



Role of the Biopharmaceutical Industry in Sustainable Health Care Systems

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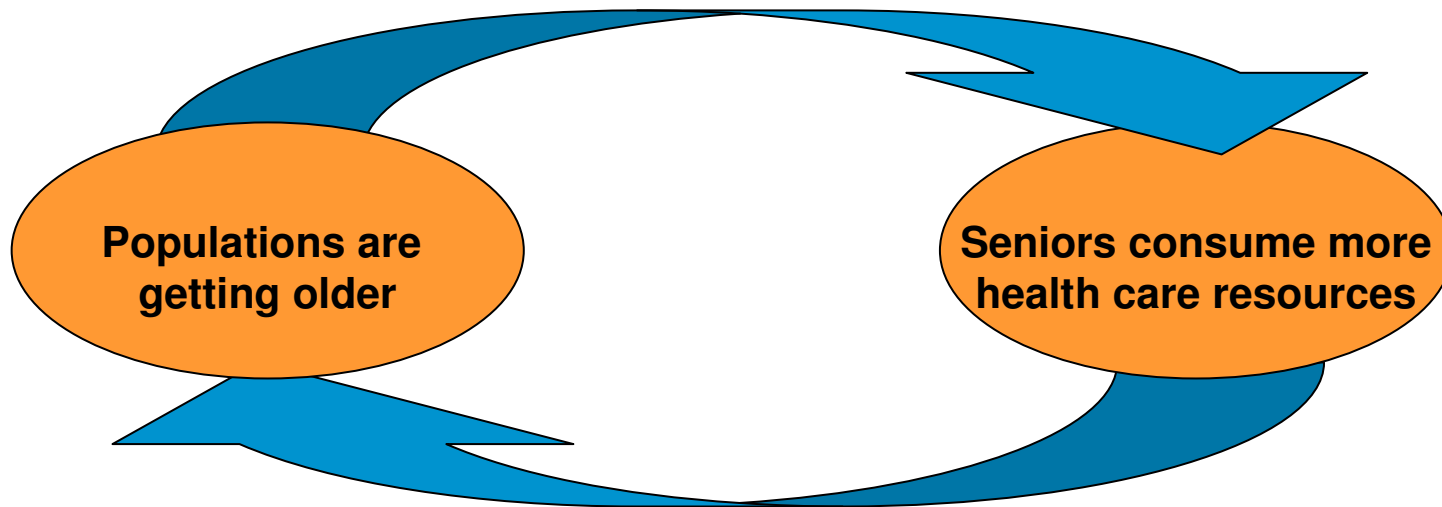
Overview

- Innovation as an Investment in health
- The life cycle of innovation
- Appropriate use of medicines
- Conclusions

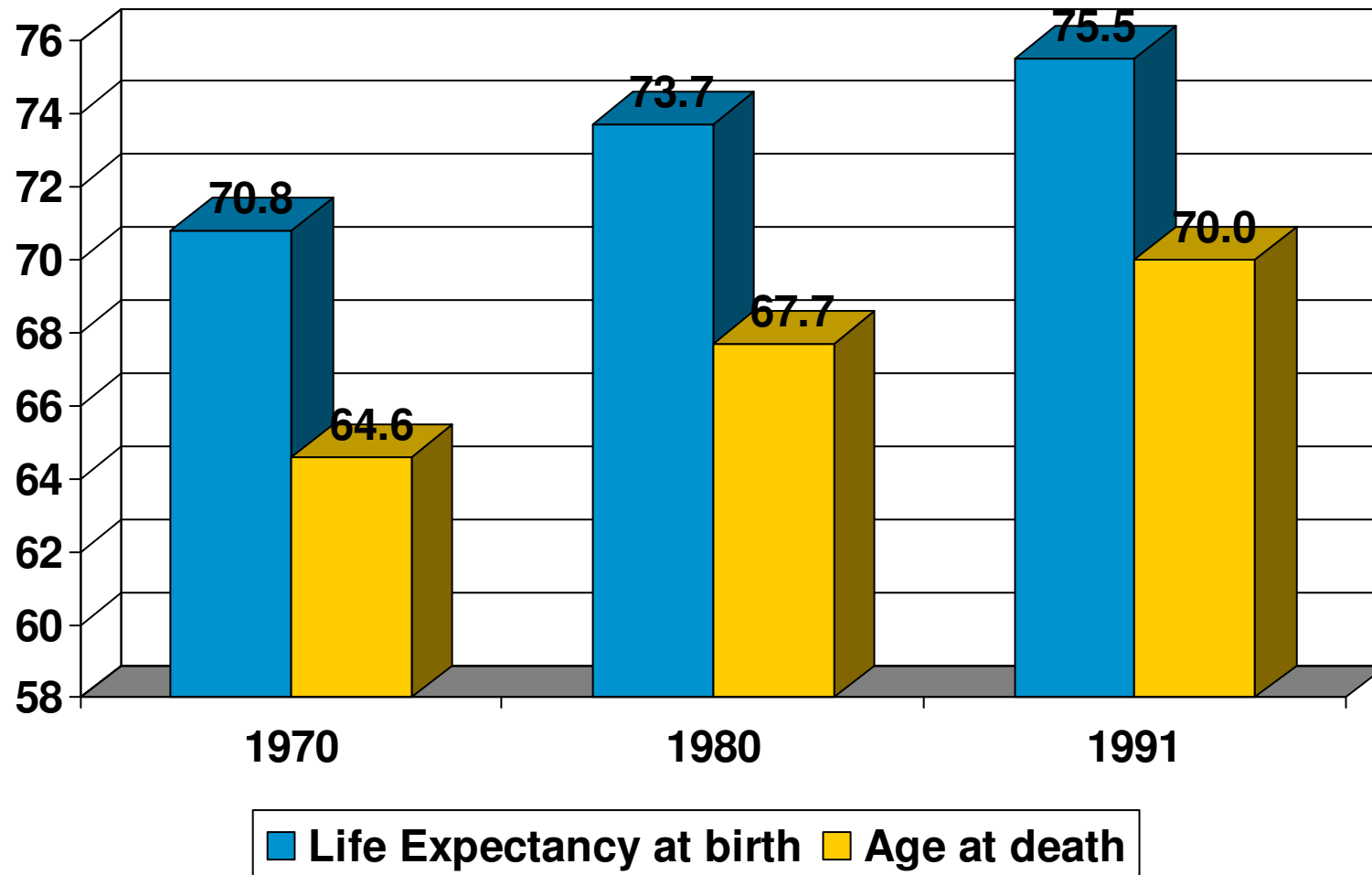
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The Value of Innovation: an investment in health

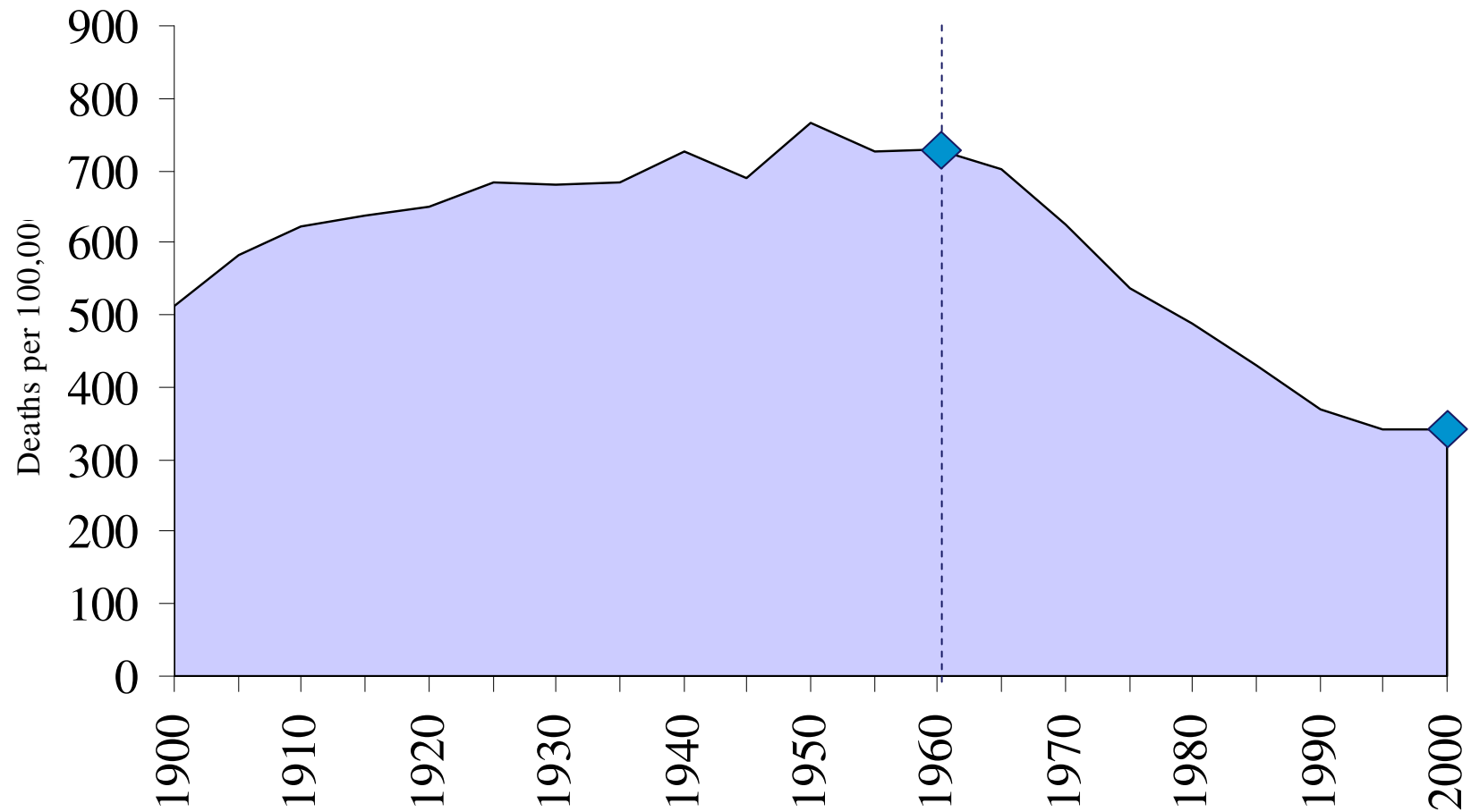


Life expectancy at birth and age at death continues to increase by 2-3 years per decade



Referenced in: Lichtenberg FR. Pharmaceutical Innovation, Mortality Reduction and Economic Growth. In: Murphy KM, Topel RH, Measuring the Gains from Medical Research. An Economic Approach. Chicago, 2003

CVD mortality has fallen by 2/3 since 1960 (U.S.)



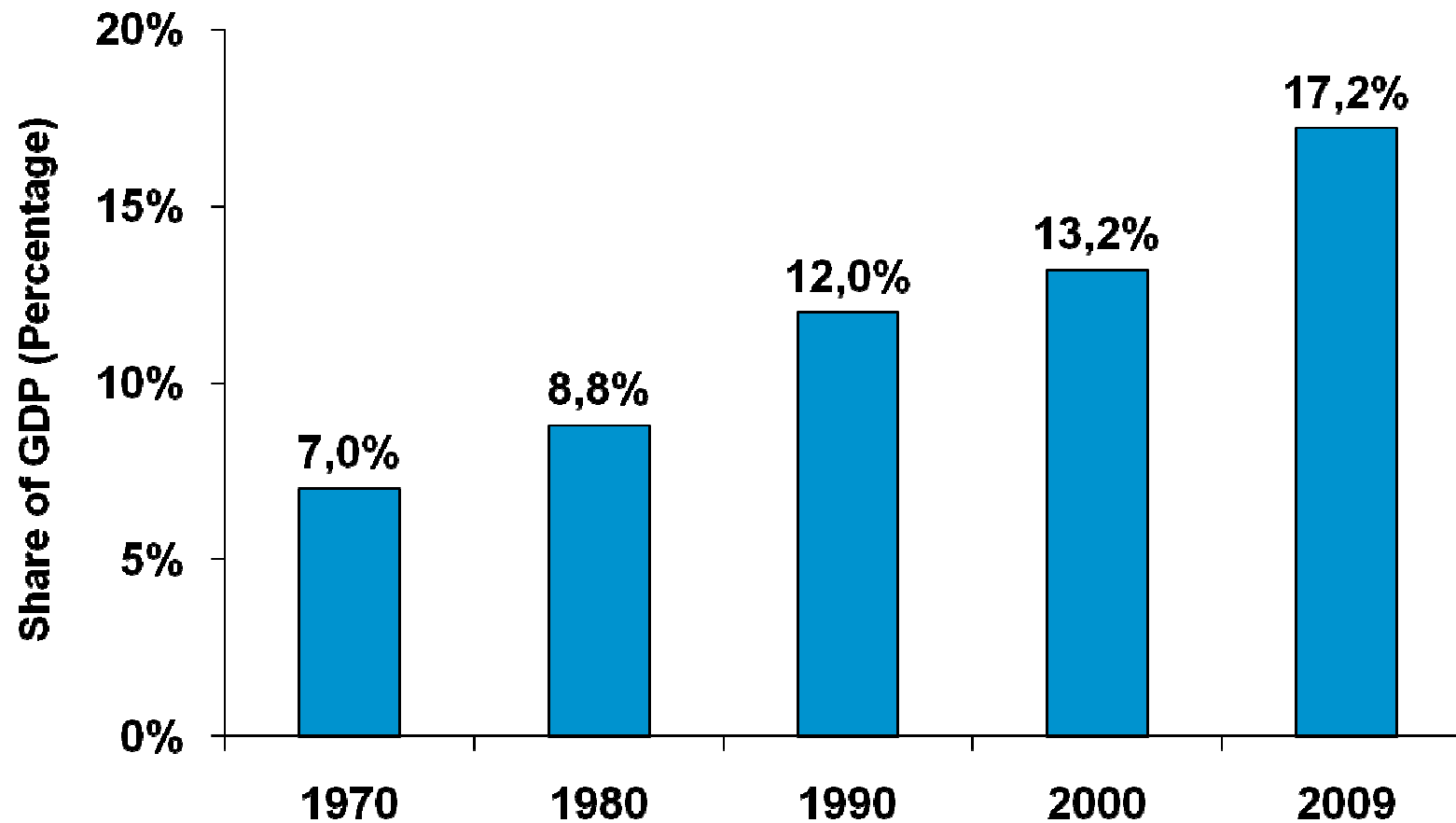
Source : National Center for Health Statistics

Use of anti-hypertensive medications has had a major impact on health and mortality in the U.S.

- Average blood pressure for the US population age 40+ would be 10-13% higher
- There would have been an estimated 86,000 more premature deaths from cardiovascular disease in 2001
- There would have been an estimated 572,000 more hospital admissions for stroke and 261,000 more hospital admissions for Myocardial Infarction in 2002
- Reducing the number of stroke and MI through better-controlled blood pressure resulted in an estimated \$16.5 billion in direct medical care costs avoided in 2002 alone
- The return on investment of a dollar spent on antihypertensive therapy is high
 - \$10 for men (benefits of longer life expectancy only)
 - \$6 for women (benefits of longer life expectancy only)

Source: The value of antihypertensive drugs: a perspective on medical innovation. Cutler DM, Long G, Berndt ER, Royer J, Fournier AA, Sasser A, Cremieux P. Health Aff (Millwood). 2007 Jan-Feb;26(1):97-110

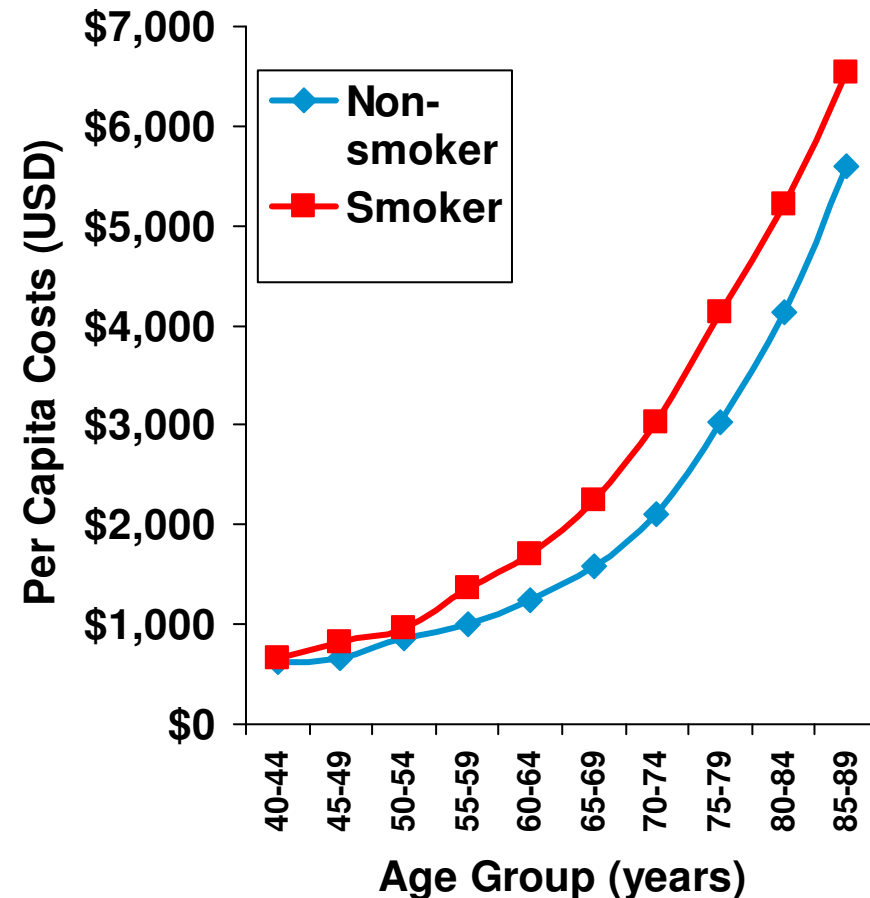
Healthcare as percentage of U.S. Gross Domestic Product, four decades



Source: Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group

Even cost-saving interventions will increase direct medical costs

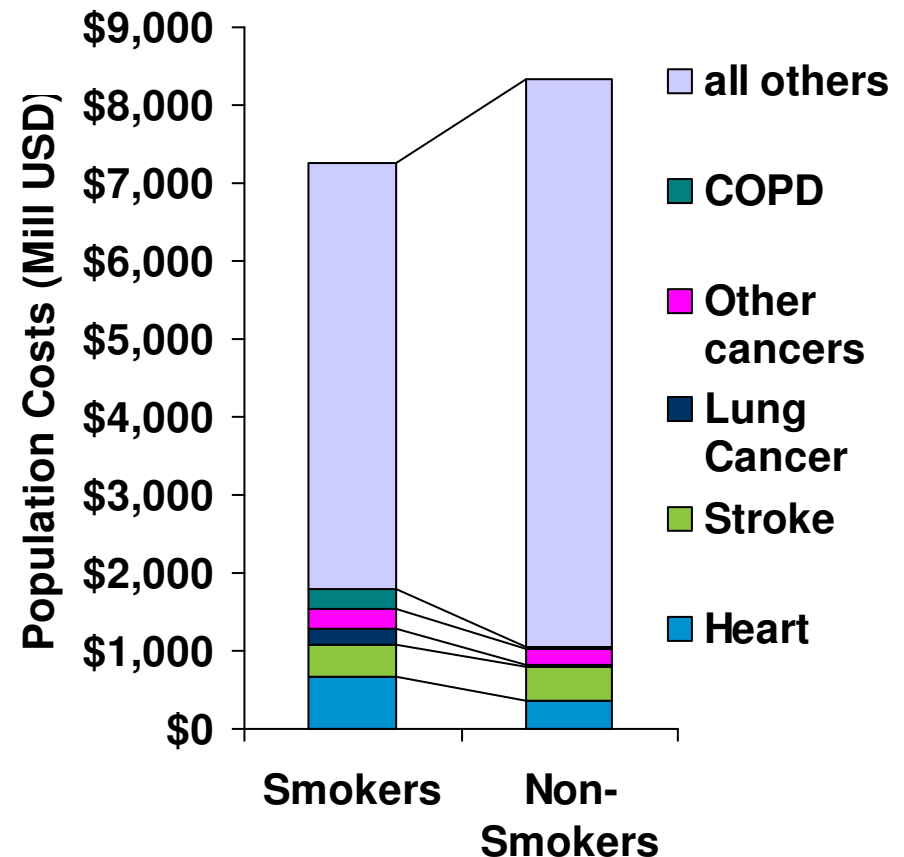
- **Would we save health care costs, if we “cured” smoking?**
- With increasing age, costs increase rapidly for both non-smokers and smokers.
- At every age, a smoker is more expensive than a non-smoker.
- However, a smoker at a defined age costs less than a 5 year older non-smoker.



Barendregt JJ, Bonneux L, van der Maas PJ. The health care costs of smoking. N Engl J Med. 1997 Oct 9;337(15):1052-7.

Would we save health care costs, if we “cured” smoking?

- As non-smokers live longer (on average 5.4 years), their lifetime costs are higher than for smokers
- Even if we had the perfect no-smoking pill, we would not save money for the healthcare system



Barendregt JJ, Bonneux L, van der Maas PJ. The health care costs of smoking. N Engl J Med. 1997 Oct 9;337(15):1052-7.

Estimated Gains from Medical Innovation net of the Increase Health Expenditures (USD billion)

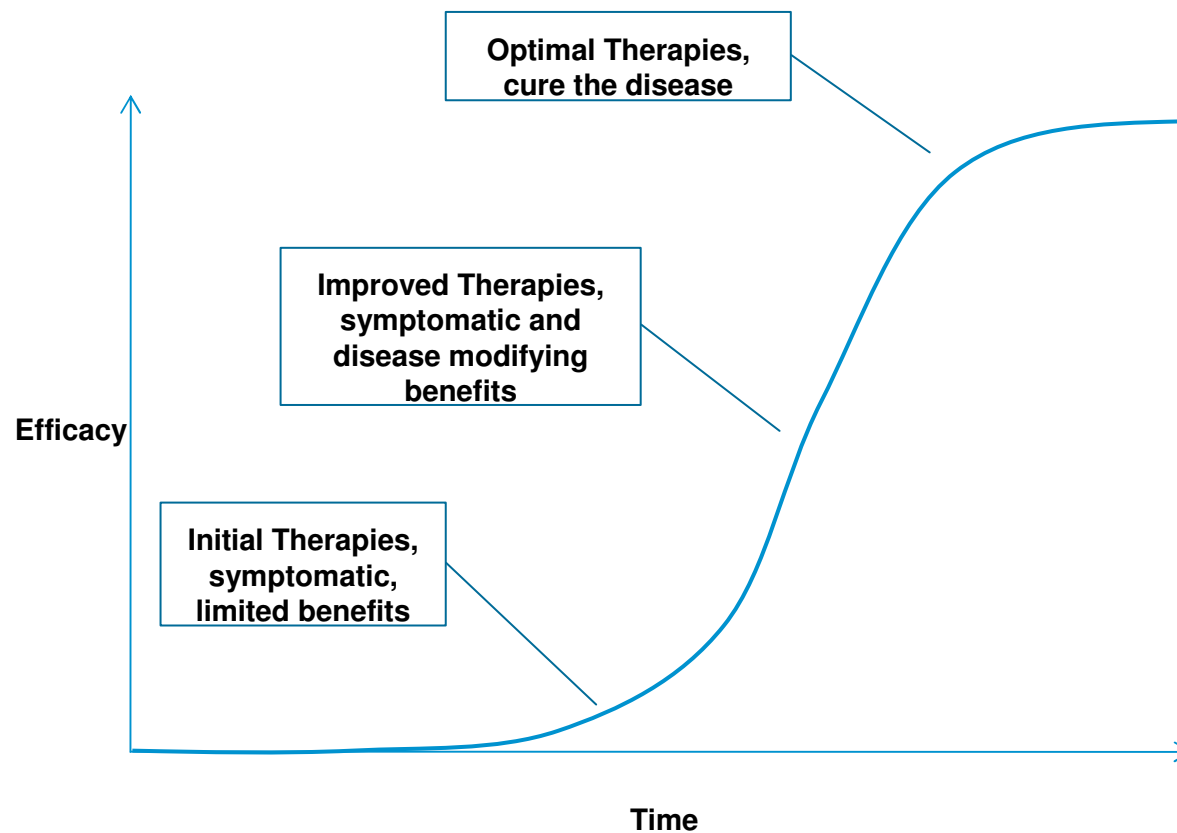
	1970-80	1980-90	1990-98	1970-98
Gross Gains	\$37,078	\$19,117	\$16,885	\$72,880
Increase in expenditure	\$6,863	\$12,485	\$7,345	\$26,693
Gains net of expenditure	\$30,215	\$6,632	\$9,340	\$46,187
Expenditure increase as a % of gains	18.5%	65.3%	44.0%	36.6%

Referenced in: Murphy KM, Topel RH. The economic value of medical research. In: Murphy KM, Topel RH, Measuring the Gains from Medical Research. An Economic Approach. Chicago, 2003

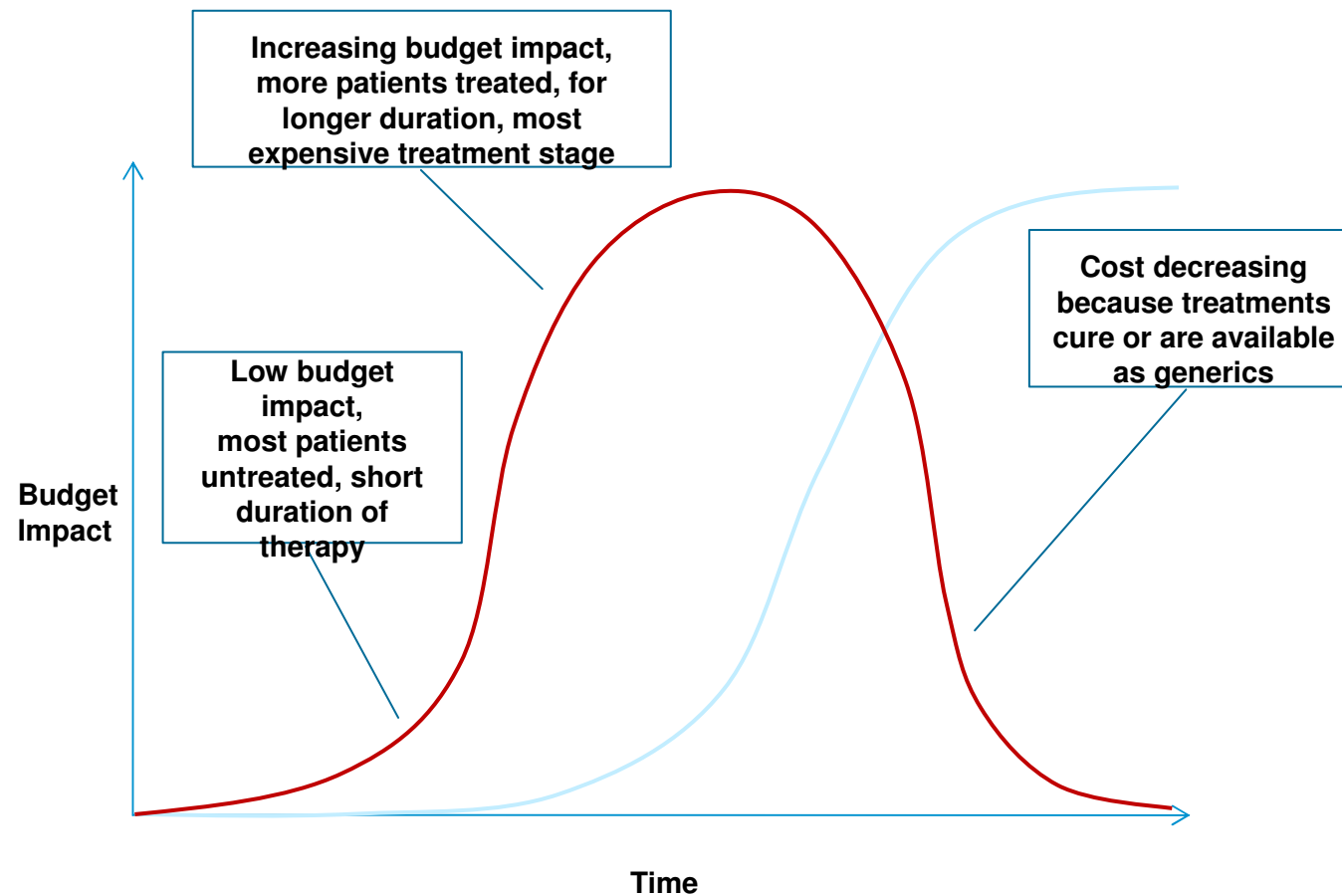
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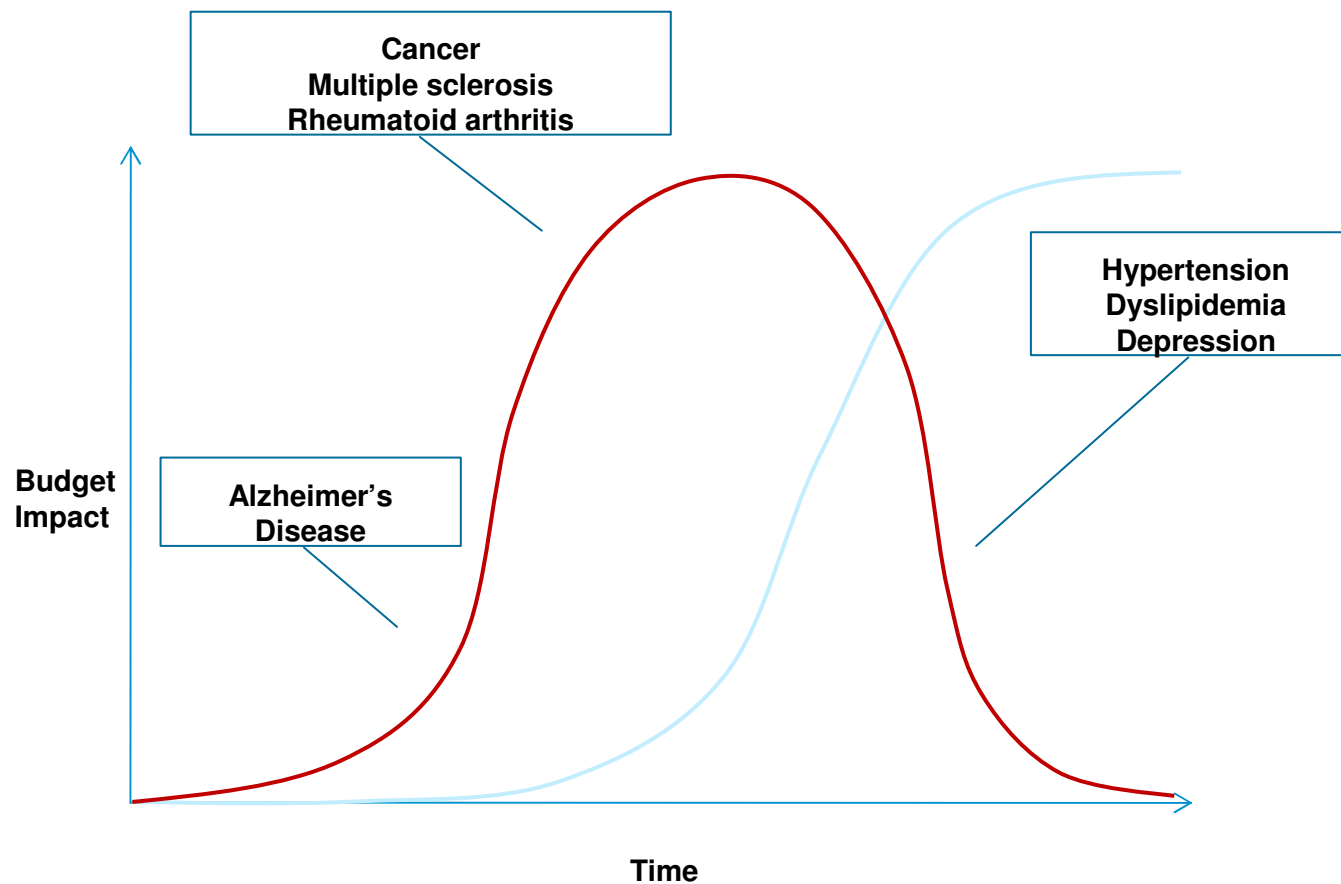
The life cycle of innovation: a long-term perspective on treatment costs



The life cycle of innovation: a long-term perspective on treatment costs



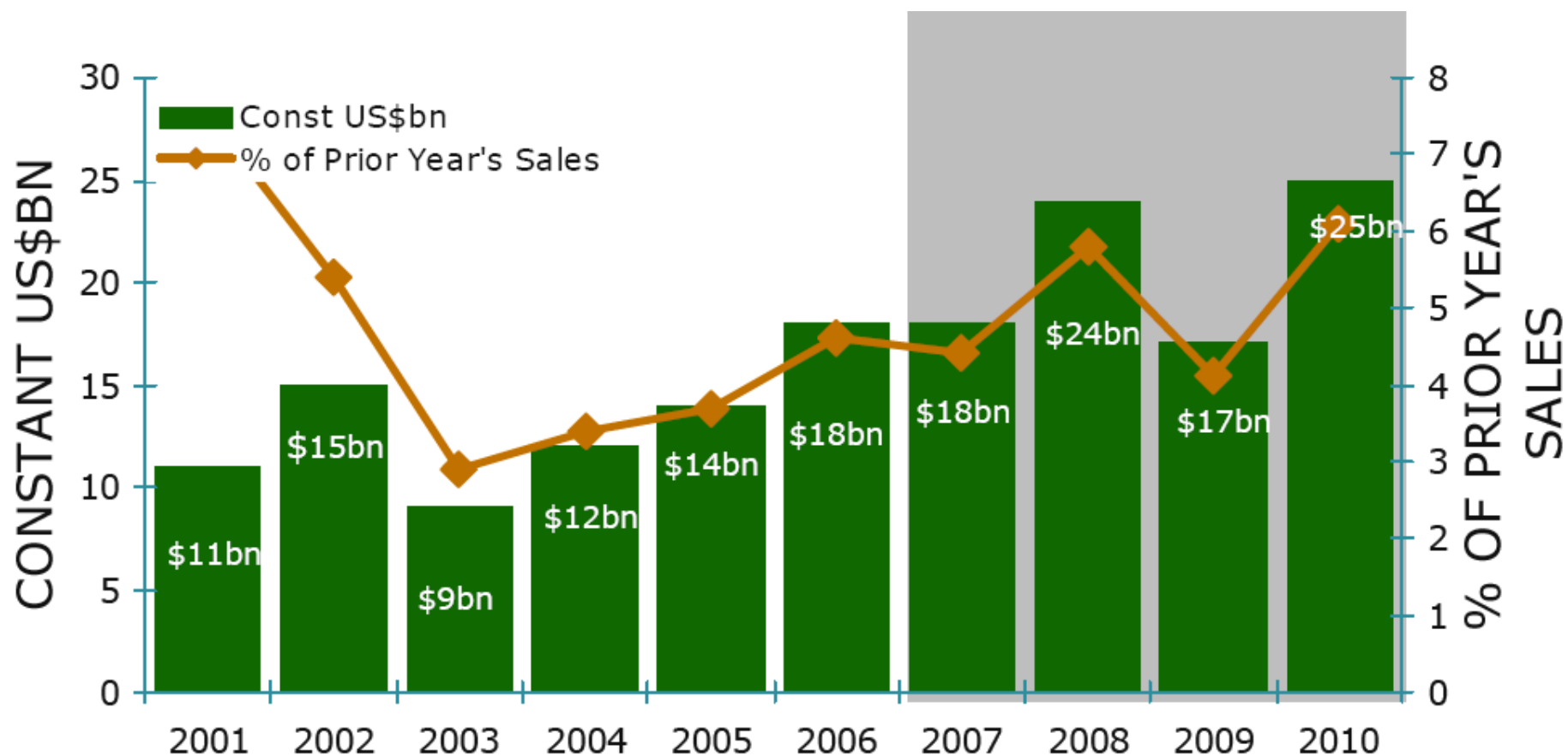
Where are we on the treatment curve?



In major chronic disease areas, we are experiencing a fundamental change

- In the past, chronic therapies were succeeded by new improved therapies before losing exclusivity
 - despite genericization of the original therapy treatment cost were not decreasing as patients were switched to new therapy
- In many disease areas, we have reached a plateau
 - current therapies are difficult to surpass, as existing therapies lose exclusivity, budget impact significantly declines

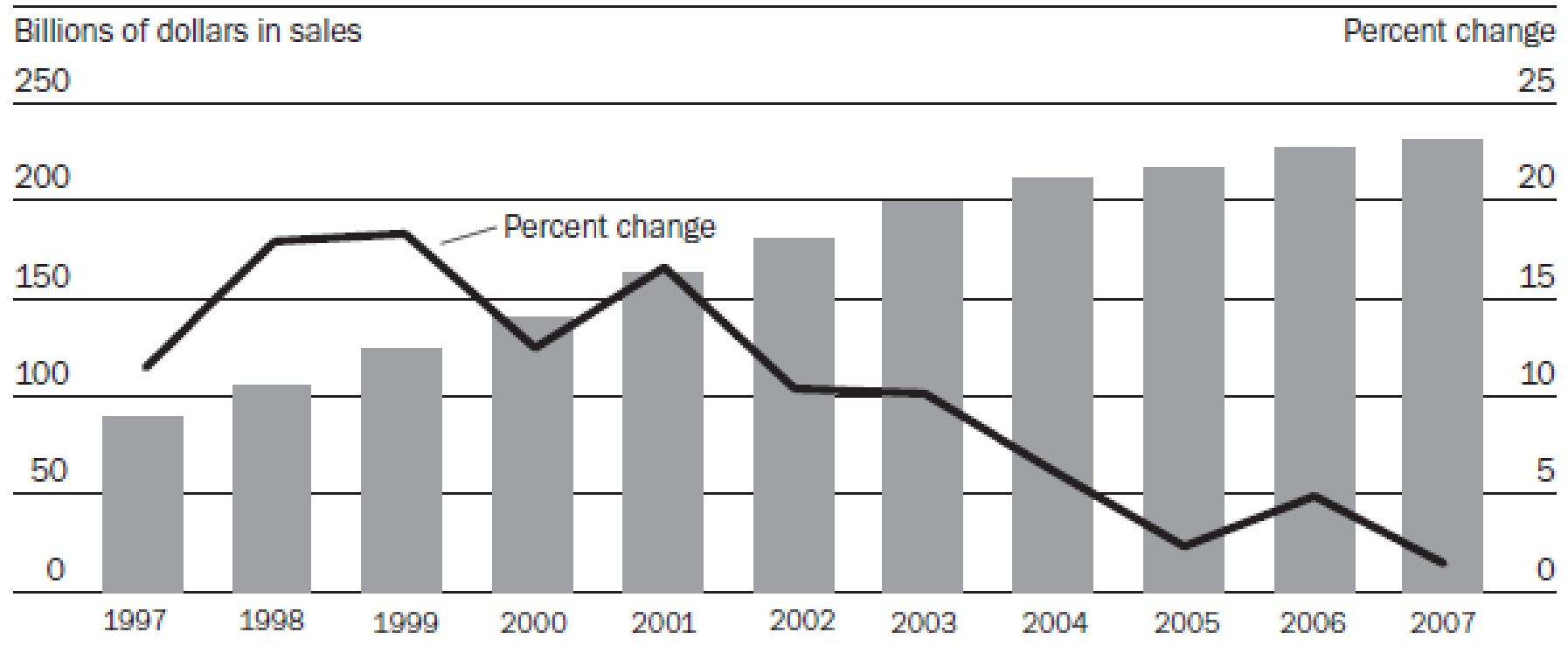
We are in the middle of the largest wave of products losing exclusivity in history



Source: IMS MIDAS, MAT Dec 2006 New Market Segmentation Feature

As a consequence, increase in prescription drug spending is slowing – and may turn negative

Size And Growth Of The U.S. Retail Pharmaceutical Market, 1997–2007



SOURCE: IMS Health, National Sales Perspectives, December 2007 (sales deflated by implicit gross domestic product deflator, \$2000).

NOTES: Dollar figures (bars) relate to the left-hand y axis. Percent change (line) relates to the right-hand y axis.

Aitken M, Berndt ER, Cutler DM., Prescription drug spending trends in the United States: looking beyond the turning point. Health Aff (Millwood). 2009 Jan-Feb;28(1):w151-60

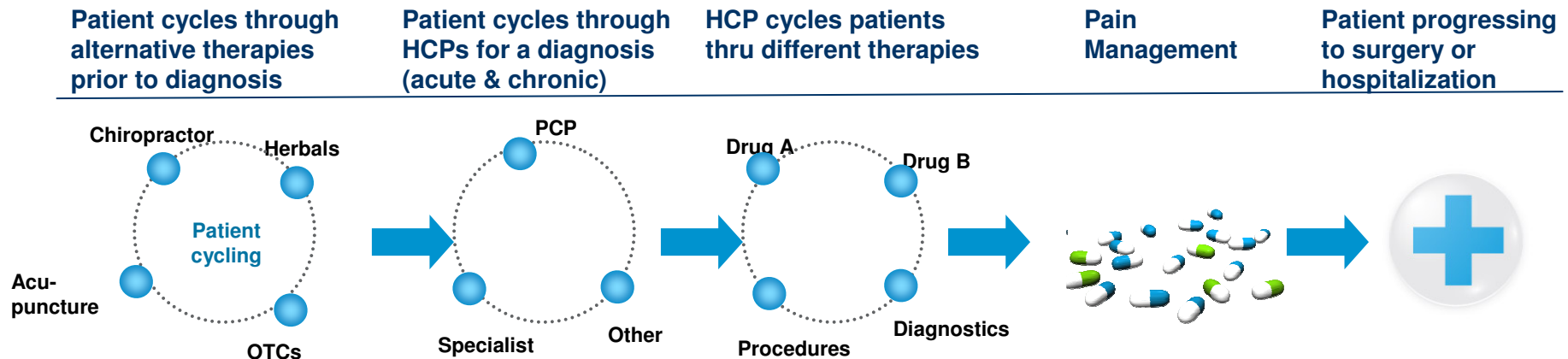
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Appropriate use of medicines – the demise of the blockbuster model

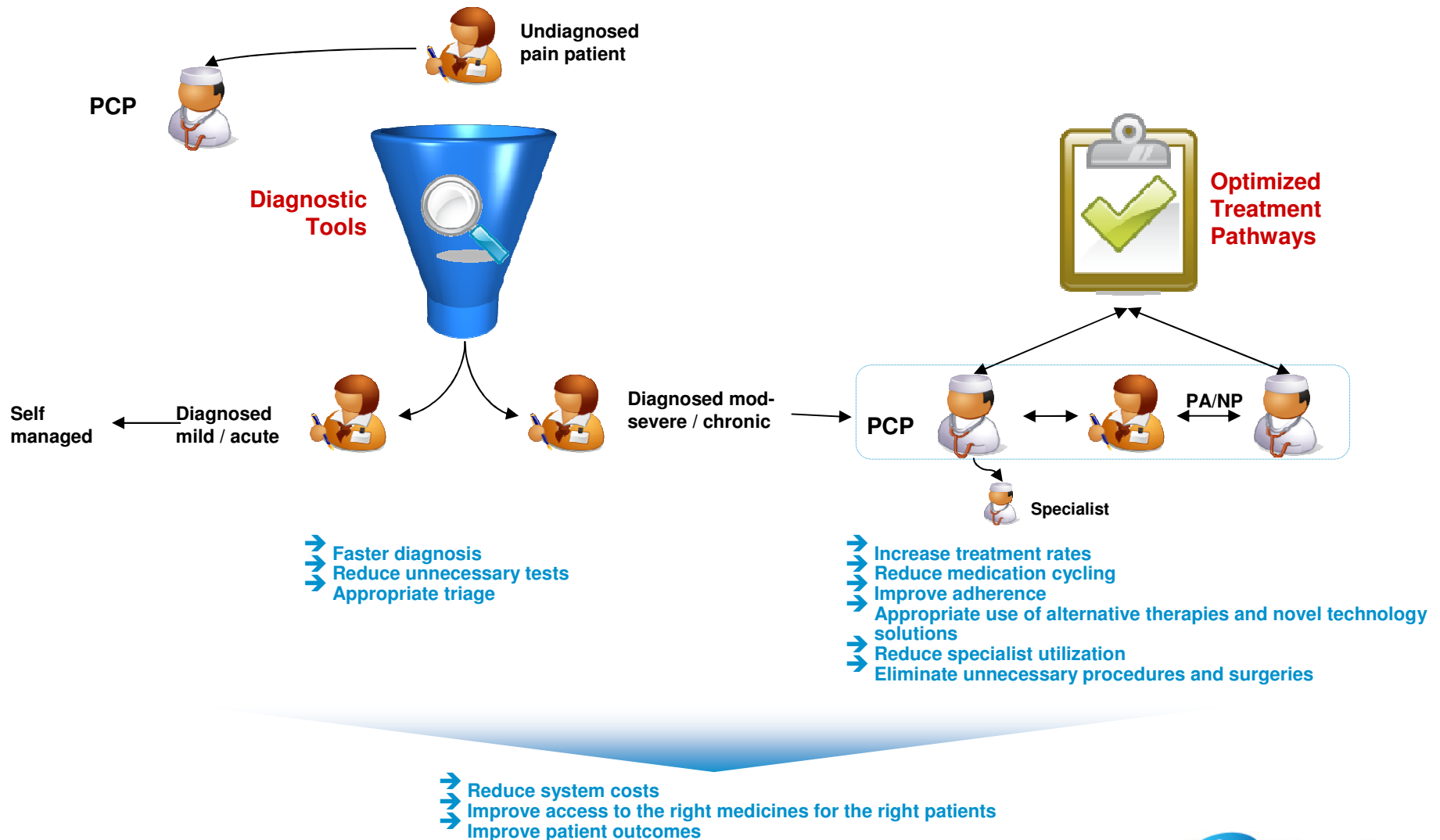
- Pfizer perfected the blockbuster model: “let’s make it simple, give Lipitor to everybody”
- Particularly in primary care, the standard of care in every disease area is or will soon be generic
- In the new world, the competition is about identifying the appropriate use of medicines: In which patients? After which other treatment alternative? For how long?
- “Personalized medicine” in primary care is about better targeting the right patients and ensuring that they are treated in the optimal way

Example Pain treatment: inefficiencies as it takes too long to get the right patients on the right drug



- It takes 5-7 years to correctly diagnose patients
 - Specifically when they have nerve pain
- Once patients are identified, they cycle through various therapies (generic and branded) before they find the therapy that works for them
- There is no case management
 - Patients do not follow treatment regimes over time and as a consequence don't achieve optimal outcomes

The Future of Pain Management: PCP at the center, aided by diagnostic tools and optimized care pathways



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Conclusion

- Healthcare is an investment, not a cost
- While we recognize cost pressures as a consequence of the financial crisis, delaying innovation will cement health care cost at a high level
- Indeed, thanks to “the patent cliff” expenditure on drugs in chronic therapies has already started to decrease
- The focus now has to be to identify the right patients for the right treatment and ensure optimal treatment support
- Industry is thinking “beyond the blockbuster model” to create a sustainable financial environment for healthcare