We are in a new era of medicine where breakthrough science is transforming care with innovative treatment approaches...

Then

- Medicines made of chemical compounds
- Medicines treat broad diseases
- Radiation and chemotherapy to treat cancer

Now

- Medicines made from living cells
- Medicines targeted to specific patient based on genetic makeup
- Immunotherapy that harnesses body’s own immune system to fight disease
- CAR T-cell therapy
- CRISPR
…and enabling us to more effectively treat chronic disease, the biggest cost driver.

Treating people with one or more chronic condition consumes 90 cents of every dollar spent on health care.

Prevalence and Spending by Number of Chronic Conditions (2014)

Health Care Spending by Number of Chronic Conditions (2014)

Note: Total health care spending defined as the amount spent on all outpatient and inpatient health care services across all payers, including out-of-pocket payments.

Source: RAND Corporation

Note: Total health care spending is defined as the amount spent on health care services across all payers, including patient out-of-pocket payments.
In the midst of this incredible progress, medicine cost growth is declining.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3.8%</td>
<td>1.5%</td>
<td>3.2%</td>
<td>1.9%</td>
<td>3.9%</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

Note: IQVIA data is reflective of retail and physician-administered medicine spending.
In fact, after discounts and rebates, brand medicine prices grew just 1.9% in 2017.


*Includes protected brand medicines only (ie, brand medicines without generic versions available in the year indicated).

**Net price growth reflects impact of off-inverse rebates and discounts provided by manufacturers.
Spending on retail and physician-administered medicines continues to represent just 14% of spending...

U.S. Health Care Spending, 2015

- Admin Costs: 8%
- Home Health & Nursing Home Care: 31%
- Prescription Medicines: 12%
- Physician & Clinical Services: 14%
- Other**: 4%
- Dental Services: 13%
- Hospital Care: 18%

Source: PhRMA analysis of CMS National Health Expenditures data, Altarum Institute study and Berkley Research Group study.

**Supply chain entities: stakeholders involved in bringing medicines from manufacturer to patient, including wholesalers, pharmacies, PBMs and healthcare provider locations.
...and a small share of total Medicaid spending...

Note: Prescription drug data is net of rebates and includes both retail and non-retail drugs. Data used were predominantly derived from CMS 64 reports. Pre-rebate expenditures were tabulated using FY2015 CMS State Drug Utilization data files and CMS brand/generic indicators for each NDC.

Source: CMS National Health Expenditure Data and Altarum Institute.
…and is projected to grow in line with health care spending through next decade.

Note: Total retail sales include brand medicines and generics.
Source: Centers for Medicare & Medicaid Services (CMS).
At the same time, growth in other health care services will be 5 times total medicine spending growth through next decade.

**Projected Cumulative Growth in Spending (in millions), 2017–2026**

- **Other Health Care Services**
  - 10-year cumulative increase: $1,958 billion
- **Total Prescription Drug Expenditures**
  - 10-year cumulative increase: $401 billion

Source: CMS National Health Expenditures Report, December 2017
Insurers and PBMs have a lot of leverage to hold down medicine costs.

Negotiating power is increasingly concentrated among fewer pharmacy benefit managers (PBM).

Top 3 Market Share: 71%

绝缘者决定：

**FORMULARY**
- 如果药品覆盖

**TIER PLACEMENT**
- 用药成本分担

**ACCESSIBILITY**
- 利用管理通过预授权或首搭

**PROVIDER INCENTIVES**
- 治疗指南和路径

来源：药渠道学院，2018年2月。
In fact, more than 1/3 of the list price is rebated back to payers, the government and other stakeholders in the supply chain.

Brand companies retain just 63% of list price spending on medicines

Rebates, discounts, fees and other price concessions have more than doubled since 2012

Source: Berkeley Research Group, Fein AJ; Drug Channels Institute
Hospitals also benefit from misaligned incentives in the supply chain.

| Nearly one in five hospitals marks up medicine prices to 700% or more of their acquisition cost | If a hospital purchased a medicine for $150, a 700% markup could result in patients being billed $1,050 for that medicine | An analysis found that 320 hospitals mark up some medicine prices at least 1000% |

<table>
<thead>
<tr>
<th>Amount paid by hospital</th>
<th>Amount billed by hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>$150</td>
<td>$1,050</td>
</tr>
</tbody>
</table>

90% of all medicines dispensed in the United States are generics.

Source: IMS Health.

$1.79 trillion

Source: IMS Health.
Generics cost a fraction of the price of the initial brand medicine.

<table>
<thead>
<tr>
<th>Medicine</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIOVAN VCT® Hypertension (2010)</td>
<td>-92%</td>
</tr>
<tr>
<td>LIPITOR® Cholesterol (2010)</td>
<td>-93%</td>
</tr>
<tr>
<td>PLAVIX® Blood Thinner (2011)</td>
<td>-98%</td>
</tr>
<tr>
<td>SEROQUEL® Schizophrenia (2010)</td>
<td>-98%</td>
</tr>
<tr>
<td>ZYPREXA® Schizophrenia &amp; Bipolar Disorder (2010)</td>
<td>-96%</td>
</tr>
</tbody>
</table>

Note: Figures represent the average annual price for 30 pills of the most commonly dispensed form and strength. "Then" price represents the average price in the year prior to generic entry. "Now" price represents the average price in December 2017. Source: IQVIA Institute for Human Data Science analysis for PhRMA. May 2018.
Competition from generics and biosimilars is expected to reduce U.S. brand sales by $105 billion from 2018 to 2022.

2013-2017: $74 Billion

2018-2022: $105 Billion

Projected

At the same time, innovator companies race to be the first to market with a new medicine.

Time Between Approval of First and Second Medicines in a Therapeutic Class Has Declined Dramatically

- **10.2 years**
  - 1970’s

- **2.3 years**
  - 2005-2011

Competing brands generally launch within **years**

Source: Tufts Center for the Study of Drug Development (CSDD).
The competitive U.S. market provides patients with access to innovative medicines faster.

For example, American patients have access to cancer medicines about two years earlier.

<table>
<thead>
<tr>
<th>Country</th>
<th>Delay Between U.S. Approval and Country-Specific Approval</th>
<th>Delay Between Country Approval and Reimbursement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>France</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Italy</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Spain</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>Australia</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>Taiwan</td>
<td>22</td>
<td>21</td>
</tr>
</tbody>
</table>

More medicines are available to U.S. patients.

Nearly 90% of newly launched medicines from 2011 to 2017 were available in the United States, compared to just two-thirds in the UK, half in Canada and France, and one-third in Australia.

For example, of the 14 new diabetes medicines launched over the period, only one was available in France.

Note: New Molecular Entities (NME) approved by the FDA, European Medicines Agency (EMA) and Japan’s Pharmaceuticals and Medical Devices Agency (JPMDA), and launch in any country between 2011-2017
Source: PhRMA analysis of IQVIA Analytics
Spending on prescription medicines is a small percentage of total health care spending around the world.

Note: Total health care spending includes hospital care, physician and clinical services, home health and nursing home care, government administration and net cost of private health insurance, dental, home health and other professional services as well as durable medical equipment.
Source: OECD Health Statistics Database (accessed February 2016); Altarum Institute, 2015. A ten year projection of the prescription drug share of national health expenditures including non-retail.
Patients in the United States are facing rising out-of-pocket costs and other barriers to care.

The use of four or more cost-sharing tiers is becoming more common on employer plans.

Source: PWC, KFF
And too often negotiated savings do not make their way to patients.

Cost sharing for nearly 1 in 5 brand prescriptions is based on list price

More than half of commercially insured patients’ out-of-pocket spending for brand medicines is based on the full list price

Source: IQVIA. May 2018.
Sharing negotiated discounts with patients would increase premiums about 1%.

Certain commercially insured patients could save $145 to more than $800 annually.

### Change in Plan Costs with Shared Rebates

<table>
<thead>
<tr>
<th>PLAN TYPE</th>
<th>Traditional PPO</th>
<th>Copay HDHP*</th>
<th>Coinsurance HDHP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Plan Per Member Per Month Spend</td>
<td>$433.91</td>
<td>$374.41</td>
<td>$372.89</td>
</tr>
<tr>
<td>Change in Plan Costs $</td>
<td>$0.82</td>
<td>$2.62</td>
<td>$3.84</td>
</tr>
<tr>
<td>Change in Plan Costs %</td>
<td>0.2%</td>
<td>0.7%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

*HDHP = High-deductible health plan*

NOTE: Plan cost includes medical and pharmacy claims.
Biopharmaceutical companies use today’s revenues to invest in tomorrow’s treatments and cures.

Invested about
$90 Billion
in R&D in 2016

And
20% of revenues are reinvested into R&D

Industry invests 17% of all domestic research and development funded by U.S. businesses

Pharmaceuticals & Medicines: 17%
Software: 11%
Automobiles: 6%
Aerospace: 4%
Computer Systems Design: 4%
Scientific R&D Services: 1%

NOTE: The remaining 57% share of business R&D spending is conducted by other industries, including subsectors of the machinery sector, the computer and electronics products sector, and the electrical equipment, appliance, and components sector. Source: Research!America report and PhRMA analysis of National Science Foundation data.
We need a public policy environment that recognizes and rewards risk taking.

On average, it takes more than 10 years and $2.6B to research and develop a new medicine.

BETWEEN 1998 AND 2014

Unsuccessful Attempts

123 Alzheimer’s Disease
96 Melanoma
167 Lung Cancer

Successful Attempts

4 Alzheimer’s Disease
7 Melanoma
10 Lung Cancer

Just 12% of drug candidates that enter clinical testing are approved for use by patients.

Source: Tufts Center for the Study of Drug Development (CSDD).
Collectively, these market-based reforms can make medicines more affordable and accessible.

<table>
<thead>
<tr>
<th>MODERNIZE THE DRUG DISCOVERY AND DEVELOPMENT PROCESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Modernize the FDA to keep pace with scientific discovery and increase efficiency of generic approvals</td>
</tr>
<tr>
<td>• Promote and incentivize generic competition.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PROMOTE VALUE-DRIVEN HEALTH CARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Remove barriers restricting information companies can share with insurers.</td>
</tr>
<tr>
<td>• Reform regulations discouraging companies from offering discounts tied to outcomes.</td>
</tr>
<tr>
<td>• Modify Medicaid best price requirements.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EMPOWER CONSUMERS AND LOWER OUT-OF-POCKET COSTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provide patients with access to negotiated rebates.</td>
</tr>
<tr>
<td>• Address affordability challenges in the deductible.</td>
</tr>
<tr>
<td>• Make more information on health care out-of-pocket costs and quality available to patients.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADDRESS MARKET DISTORTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Address burdensome regulations that distort programs like the 340B Drug Pricing program.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IMPROVE TRADE AGREEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Enforce existing trade agreements.</td>
</tr>
<tr>
<td>• Ensure new trade agreements recognize value of innovative medicines.</td>
</tr>
</tbody>
</table>