, 2016
Disclosures: Steven Miller, MD

- Express Scripts Inc.; Full time employee and shareholder
- MediBeacon; Board of Directors
- SureScripts; Board of Directors
- RxOutreach; Board of Directors
- St. Louis Children’s Hospital; Board of Trustees
- OASIS; Board of Directors
- Midwest Health Initiative; Board of Directors
Healthcare bucket

$3.0 Trillion

Source: National Health Expenditure Accounts, Centers for Medicare & Medicaid Services
How much is a trillion?

April 23, 2016
1 million seconds
• 12 days ago

1 billion seconds
• Reagan begins second term

1 trillion seconds
• 30,000 BC
Pharmacy is the most widely used benefit

Health Spending Distribution

Healthcare Transactions (per member per year)

Source: http://www.cms.hhs.gov/NationalHealthExpendData
Pharmacy spend growth continues: It’s all about specialty

Source: Express Scripts research
>7,000 potential drugs in development

Pipeline Products by Therapeutic Area

- **Cancer**: 1,813
- **Neurological**: 1,329
- **Infectious Disease**: 1,256
- **Immunology**: 1,120
- **Cardiovascular**: 599
- **Mental Health**: 511
- **Diabetes**: 159
- **HIV/AIDS**: 475

Source: 2015 Profile Biopharmaceutical Research Industry, PhRMA
FDA new drug approvals keep climbing

Source: U.S. Food & Drug Administration
Why is trend increasing?

Price Inflation + Higher Utilization

Never before have we seen such high prices on medications that are used by so many.
Costly, high-use drugs drive up spend

<table>
<thead>
<tr>
<th>Condition</th>
<th>Prevalence</th>
<th>Annual Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alzheimer’s</td>
<td>5.4 million</td>
<td>$35,000</td>
</tr>
<tr>
<td>Cancer</td>
<td>14 million</td>
<td>&gt;$100,000</td>
</tr>
<tr>
<td>High Cholesterol</td>
<td>71 million</td>
<td>&gt;$14,000</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>3.2 million</td>
<td>~$100,000</td>
</tr>
</tbody>
</table>

Source: Express Scripts research
Biogenerics: The law of the land

Potential Savings Of Biogenerics In the United States

Study Authors: Steve Miles, MD, and Sarah Heuts
Biosimilars approved around the world

- EU: 2006
- South Korea: 2012
- Canada: 2010
- Japan: 2009
- India: 2013
- Australia: 2010

US: Awaiting clear regulatory path To market
Falling barriers, rising profits draw competition

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>PRICE</th>
<th>MANUFACTURING COST ASSUMING 2 G/L YIELD ($/GR)*</th>
<th>COST/PRICE*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avastin</td>
<td>$687.5/100mg</td>
<td>$188</td>
<td>2.7%</td>
</tr>
<tr>
<td>Enbrel</td>
<td>$243/25mg</td>
<td>$428</td>
<td>4.4%</td>
</tr>
<tr>
<td>Remicade</td>
<td>$784/100mg</td>
<td>$188</td>
<td>2.4%</td>
</tr>
<tr>
<td>Humira</td>
<td>$1,816/40mg</td>
<td>$308</td>
<td>0.7%</td>
</tr>
<tr>
<td>Rituxan</td>
<td>$675/100mg</td>
<td>$188</td>
<td>2.8%</td>
</tr>
<tr>
<td>Herceptin</td>
<td>$3,331/440mg</td>
<td>$126</td>
<td>1.7%</td>
</tr>
<tr>
<td>Erbitux</td>
<td>$600/100mg</td>
<td>$188</td>
<td>3.1%</td>
</tr>
<tr>
<td>Soliris</td>
<td>$5,122/300mg</td>
<td>$135</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

**AVERAGE**

|           | **$231**       | **2.3%** |

*Bernstein Research analysis, market data as of 4Q2008*

Note: IP licensing is excluded from cost calculation. Calculation intends to show direct gross margin of innovators. Cost of sales and marketing and discount given by biosimilars not included.
Projected biosimilar savings

$250 BILLION through 2024

Projected Sales: No Biosimilars
- Projected Sales: With Biosimilars

Source: Potential Savings of Biogenerics in the United States, S Miller, J Houts - Express Scripts, 2007
The first biosimilar arrives

Discount to Neupogen

<table>
<thead>
<tr>
<th></th>
<th>Europe</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discount</td>
<td>30%</td>
<td>15%</td>
</tr>
</tbody>
</table>

In Europe, lower price leads to 30% market share
Enbrel: Biosimilar represents a significant savings opportunity

Realizing that value requires a pharmacy partner that can:

- Manage substitution and tracking
- Encourage use
- Support physicians and patients
Sovaldi cost ignites payers & patients

At $84,000 Gilead Hepatitis C Drug Sets Off Payer Revolt

By Drew Armstrong | Jan 27, 2014 3:09 PM CT | 119 Comments Email Print

As Gilead Sciences (GILD) touted its pill hepatitis C cure to investors in a hotel in San Francisco

Source: AIDS Healthcare Foundation.
Price shock not felt round the world

<table>
<thead>
<tr>
<th>Country</th>
<th>Harvoni</th>
<th>Sovaldi (12-week cycle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>$94,500</td>
<td>$84,000</td>
</tr>
<tr>
<td>Germany</td>
<td>$63,000</td>
<td>$57,000</td>
</tr>
<tr>
<td>U.K.</td>
<td>$900</td>
<td>$900</td>
</tr>
<tr>
<td>India</td>
<td>$900</td>
<td></td>
</tr>
<tr>
<td>Egypt</td>
<td>$900</td>
<td></td>
</tr>
</tbody>
</table>

Innovation reduces prices...
But not in pharmaceuticals
The Future of Medicine: A conversation on cost and value

The Atlantic – Washington DC – May 21, 2014
Making drugs more affordable for payers

Health Insurers Pressing Down on Drug Prices

By ANDREW POLLACK  JUNE 20, 2014

Express Scripts alters financial landscape for drugs

Hepatitis Drug Prices Fall So Low, No Exclusives Needed

By Robert Langreth  2015-01-12T21:26:37Z
Hepatitis Cure Value Program℠

- Significant prescription discount for exclusive use of Viekira Pak™
- Specialized care and therapy management from Accredo’s hepatitis clinicians
- Guaranteed medication adherence
- Financial cap for extended therapy
Proven results curing Hep C

- Adherence rates >95%
- Cure rates >96%
- All patients have access, not just sickest
- Cured more people with hepatitis C than at any time in history

$1B

in savings for our book of business in 2015
Doing more to ensure access to life-saving drugs

Bloomberg News

Biotech’s Price Wars Are Just Beginning
By Robert Langreth | January 09, 2015

Express Scripts Eyes New Price War: Anti-PCSK9 Drugs
By AMY REEVES
INVESTOR’S BUSINESS DAILY

January 13, 2015

Regeneron Pharmaceuticals reported solid Q4 sales, but the big cap biotech’s stock reversed lower Tuesday as its potentially huge new cholesterol fighter was in the crosshairs of a leading pharmacy benefit manager (PBM).

At the JPMorgan Healthcare Conference in San Francisco, Express Scripts (NASDAQ:ESRX) CEO George Paz chatted at a Q&A session about his company’s recent success at driving discounts to pricey new hepatitis C drugs by excluding Gilead.

RPT - INSIGHT-Big Pharma faces up to new price pressure from aggressive insurers
Thu, Jan 15 2015

(Repeats for additional subscribers)
By Deena Beasley and Caroline Humer
SAN FRANCISCO, Jan 15 (Reuters) - The world's biggest drugmakers face a new reality when it comes to U.S. pricing for their products as insurers use aggressive tactics to extract steep price discounts, even for the newest medications.

The Washington Post
The coming revolution in much cheaper life-saving drugs
Bad actors add fuel to the fire

2 Valeant Dermatology Drugs Lead Steep Price Increases, Study Finds

Pharmaceutical Companies Buy Rivals’ Drugs, Then Jack Up the Prices

Investigation: Insurance billed $18,000 for unwanted pain meds

Prices Doubled for More Than 60 Drugs in 2015
Bringing Daraprim in reach of patients and payers

Daraprim Price

$750

$13.50

$1

Pre-Turing | Turing | Imprimis & Express Scripts
The next frontier

Bloomberg News

The People Who Brought You Cheaper Hepatitis C Drugs Are Going After Cancer Next
Indication-Based Management
Medications priced based on indication efficacy

**Based on Industry Thought Leadership**

Steve Pearson, MD, MSc, FRCP
President of Institute for Clinical and Economic Review

Peter Bach, MD
Director, Memorial Sloan Kettering’s Center for Health Policy & Outcomes

**Multiple Indication Factors Considered**

- Unique Attributes
- Clinical Outcomes
- Adverse Events
- Factor
- Factor

**Independent Feedback on Cost Based on Efficacy**

**Fair Indication Pricing**

Demanding what patients **DESERVE** – The **BEST** care at a **BETTER** price
Pharmaceutical companies

Show better judgment in pricing

Support biosimilars

Reform patent system

Reduce international price disparities
Federal government

**Boost NIH research**

**Better fund FDA**

**Adjust malpractice laws**

**Bring cost into care equation**
Payers

**ACCEPT PAYMENT REFORM**

**ADVOCATE FOR POLICY CHANGES**

**WORK TOGETHER FOR COMMON CAUSE**
Summary

1. Exorbitant drug pricing threatens the pharmacy benefit

2. Specialty trend is an ongoing and growing challenge

3. Biosimilars can create “headroom” for new expensive drugs

4. All stakeholders must be involved to create a sustainable path forward