



# Forecasting and Managing Medication Expenditures – 2009 Update

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# Overview

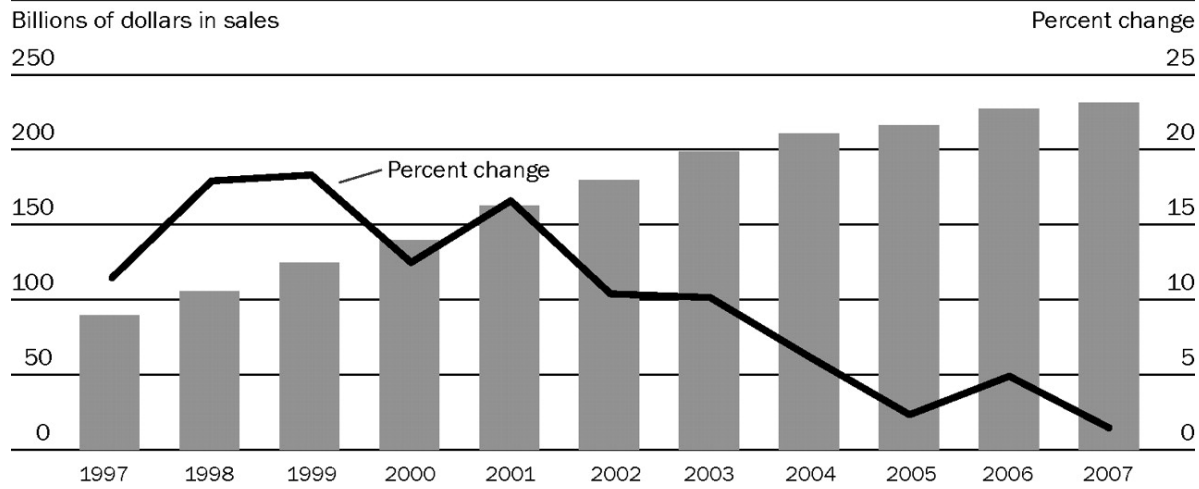
- Discuss trends in US health care and pharmaceutical expenditures
- Outline drivers of pharmaceutical expenditures and discuss the 2009 forecast of pharmaceutical expenditures
- Discuss financial management tactics to respond to future cost containment pressure

# Total US Health Care Expenditures

<b>Year</b>	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
<b>Total, Billions \$</b>	\$74	\$253	\$714	\$1,353	\$1,854	\$1,980	\$2,112	\$2,241
<b>Population (millions)</b>	210.2	230.4	253.8	282.5	293.5	296.2	299.1	302.0
<b>NHE Per Capita</b>	\$356	\$1,100	\$2,814	\$4,789	\$6,319	\$6,387	\$7,062	\$7,421
<b>NHE as % GDP</b>	7.2%	9.1%	12.3%	13.8%	15.9%	15.9%	16.0%	16.2%

# Pharmaceutical Expenditures and Growth

**EXHIBIT 1**  
**Size And Growth Of The U.S. Retail Pharmaceutical Market, 1997-2007**



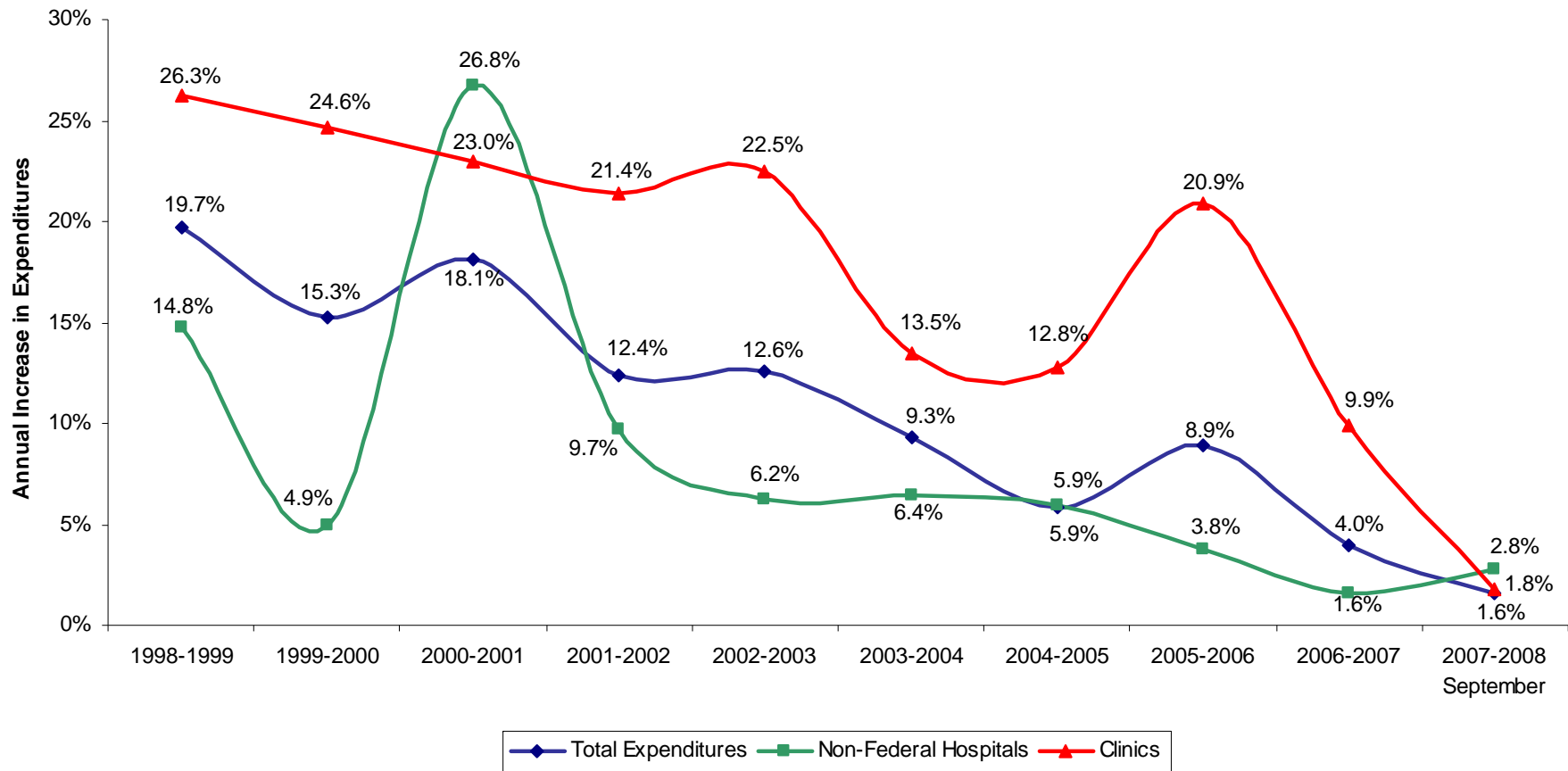
**SOURCE:** IMS Health, National Sales Perspectives, December 2007 (sales deflated by implicit gross domestic product deflator, \$2000).

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

Year	1970	1980	1990	2000	2004	2005	2006	2007
Drug Expenditures, Billions \$	\$5.5	\$12.0	\$40.3	\$120.6	\$188.8	\$199.7	\$216.8	\$227.5
Growth, % (vs previous period)	7.5%	8.2%	12.8%	11.6%	11.9%	5.8%	8.6%	4.9%

Figure from Aitken et al. *Health Affairs* 2009;28:w151-160w. Data from IMS.  
 Table adapted from Hartman et al. *Health Affairs* 2009;28:246-261. Data from CMS.

# Growth in Pharmaceutical Expenditures by Channel



# Top 10 Drug Classes in Hospitals

Drug Class	2007 Total (\$ Thousands)	Change From 2006	2008 Expenditure YTD Sep 2008 (\$ Thousands)	Change YTD Sep 2007 vs YTD Sep 2008
Antineoplastic Agents	3,321,432	6.6%	2,643,867	6.7%
Hemostatic Modifiers	3,308,712	4.4%	2,608,358	5.6%
Anti-infectives, Systemic	3,062,470	2.6%	2,483,304	8.8%
Blood Growth Factors	2,531,955	-11.2%	1,768,352	-9.3%
Biologicals	1,552,058	22.2%	848,084	-25.5%
Diagnostic Aids	1,472,772	-1.3%	1,106,300	-1.6%
Hospital Solutions	1,468,450	23.8%	1,318,090	20.7%
Psychotherapeutics	1,134,477	1.3%	894,739	5.2%
Gastrointestinal	1,078,886	2.9%	897,556	11.6%
Respiratory Therapy	984,172	9.9%	780,038	6.2%
Total	27,312,317	1.6%	21,052,543	2.8%

# Top 15 Drugs in Hospitals

Drug	2007 Total (\$ Thousands)	Change From 2006	2008 Expenditure YTD Sep 2008 (\$ Thousands)	Change YTD Sep 2007 vs YTD Sep 2008
Enoxaparin (Lovenox)	1,048,526	9.8%	879,178	12.0%
Epoetin Alfa (Epopgen, Procrit)	730,900	-17.3%	484,944	-14.8%
Immune globulin (various products)	946,596	16.9%	674,202	17.9%
Infliximab (Remicade)	648,490	4.5%	524,805	8.9%
Pegfilgrastim (Neulasta)	645,804	-1.1%	509,217	4.7%
Darbepoetin Alfa (Aranesp)	642,712	-20.2%	377,725	-26.2%
Piperacillin/Tazobactam (Zosyn)	558,606	15.7%	505,017	23.1%
Rituximab (Rituxan)	545,972	2.2%	451,872	11.0%
Bevacizumab (Avastin)	405,844	17.5%	349,318	15.6%
Iohexol (Omnipaque)	374,108	0.5%	259,004	-10.3%
Filgrastim (Neupogen)	356,556	1.2%	276,905	3.8%
Eptifibatide (Integrilin)	325,467	1.6%	236,097	-3.0%
Iodixanol (Visipaque)	320,255	3.9%	240,487	-0.8%
Linezolid (Zyvox)	313,352	13.8%	280,918	20.7%
Oxaliplatin (Eloxitan)	284,879	4.4%	229,835	7.7%
Total	27,312,317	1.6%	21,052,543	2.8%

# Top 15 Drugs in Clinics

Drug	2007 Total (\$ Thousands)	Change From 2006	2008 Expenditure YTD Sep 2008 (\$ Thousands)	Change YTD Sep 2007 vs YTD Sep 2008
Epoetin Alfa (Procrit, Epogen)	3,786,237	-8.2%	2,668,665	-7.3%
Pegfilgrastim (Neulasta)	2,153,770	7.0%	1,690,977	4.6%
Darbepoetin Alfa (Aranesp)	2,147,785	-18.5%	1,158,329	-32.6%
Infliximab (Remicade)	1,851,287	11.2%	1,514,484	10.4%
Bevacizumab (Avastin)	1,754,629	37.4%	1,501,741	16.3%
Rituximab (Rituxan)	1,647,649	13.8%	1,347,430	11.4%
Trastuzumab (Herceptin)	1,035,280	9.4%	820,421	6.9%
Oxaliplatin (Eloxatin)	1,031,455	10.0%	809,380	5.1%
Docetaxel (Taxotere)	783,094	8.4%	666,224	14.3%
Ranibizumab (Lucentis)	759,963	121.3%	589,386	1.4%
Varicella vaccine (Varivax)	692,617	194.8%	569,569	19.1%
Human papiloma vaccine (Gardasil)	666,439	545.4%	469,317	-5.5%
Zoledronic acid (Zometa, Reclast)	537,129	-2.5%	466,183	17.7%
Gemcitabine (Gemzar)	527,083	8.6%	425,591	8.2%
Paricalcitol (Zemplanr)	456,384	10.2%	392,264	19.5%
Total	33,427,450	9.9%	25,456,822	1.8%

# Factors Driving Pharmaceutical Expenditure Growth

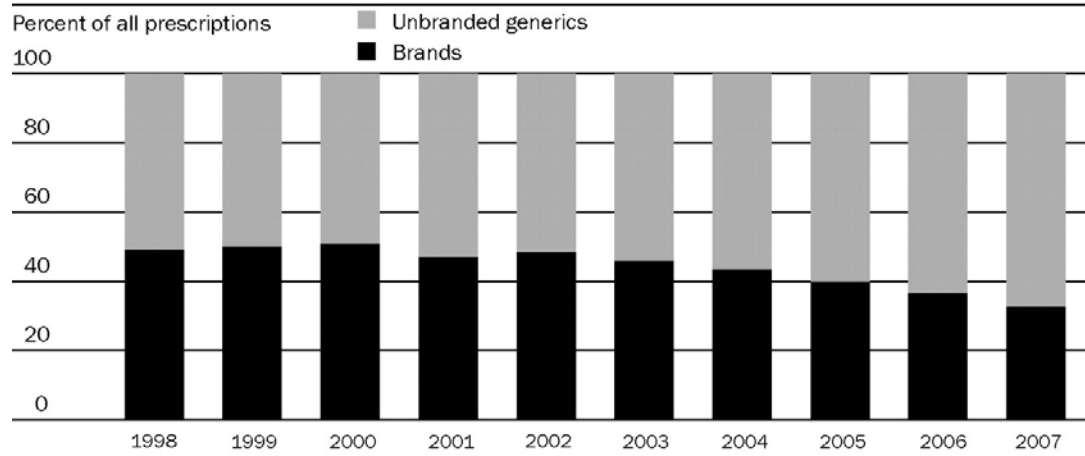
- Price
- Utilization
  - Per capita utilization of prescription drugs
- “Mix” and new technology
  - Some innovative products used to treat previously untreated disease; true innovation
  - Many marginally improved, “me too” products that gain preference over older agents for various (sometimes irrational) reasons
  - Increasing intensity of drug therapy; add-on therapies vs replacements (triple drug tx vs single drug tx)

# Explanations for Recent Deceleration in Growth (1)

- Increase in generic drug availability and utilization
- Shift in co-pay differentials; gap widening
  - 2000: \$7 generics, \$13 preferred, \$17 non-preferred
  - 2005: \$10 generics, \$22 preferred, \$35 non-preferred
  - 2008: \$6 generics, \$29 preferred, \$40 non-preferred

## EXHIBIT 4

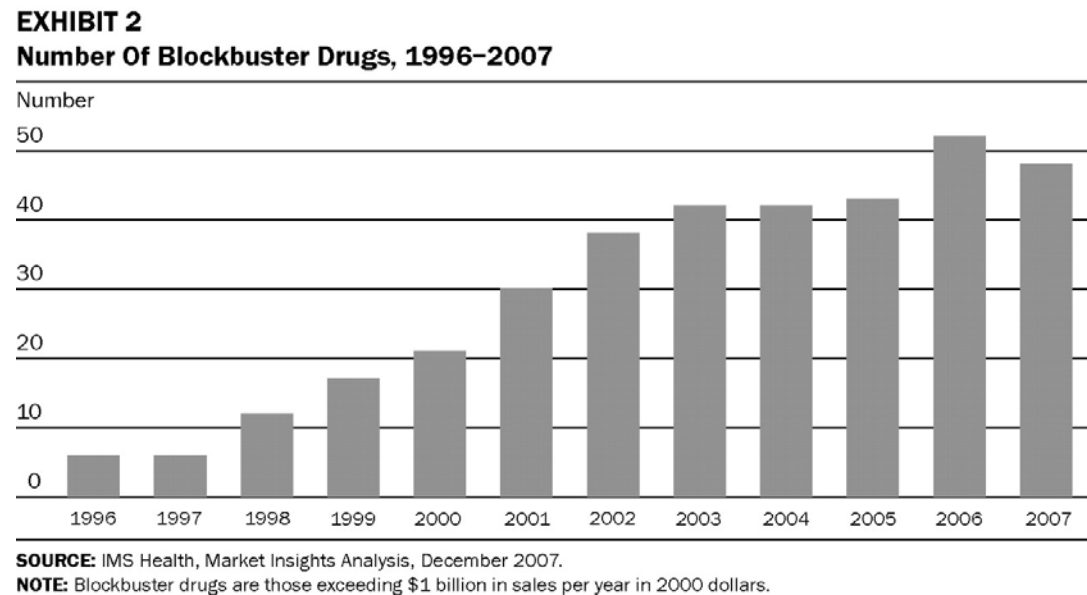
### Brand-Name And Generic Drugs' Share Of Total Retail Dispensed Prescription Drugs, 1998-2007



SOURCE: IMS Health, National Prescription Audit, December 2007.

# Explanations for Recent Deceleration in Growth (2)

- Diminished innovation
- Reduction in number of blockbuster drug products approved by FDA
- Recently, lower spend on individual blockbusters



# Explanations for Recent Deceleration in Growth (3)

- Ongoing impact of prescription to OTC status
  - Non-sedating antihistamines
  - Proton pump inhibitors
- Consumer safety concerns
  - Increase in number and significance of new “black box” warnings
  - Meta analyses demonstrating safety concerns (e.g., rosiglitazone)
  - Continued increase in number of market withdrawals

# Explanations for Recent Deceleration in Growth (4)

- Lower growth of Medicare Part D
  - Decrease in growth after huge jump in initial spending
  - More aggressive contracting and better performance of plans
- Improved performance of Medicaid prescription drug programs
  - Following big drop with implementation of Medicare Part D, continued decline
  - Improved formulary management (Medicaid programs finally catching up with commercial insurer strategies!)
- Impact of overall economic downturn on commercial side
  - Increase in unemployment
  - For those employed, decrease in generosity of insurance (higher out-of-pocket expenses)
  - Decrease in clinic visits

# Summary of Factors Potentially Affecting Future Growth

- Continued growth of generic products with substantial products coming (see 2009 forecast for details)
- Ongoing slowing of innovation with fewer market entries as weak economy has reduced R&D investments (see 2009 forecast for details)
- Continued impact of economic downturn on employment, etc. (potentially affected by HC reform or incremental changes in publicly funded programs)
- Continued impact of demographic changes

# Projection of US Health Care and Pharmaceutical Expenditures

<b>Year</b>	<b>2002</b>	<b>2004</b>	<b>2006</b>	<b>2010 Proj.</b>	<b>2014 Proj.</b>	<b>2017 Proj.</b>
Total National Health Expenditures (NHE), Billions \$	\$1,603	\$1,852	\$2,105	\$2,725	\$3,523	\$4,277
NHE Growth from Previous Year	-	6.9%	6.7%	6.7%	6.6%	6.7%
Prescription Drug Expenditures, Billions \$	\$157.6	\$188.8	\$216.7	\$284.6	\$393.7	\$515.7
Drug Expenditure Growth from Previous Year	-	8.4%	8.5%	7.6%	8.9%	9.6%

Source: Data from CMS. National Health Expenditure Projections 2007-2017. Available at <http://www.cms.hhs.gov/NationalHealthExpendData/Downloads/proj2007.pdf>. Accessed July 1, 2009. See also Keehan et al, *Health Affairs* 2008;27: w145-w155.

# 2009 Forecast of Pharmaceutical Expenditures by Channel

- Use with caution... not a “multiplier”
- Clinics include prescriber offices and hospital outpatient clinics where meds are administered

Setting	Inflation Rate Forecast
Outpatient	0 to 2%
Clinics	1 to 3%
Non-federal hospitals	1 to 3%

# Not out of the woods yet...

- Many factors may act to increase future expenditures and require vigilance
  - Isolated areas of substantial expenditure growth
    - New, very expensive biologics; small numbers of patients, huge cost
    - Orphan drugs
    - Antimicrobials
  - Continued impact of medication shortages
  - H1N1 novel influenza
  - Potential impact of FDA reform
  - Response to decreases in medication use leading to poorer outcomes and resulting increases in total cost of care



# Response to Trends: Tactical Approach to Financial Management for Pharmacy Leaders

# Improved Financial Planning (1)

- Systematic, step-wise approach to budgeting for medications, identifying cost containment targets and conducting financial management
- Resources
  - Annual forecast of expenditures and trends in *AJHP*
  - Summary of budgeting process in *AJHP*, January 15, 2005
  - Andy Wilson’s new book “Financial Management for Health-System Pharmacists” (2009, ASHP)

# Improved Financial Planning (2)

- Key messages
  - Data, data, data
  - Focus your attention on key drivers of cost; 60-80 products account for 80-90% of hospital drug budget
  - Consider diffusion patterns of newer products
  - Creative cost containment tactics
    - Moderation of trend vs actual reduction in expenditure
  - Monitor performance monthly; trend analysis, variance reporting
  - Financial performance metrics
    - Cost per day vs cost per discharge
    - Watch volume of cost-driving service elements
    - Use benchmarks with caution (“compass vs thermometer”)

# Evidence-based “Tool Kit” (1)



- Variety of tools used to ensure the safe, rational, efficient and ethical use of health care interventions in the treatment of patients
- Some passive tools that do not involve direct interventions on prescribing
- Some active tools involve direct intervention on prescribing

# Evidence-based “Tool Kit” (2)



- **Passive tools**
  - Prescriber education and cost awareness campaigns
  - Clinical practice guidelines
  - Medication use evaluation, report cards
- **Active tools**
  - Medication formulary and restrictions
  - Prior authorization
  - Generic and therapeutic interchange
  - Protocol-based independent pharmacist prescribing
    - IV to PO
    - Renal dose adjustment
    - Collaborative practice agreements
  - Antimicrobial stewardship program

# Value of Clinical Pharmacy Services

- Impact of clinical pharmacists accepting responsibility for both clinical and financial implications of medication use
- 1988 to 1995, n = 104 studies
  - Schumock GT, Meek PD, Ploetz PA, Vermeulen LC. *Pharmacotherapy* 1996;16:1188-1208.
- 1996 to 2000, n = 59 studies
  - Schumock GT, Butler MG, Meek PD, Vermeulen LC, et al. *Pharmacotherapy* 2003;23:113-132.
- 2001 to 2005, n = 93
  - Perez A, Doloresco F, Hoffman JM, Meek PD, Touchette DR, Vermeulen LC, Schumock GT, American College of Clinical Pharmacy. Economic evaluations of clinical pharmacy services: 2001-2005. *Pharmacotherapy*. 2009;29:128. (See <http://www.accp.com/> for full report.)

# Clinical Pharmacy Services R.O.I.

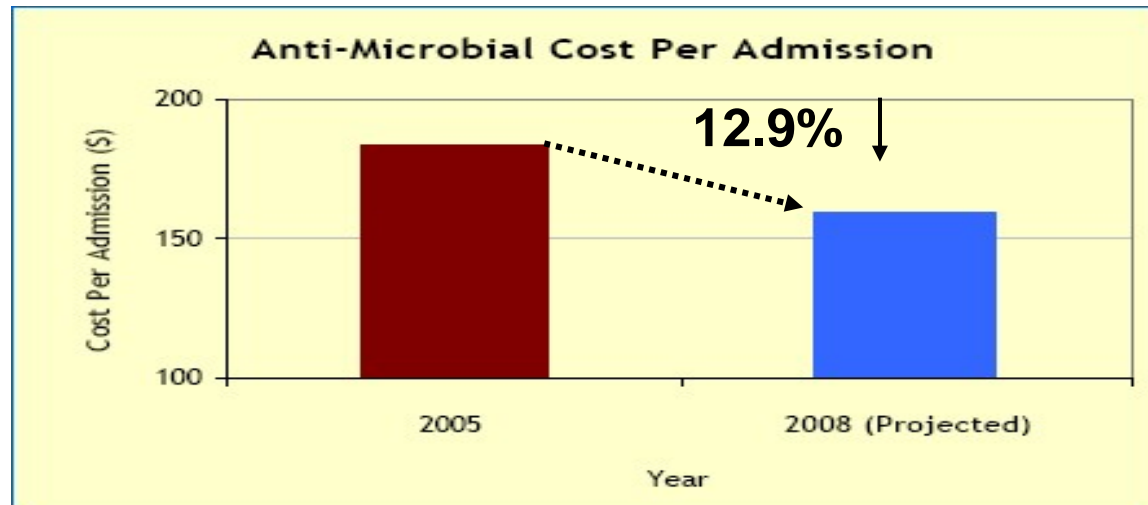
## “Highest R.O.I. in Healthcare”

R.O.I.	1988-1995 N = 7	1996-2000 N = 5	2001-2005 N = 15
Lowest	\$1.08 : \$1	\$1.7 : \$1	\$2 : \$1
Highest	\$75.84 : \$1	\$17.01 : \$1	\$12 : \$1
Median	\$4.09 : \$1	\$4.68 : \$1	\$6.40 : \$1
Mean	\$16.70 : \$1	\$5.54 : \$1	\$6.70 : \$1

# Antimicrobial Stewardship Program (1)

- Huge portion of inpatient budget in antibiotics, antifungals
- Commitment of resources to stewardship program
  - Separate subcommittee of P&T
  - Pharmacist and Infectious Disease faculty member employed by pharmacy
  - Daily activities
- Data resource for infection control

# Antimicrobial Stewardship Program (2)



- Goal: Maximize appropriate utilization of antimicrobial and antifungal therapies to control both resistance and expense
- Antimicrobial portion of inpatient drug budget: 22.9% (FY05), 20.5% (FY08)
- Cost-avoidance in 2009 Budget = \$600,000
- Team consists of a clinical pharmacist, an ID physician, infection control and microbiology
- Methods
  - Development of evidence-based guidelines
  - Cereplex software to identify targeted interventions
  - Daily interdisciplinary rounds
  - Restriction of specific antibiotics and antifungals to ID approval

# “Internal” Prior Authorization of Clinic Administered Injectables (1)

- Policy response #1, ban on “brown-bagging” of infused medications
  - Exceptions on case-by-case basis, often economic issues (WRT patient out of pocket expense)
- Policy response #2, prior authorization program for all clinic administered injectable medications with cost of >\$5,000 per year
  - Currently infliximab, omalizumab, plerixafor, botox, palivizumab, natalizumab
  - Future IVIG, albumin, rituximab

# “Internal” Prior Authorization of Clinic Administered Injectables (2)

- Key components of program
  - Pharmacy department-based program
  - Center for Drug Policy develops guidelines for use
  - Subcommittee of P&T reviews and approves guidelines and oversees program
  - Pharmacy staff reviews requests for medications
  - Appeals process for denials
  - Independent of insurance or ability to pay
  - Inpatient application; essential for management of transition of care

# Cancer Chemotherapy Management (1)

- Risks and cost of cancer chemotherapy create substantial challenges
- Recent emergence of biologics (EGFR inhibitors, VEGF inhibitors, etc) raise stakes
- While national standards are prominent in cancer care (guidelines from ASCO, NCCN), variation in care common
- Questionable value from substantial investments (life expectancy gains of days, months for tens of thousands of dollars in added cost)
- Huge reimbursement challenges
- Increasing interest in cost-effectiveness by oncologists

# Cancer Chemotherapy Management (2)

- Cost containment focusing on supportive care (n/v, pain, infection, anemia, neutropenia) common
- Efforts to limit chemotherapy decision making needed
- Chemotherapy Review Council developed to manage safety, reduce variability and open dialogue regarding cost

# Cancer Chemotherapy Management (3)

- Individual groups of oncologists apply for “core” status of specific chemo regimens
  - Specific disease, stage, etc.
  - Specific routes, doses and dosing intervals
  - Evidence (phase III trials; no abstracts)
  - Cost and reimbursement analysis
  - Far more restrictive than P&T Committee
- If approved by Chemo Council, can be ordered
- If not approved, must seek patient-specific approval before use (appeal process)

# Cancer Chemotherapy Management (4)

- Results
  - Decrease from approx. 500 combinations to under 300 “core” recipes
  - In 2 years, fewer than 50 patient-specific requests with 30% denial rate
  - More consistency in prescribing
- Status as sub-committee of P&T
- Expanding to supportive care review
- Critical venue for debate over “productive” vs “unproductive” treatment and cost/value issues

# Summary

- Substantial deceleration in expenditure growth for pharmaceuticals in all channels
- Likely continued decline in rate of growth for short-term
- Many factors may put pharmaceutical expenditures in spotlight again
- Vigilance, improved financial management, creative cost-containment will remain critical for pharmacy leaders



# Questions?

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