

# The Use of Medicines in the United States: Review of 2010



April 2011

# Introduction

The use of medicines is a critical topic for all stakeholders in the U.S. healthcare system. Last year reinforced the slowing growth trends of the last decade, and when adjusted for economic and population growth, spending grew by less than 1 percent.

The volume of medicines consumed also grew at very low volumes, and even declined in the case of injectables and infusables.

A number of factors contributed to this comparatively and historically low growth, including fewer patient visits to doctors' offices, patent expiries for branded products, expanded usage of existing generic products and less spending on new products.

This report further illustrates these key trends, helping to put 2010 into context, while also informing decision makers in all areas of healthcare.

## **Michael Kleinrock**

Director Research Development  
IMS Institute for Healthcare Informatics

### **IMS Institute for Healthcare Informatics**

11 Waterview Boulevard  
Parsippany, NJ 07054  
USA

info@theimsinstitute.org  
www.theimsinstitute.org

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Spending \$307Bn +2.3%

Real per capita spending growth +0.6%

Spending on brands -0.7%

Prescriptions dispensed 3.99Bn +1.2%

Injectable standard units +0.2%

Patient visits -4.2%

Average copayment \$10.73 -1.8%

Medicare Part D Rx's 871Mn +6.4%

# Executive summary

## SPENDING ON MEDICINES

Spending on medicines exceeded \$307Bn in 2010, up 2.3% on a nominal basis. On a real per capita basis spending increased by 0.6% compared to a 3.1% increase in 2009. The largest segments of the market, including branded drugs, oral formulations and small molecules, each declined or grew more slowly than the total market, while spending on generics, injectables and biologics increased at a higher rate.

## VOLUME OF MEDICINES CONSUMED

The total volume of medicines consumed in oral form increased by 0.5% in 2010, which corresponds to a decline of 0.3% on a per capita basis. Medicines administered by injection or infusion increased by 0.2% or a decline of 0.6% on a per capita basis. The number of retail prescriptions dispensed totaled 3.99Bn, an historically low increase of 1.2% over 2009. Chain drugstores were increasingly chosen by patients to fill their prescriptions reflecting both convenience and the availability of discounted generics in these pharmacies. Overall consumption of medicines may be affected by fewer doctor office visits, which were down 4.2% in 2010. The number of patients starting treatment for a chronic therapy was down 3.4Mn from 2009 levels, and increasingly these patients are starting therapy with a generic drug. The number of therapy continuations or refills rose in 2010, with all of the increase coming in the form of generics.

## PATIENT PAYMENT FOR MEDICINES

Commercial third-party insurance was used by patients to pay for 63% of dispensed prescriptions, down from 66% five years ago. Prescriptions filled under a Medicare Part D plan totaled 871 million, or 22% of the total. The average patient copayment was \$10.73 in 2010, down 20 cents from 2009 due to shifts in usage to generics.

## COMPARISON OF 2010 VERSUS 2009 SPENDING

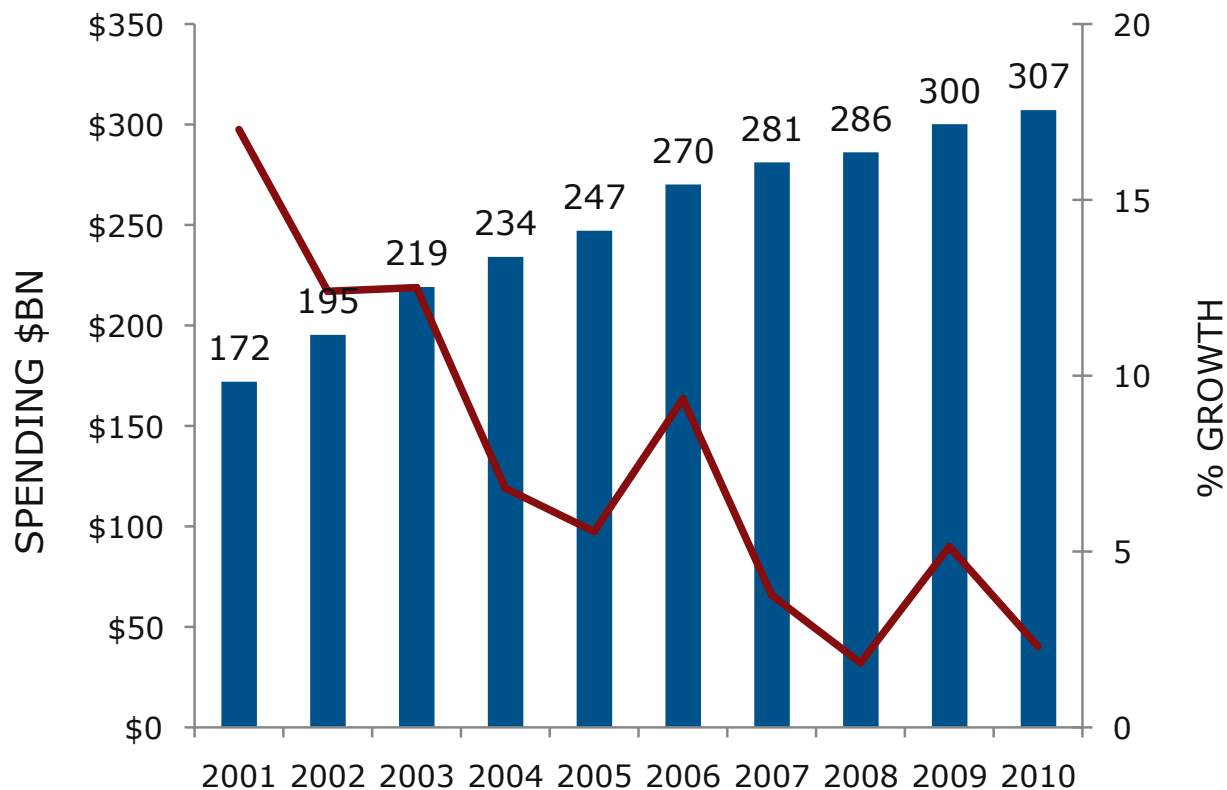
Spending changes in 2010 were driven by five major segments. Whereas protected brands have historically caused volume-based increases in spending – \$7.9Bn in 2006 – this segment saw a volume-based decline in spending of \$8.3Bn in 2010. Increased spending due to price levels of protected brands was \$16.6Bn in 2010, but offset by an estimated \$4.5Bn in higher rebates. Total spending on new brands has declined in the last five years, even as newly launched products brought significant new therapy options to patients. Brands that in the prior year had sales of \$32.1Bn were exposed to generic competition in 2009 and 2010, the highest two-year total ever. Over 80% of a brand's prescription volume is replaced by generics within six months of patent loss and as a result, total branded and unbranded generic market share has risen each of the past five years to now account for 78% of all prescriptions dispensed.

## CHANGES IN USAGE AND SPENDING IN MAJOR THERAPY AREAS

Therapy area spending growth is largely driven by the state of the innovation cycle. Oncologics spending growth has slowed since 2006 to 3.5% in 2010 as a result of fewer new products being launched and the broad adoption of therapeutic regimens launched in the first half of the decade. Anti-asthmatics remain the key spending growth driver in respiratory agents in 2010. Spending on lipid regulators increased by 0.9% as many of the key innovations in the class are now or will soon be available generically, while usage of these drugs grew by 2.3%. Antidiabetes spending grew by \$1.9Bn in 2010, of which \$1.3Bn was for human insulins and their synthetic analogues. Patients filled 165Mn prescriptions in 2010, up 3.8% over 2009. Antipsychotic spending grew by \$1.4B, mainly from leading branded therapies. Patients filled 56Mn prescriptions in 2010 mostly for newer generation atypical antipsychotics.

# Spending on medicines reached \$307Bn in 2010, up 2.3%

Spending Growth 2001-2010



- Spending on medicines increased by 2.3% in 2010, lower than the 5.1% growth recorded in 2009, and continuing the trend of 5% or lower growth per year that has occurred since 2007.
- Total spending in 2010 was \$307Bn, an increase of about \$60Bn since 2005 and \$135Bn since 2001.
- Lower levels of growth in spending in recent years reflect broad dynamics of lower volume growth, increased use of generics, loss of patent protection for major branded products and less spending on new drugs.

**Chart notes**

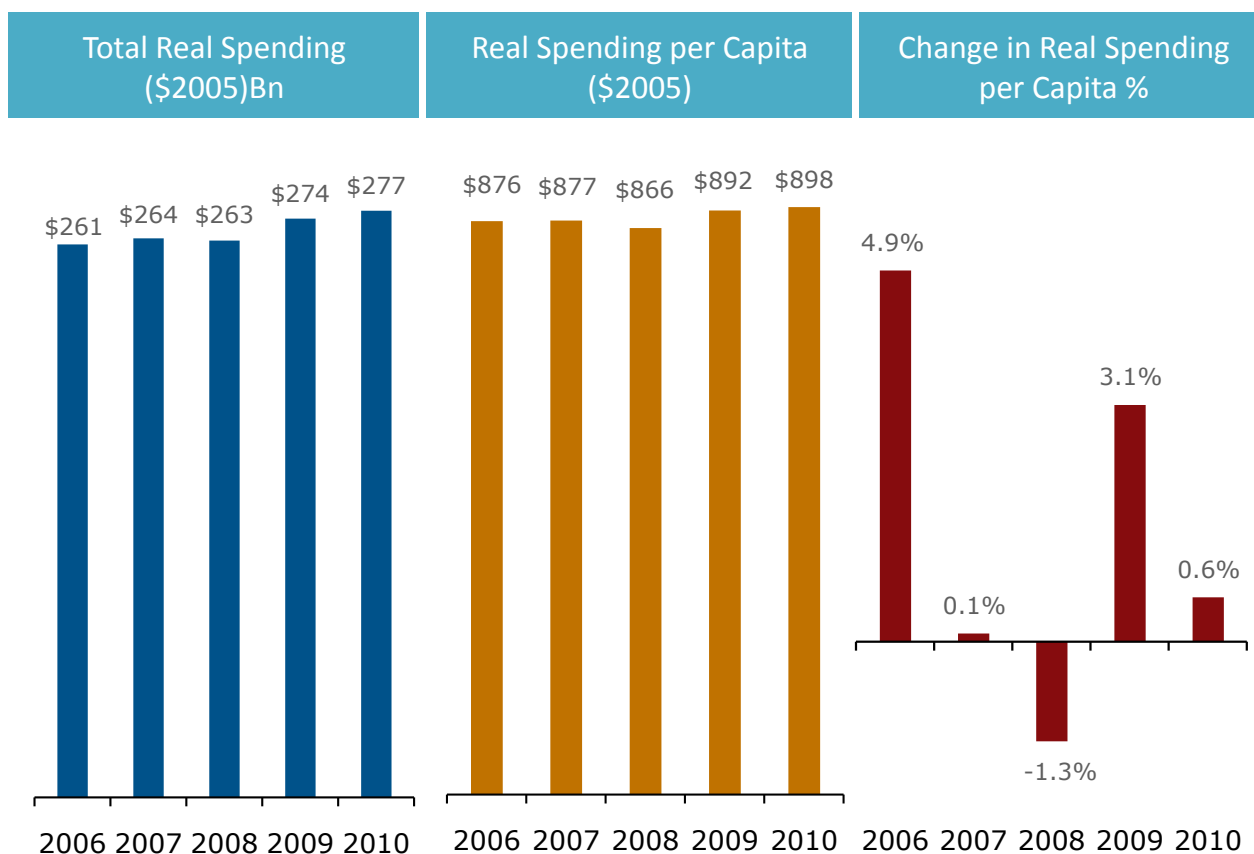
Measures total value of pharmaceutical sales, including generics, branded products, biologics, small molecules, retail and non-retail channels.

Value measured at Trade Price – the price paid to wholesalers or manufacturers by retail and non-retail channels and excluding off-invoice discounts and rebates that lower net prices received by manufacturers.

Source: IMS Health, National Sales Perspectives, Dec 2010

# Real spending per capita increased by 0.6% in 2010

## Total \$2005 Real Spending



- When adjusted by the GDP price deflator, real total spending increased from \$261Bn in 2006 to \$277Bn in 2010.
- When adjusted for the estimated total population increase, real spending per capita increased from \$876 in 2006 to \$898 in 2010.
- The annual change in real spending per capita has fluctuated over the past 5 years between a high of 4.9% in 2006, the year of the introduction of Medicare Part D, to a decline of 1.3% in 2008.
- Real spending per capita on all medicines increased by 0.6% in 2010.

**Chart notes**

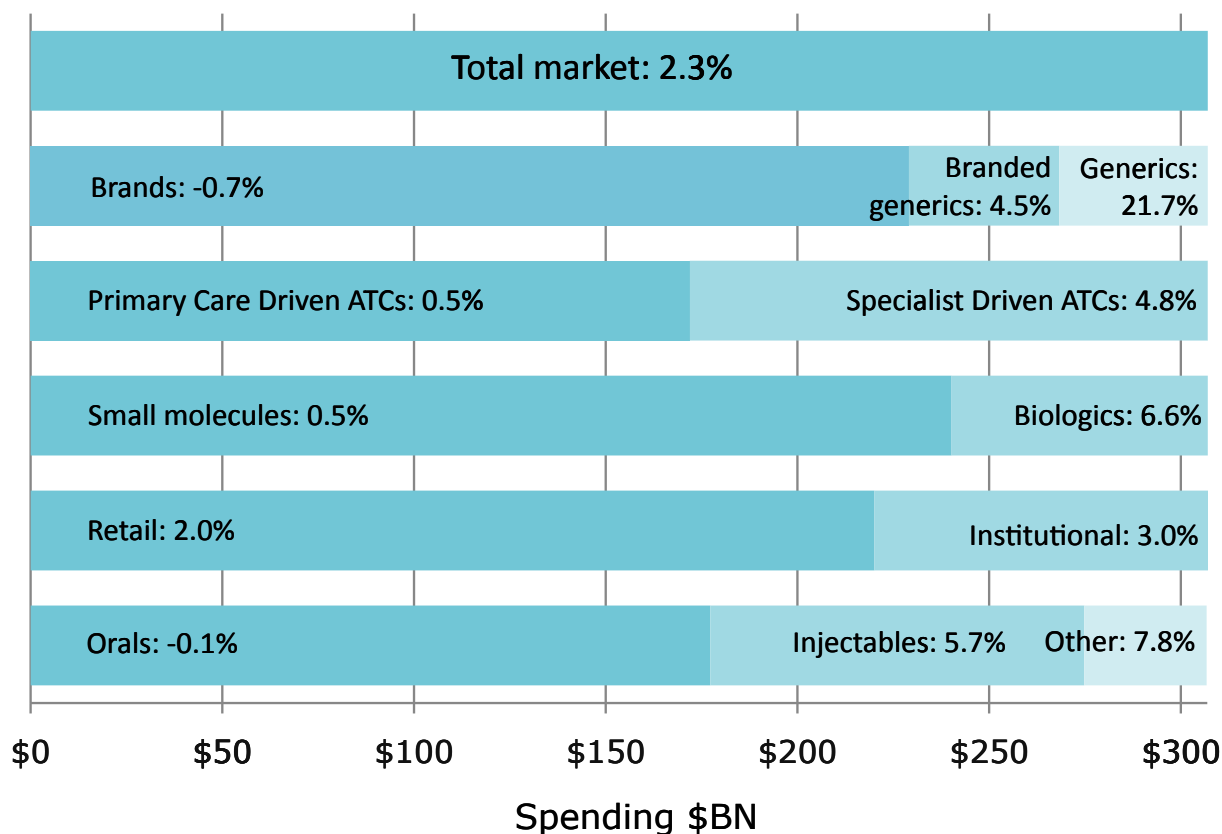
Real spending calculated using GDP price deflator to \$2005 from Bureau of Economic Analysis.

Per capita spending calculated using July 1 population estimates from U.S. Census Bureau, Population Division, release date: February 2011.

Source: IMS Health, National Sales Perspectives, Dec 2010; Bureau of Economic Analysis; U.S. Census Bureau

# Spend grew 2.3% but largest segments grew slower or declined

## Spending Growth 2010



Source: IMS Health, National Sales Perspectives, Dec 2010

- Spending on branded drugs totaled \$229Bn, but declined by 0.7%, while spending on unbranded generics increased 21.7% and branded generics by 4.5%.
- Spending on medicines mainly dispensed by primary care physicians grew by 0.5%, while those medicines primarily used by specialists grew by 4.8%.
- Small molecule spending totaled \$240Bn, an increase of 0.5% as biologics grew by 6.6%, amounting to \$67Bn.
- Spending on drugs through retail channels increased by 2.0%, while institutional channels rose by 3.0%.
- Oral forms of medicines declined by 0.1%, but spending on injectables increased by 5.7%.

### Chart notes

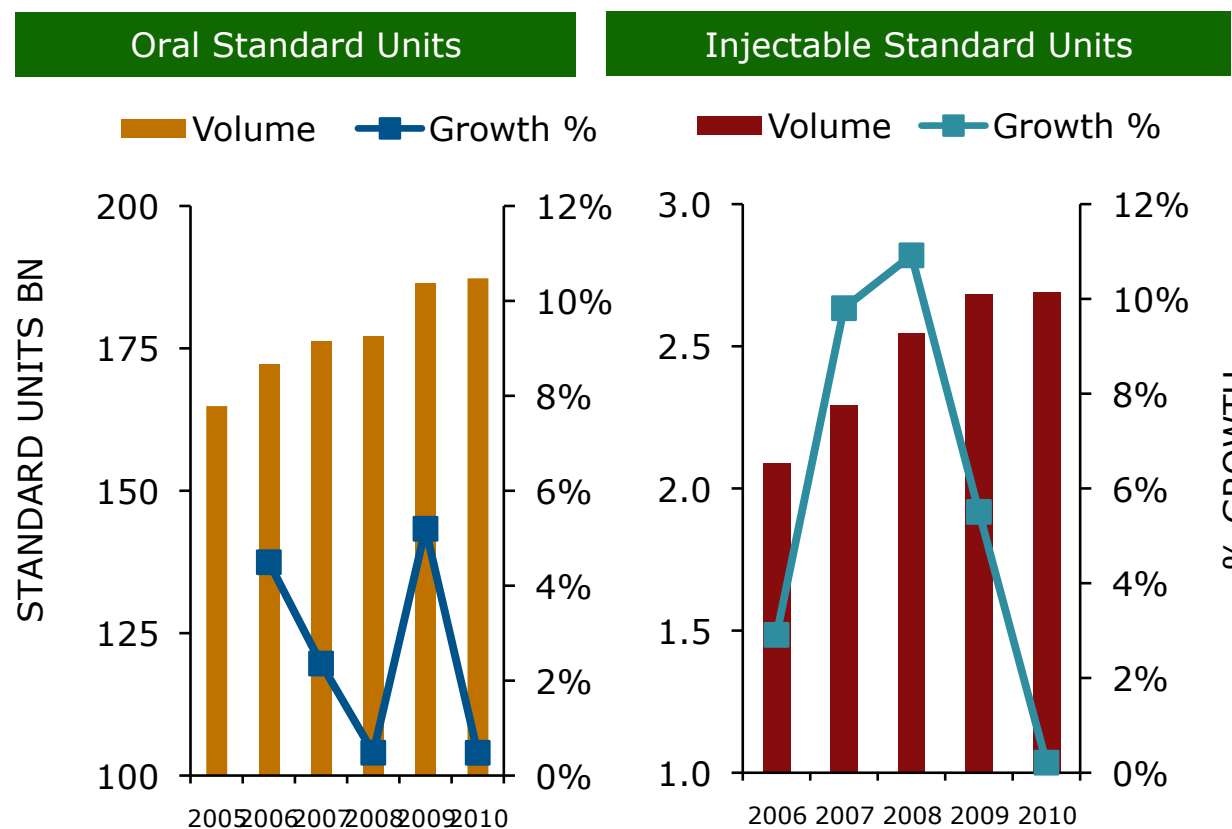
All growth amounts based on spending in Nominal Dollars. Length of each bar segment represents total spending for that segment in 2010.

Brands are those products with current or former patent protection or other forms of market exclusivity.

Specialist driven, Primary care driven and Biologics segments are based on proprietary IMS Health definitions.

# Total volume of medicines grew by historically low rates in 2010

## Volume Growth Performance



- The total volume of drugs consumed increased at historically low rates for oral/nasal forms and declined for injectable/infusable forms.
- For oral and nasal forms of medication, which account for approximately 60% of the total spending on medicines, the volume consumed was up 0.5% in 2010; this corresponds to a decline of 0.3% on a per capita basis.
- For injectable and infusable forms, the total volume consumed increased by 0.2% in 2010, or a decline of 0.6% on a per capita basis.

**Chart notes**

Volume is based on Standard Units, a measure of the number of pills, capsules, vials and ampoules of active pharmaceutical ingredient included in the dispensed medicine.

Standard Units for oral forms are not additive nor comparable to injectable forms.

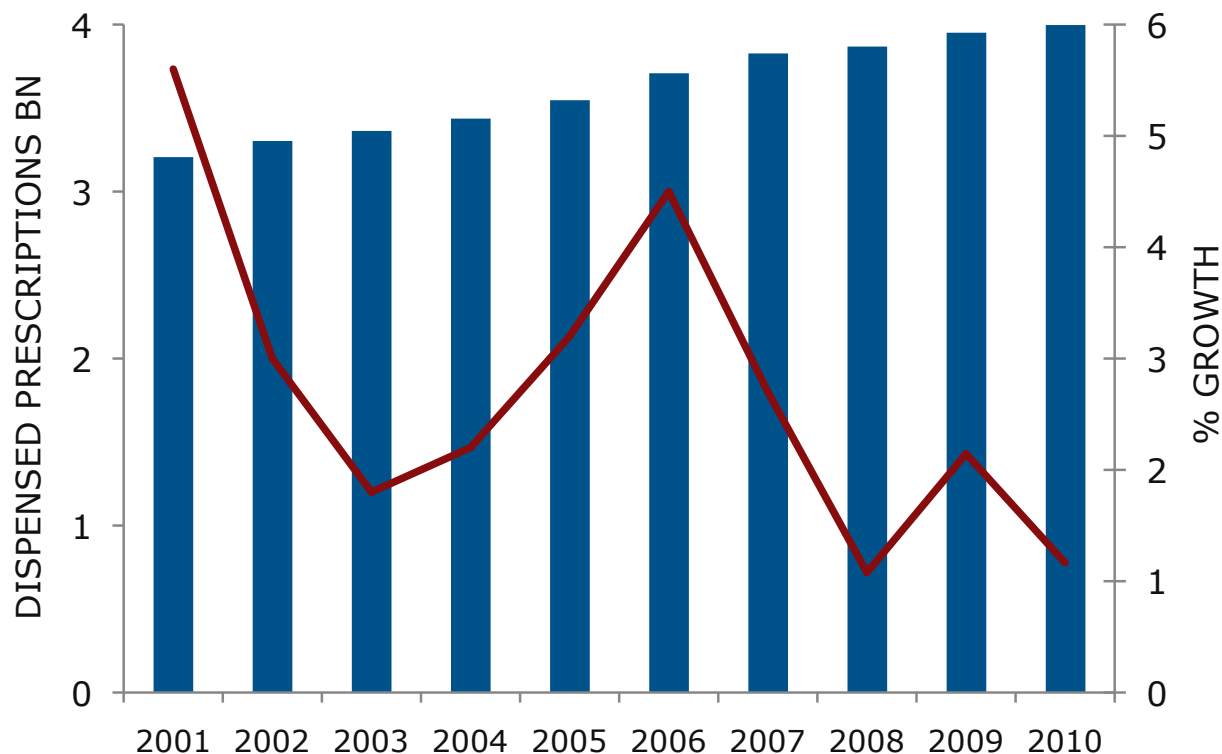
Oral Standard Units include both oral and nasal forms.

Injectable Standard Units include both injectable and infusable forms.

Source: IMS Health, MIDAS, Dec 2010

# Total prescription volume was 3.99Bn in 2010, up 1.2%

Prescriptions Volume 2001-2010



Source: IMS Health, National Prescription Audit, Dec 2010

- Medicines dispensed to patients through the retail and long-term care sectors account for nearly 76% of total spending and 88% of the oral/nasal volume.
- These medicines are almost entirely dispensed through retail prescriptions, which totaled 3.99Bn in 2010, up 1.2% over the number dispensed in 2009 and up from 3.20Bn dispensed in 2001.
- On a per capita basis, retail prescription volume has been fairly steady since 2006, increasing from 12.7 in 2007 to 12.9 in 2010, compared to 11.2 prescriptions per person dispensed in 2001.

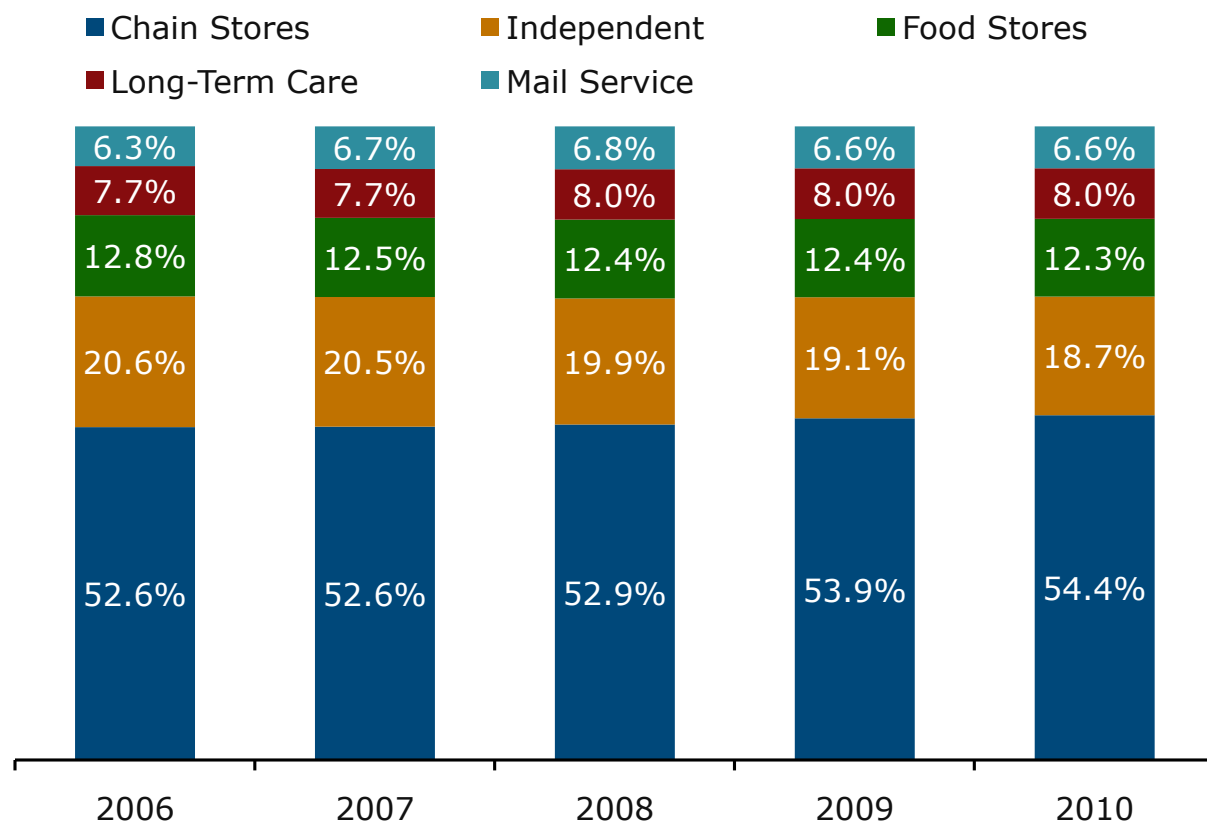
**Chart notes**

Includes all prescriptions dispensed through retail pharmacies, including independent and chain drugstores, food store pharmacies, mail order and long-term care facilities.

Prescription counts are not adjusted for length of therapy. 90-day and 30-day prescriptions are both counted as one prescription.

# Patients chose to fill more prescriptions at chain drugstores

## Prescriptions by Type of Pharmacy



Source: IMS Health, National Prescription Audit, Dec 2010

- Patients filled more prescriptions at chain drugstores, accounting for more than 54% of all prescriptions, or 2.2Bn, in 2010.
- Many chains now offer discounted generic prescriptions including 3-month prescriptions.
- Fewer prescriptions were filled in independent pharmacies whose share declined to 18.7% in 2010, compared to 20.6% in 2006.
- While the number of prescriptions filled reflect patient behavior, they do not necessarily reflect changes between standard 30-day and 90-day prescriptions.

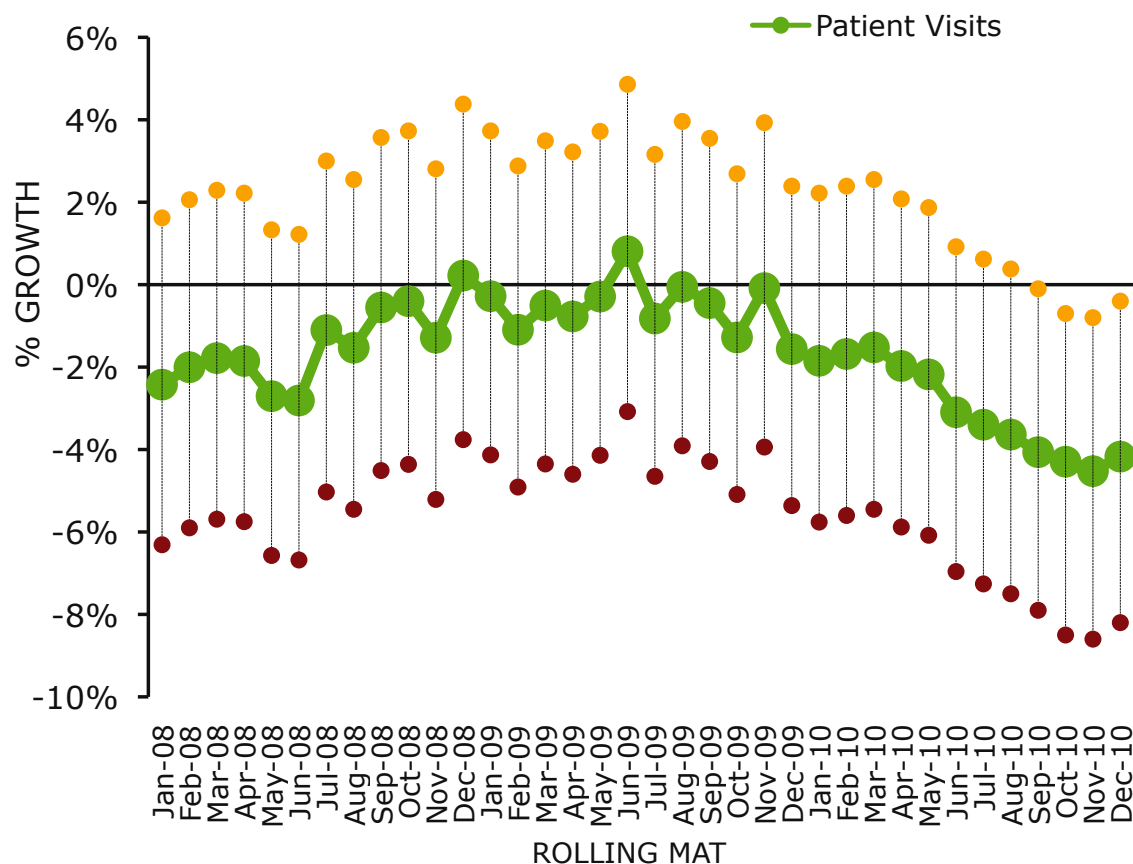
### Chart notes

Includes all prescriptions dispensed through retail pharmacies – including independent and chain drug stores, food store pharmacies and mail order as well as long-term care facilities.

Prescription counts are not adjusted for length of therapy. 90-day and 30-day prescriptions are both counted as one prescription.

# Patient office visits declined by 4.2% in 2010

## Patient Visit Trends



Source: IMS Health, National Disease and Therapeutic Index, Dec 2010

- The number of patient office visits remained level from mid-2008 to mid-2009, a period of significant economic uncertainty, reduced consumer confidence and increased unemployment.
- Patients with health insurance, and concerned about future coverage, may have increased their visits during this time, offsetting a decline in activity by those affected by the economic downturn and uncertainty; however, there is no clear evidence of this behavior.
- Since mid-2009, the number of patient visits to doctor offices declined, down 4.2% in 2010, compared to the prior year.
- This may reflect the enduring effects of the macroeconomy, high unemployment levels and rising healthcare costs; it also may include more patients losing coverage and others managing their healthcare spending carefully.

### Chart notes

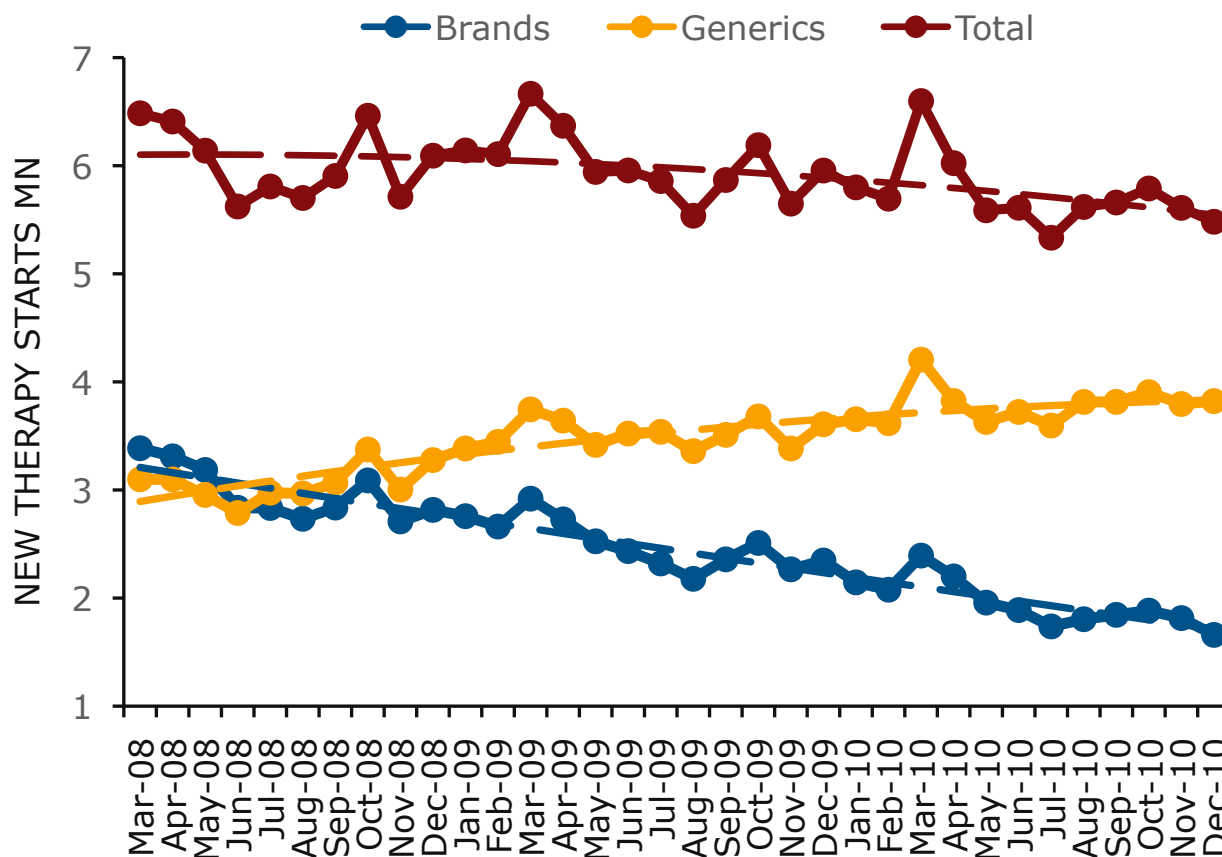
Patient visits calculated using national sample based methodology of office visits.

Margin of error of patient visit growth is 3.9% (shown on chart).

Growth is for the rolling twelve month period over prior year period.

# Fewer patients began new chronic therapy treatment

## Chronic Disease New Therapy Starts



- New therapy starts for 17 chronic conditions declined by 3.4Mn patients in 2010.
- 3.2Mn more patients started their therapy with a generic while 6.6Mn fewer patients started therapy with a brand.

### Chart notes

Analysis of national-level prescription audit combined with anonymized patient-level data.

17 chronic therapy areas representing two-thirds of all chronic prescriptions, 47% of dollars and 38% of prescriptions in the total market.

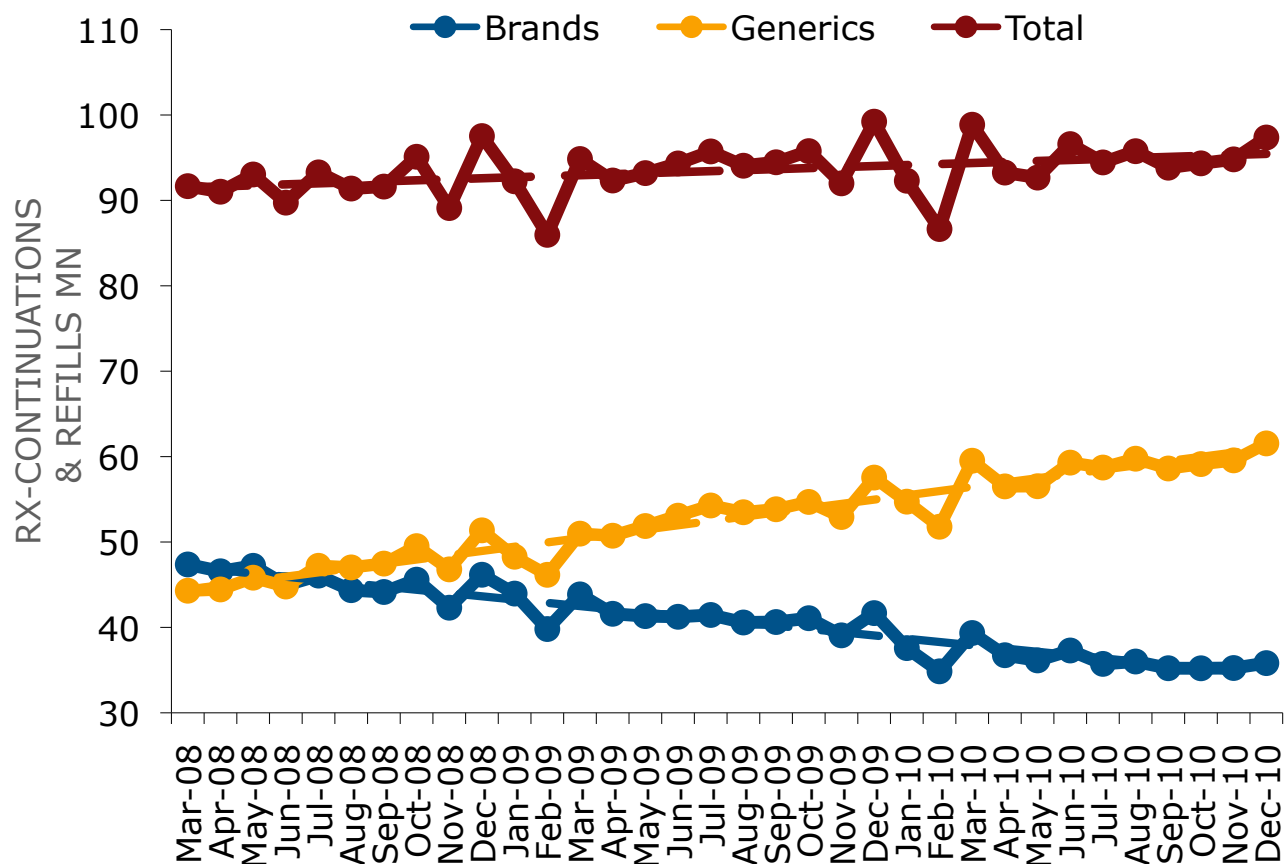
Therapy areas covered include: ADHD, Alzheimer's, BPH, Cholesterol, COPD-Asthma, Depression, Diabetes, HIV, Hypertension, Insomnia, Migraine, Over Active Bladder, Osteoporosis, Parkinson's, Proton Pump Inhibitors, Antipsychotics and Seizure.

A New Therapy Start occurs when a new patient begins on medication and they have not filled any other prescriptions for this condition during the prior year.

Source: IMS Health, NPA Market Dynamics, Dec 2010

# Continuing therapies grew slowly as brands continued to decline

## Chronic Disease Continuing Therapy



Source: IMS Health, NPA Market Dynamics, Dec 2010

- Continuations and refills within 17 chronic therapy areas increased by 6.7Mn in 2010.
- Generic continuations increased by 11%, or 67.8Mn in 2010, and now represent about two-thirds of all continuations.
- The number of brand continuations declined by 12% or 61Mn prescriptions in 2010.

### Chart notes

Analysis of national-level prescription audit combined with anonymized patient-level data.

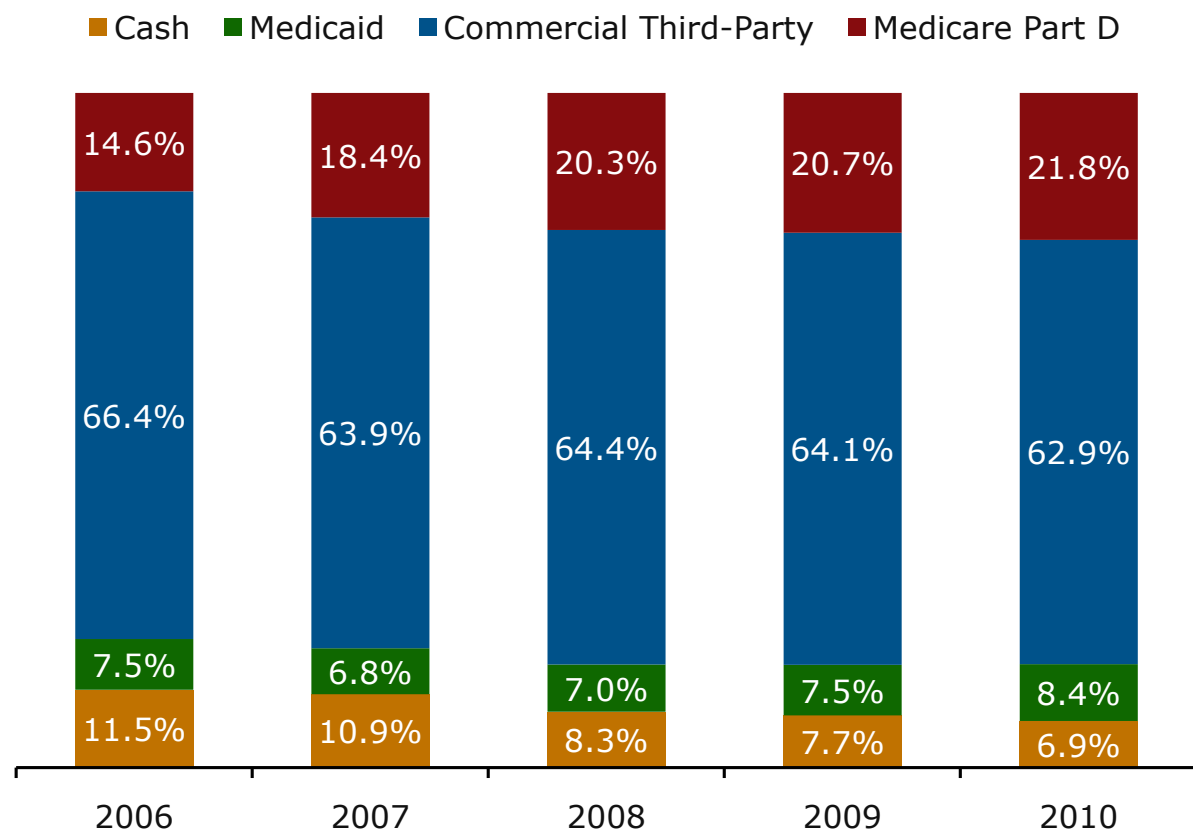
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Continuations and refills defined as patients continuing a previous therapy which had been dispensed during the prior year. Continuing therapy using a new prescription for the same drug, once authorized prescription refills have been used, is also a continuation.

# Payment type continued shift toward Medicare Part D and Medicaid

## Dispensed Prescriptions by Payment Type



Source: IMS Health, National Prescription Audit, Dec 2010

- Medicare Part D beneficiaries filled 871Mn prescriptions in 2010, up 6.4% and accounting for nearly 22% of all prescriptions.
- Medicaid prescriptions increased by 13.7% to 337Mn in 2010 while cash payments declined by 10.3% to 273Mn prescriptions.
- Commercial third-party (excluding Medicare Part D) accounted for 62.9% of prescriptions in 2010 versus 64.1% in 2009.
- Patients with Medicare Part D or Medicaid coverage filled 30.2% of all prescriptions in 2010, compared to 22.1% in 2006, the first year of the Part D program.

### Chart notes

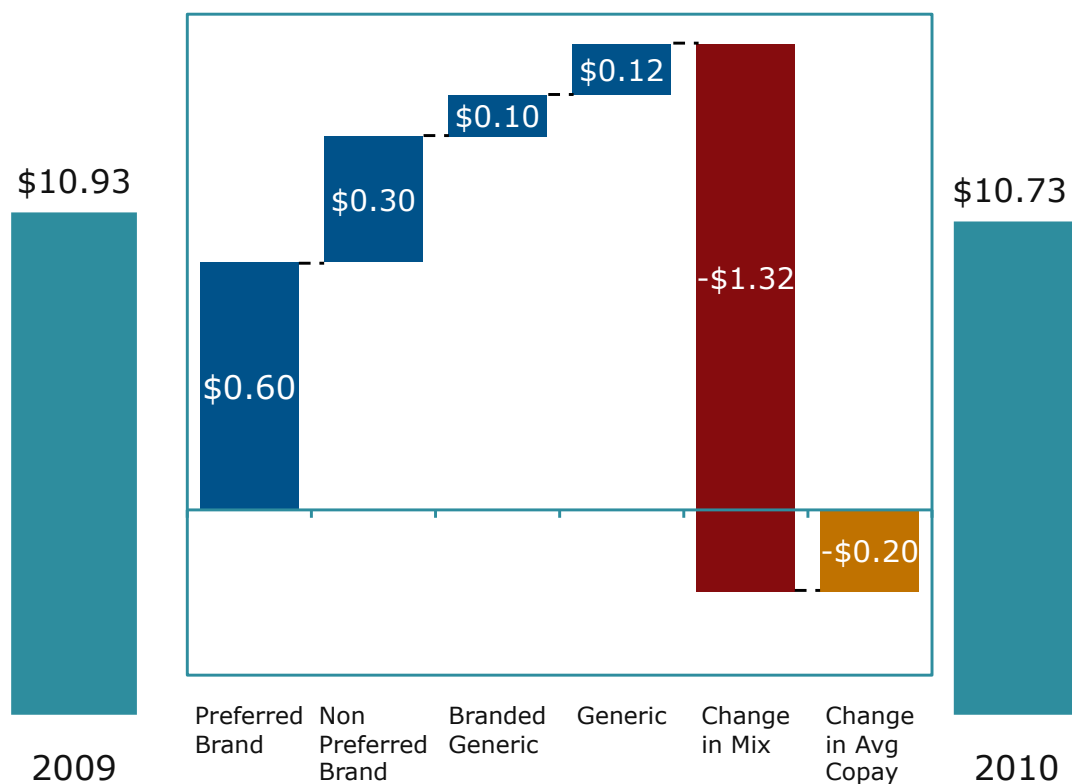
Method of payment measured at prescription level at point of payment.

All payment types are mutually exclusive; commercial third-party includes all private third-party insurers and excludes Medicare Part D plans.

Includes all prescriptions dispensed through retail pharmacies, including independent and chain drugstores, food store pharmacies, mail order and long-term care facilities.

# Copayments declined 1.8% due to shifts to generics

Change in Copayments from 2009 to 2010



- The average prescription copayment declined from \$10.93 in 2009 to \$10.73 in 2010, a decrease of 1.8%.
- Average copays for generics increased by 5.2% in 2010 to \$6.06 per prescription.
- Average copays for preferred and non-preferred brands grew by 7.1% and 7.3% respectively, taking the average payment to \$23.65 and \$34.77.
- Branded generic copayments increased 6.0% to an average \$22.73.
- The overall reduction in copays was the result primarily of movement by patients to generics which, after the increases in each type of copay, contributed \$1.32 to the decline in average copayments.

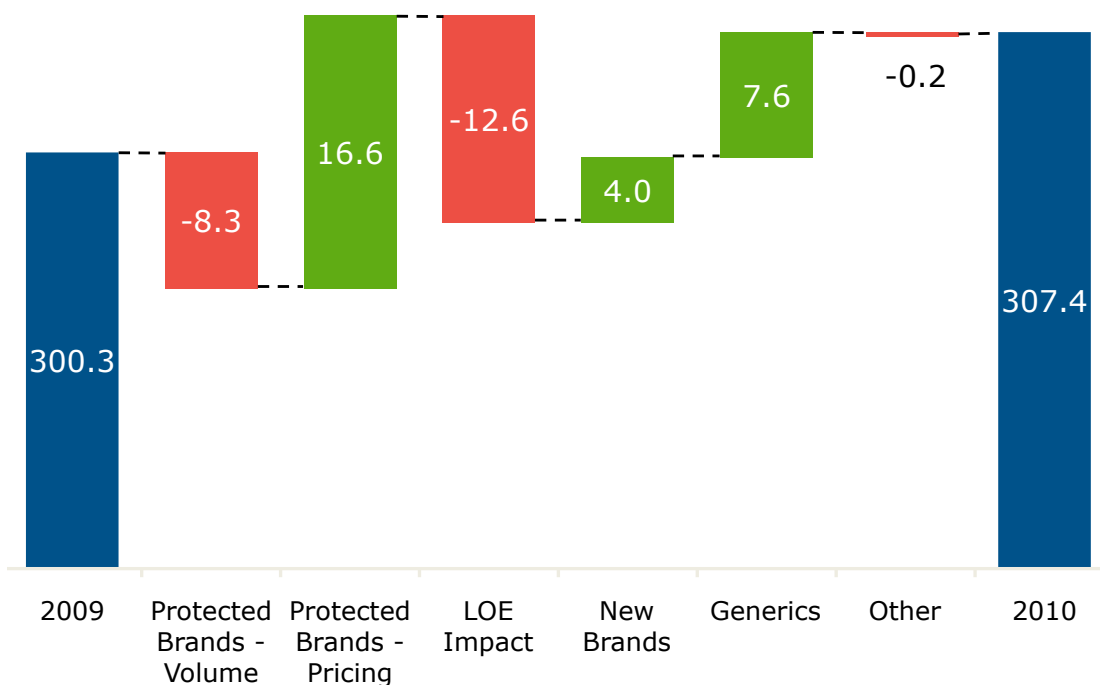
**Chart notes**

Average copayments weighted by prescription volume in 2009. Change in mix reflects changes in volume share of segments. Analysis includes prescriptions where insurance was used - including Commercial Third-Party insured, Medicare Part D and Medicaid, and transactions with zero patient copayment. Includes 1.54Bn dispensed prescriptions, 45% of retail, but excludes OTC products, and the value of coupons or vouchers. Preferred and non-preferred brands are IMS proprietary definitions.

Source: IMS Health, Plantrak Copay, Formulary Focus, Dec 2010

# Spending changes driven by five major segments

Components of Change in Total Spending \$Bn



- Total spending on medicines increased from \$300.3Bn in 2009 to \$307.4Bn in 2010.
- The decline in the volume of protected branded products reduced spending in 2010 by \$8.3Bn compared to 2009.
- Increases in the pricing of protected branded products – without consideration to off-invoice discounts or rebates – raised spending by \$16.6Bn.
- Brands losing patent protection or exclusivity in 2010 resulted in a reduction in spending of \$12.6Bn.
- Spending growth for new brands was \$4.0Bn in 2010.
- Spending on generics – including both volume and price effects – increased by \$7.6Bn in 2010 compared to 2009.

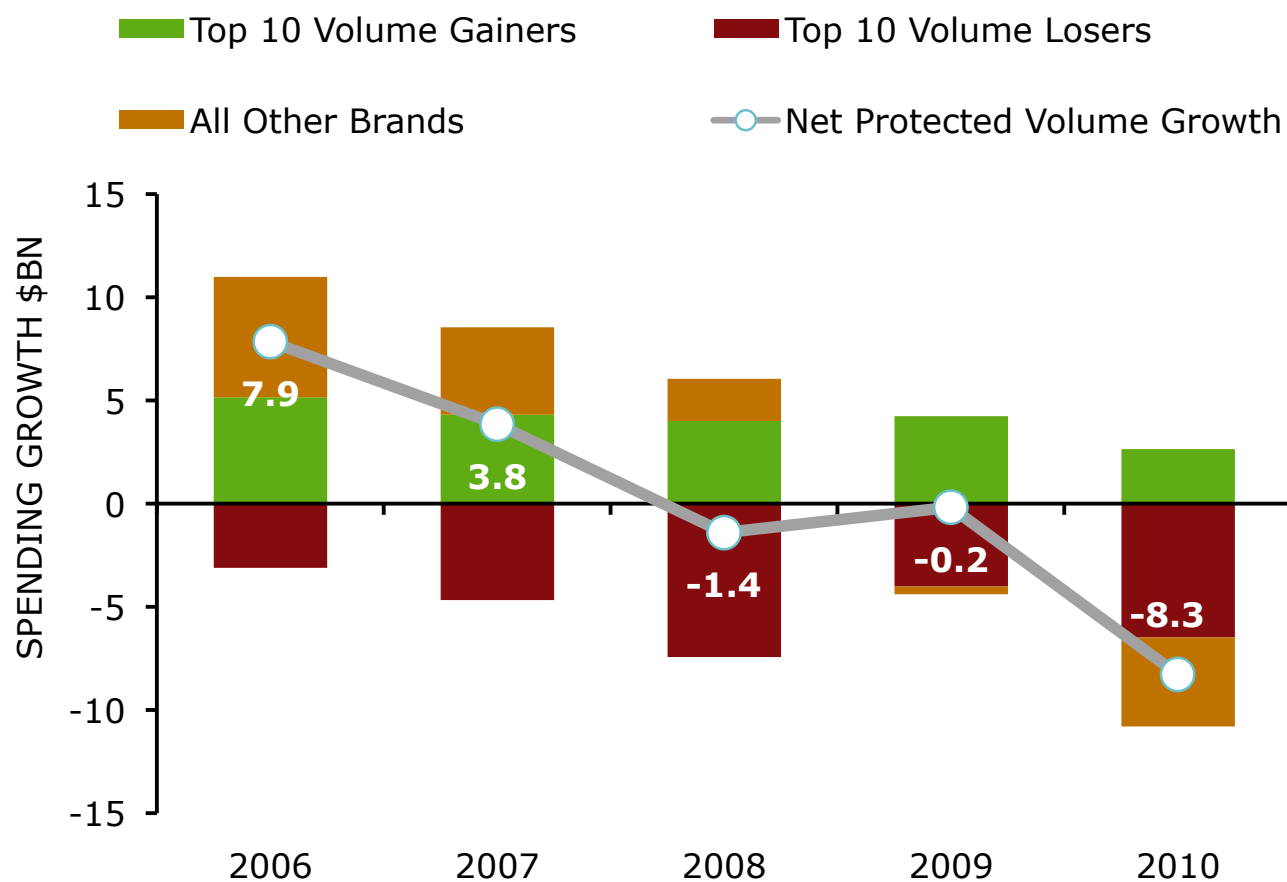
**Chart notes**

Each segment is mutually exclusive and reflects the change in spending between 2009 and 2010 in billions of dollars. Protected brands (brands that have not reached patent expiry) have been split based on growth through pricing dynamics and volume (absent pricing dynamics). New Brands segment includes all new products launched in 2009 and 2010. LOE – Loss of Exclusivity – includes branded products that lost exclusivity during 2010 or previous years.

Source: IMS Health, National Sales Perspectives, Dec 2010

# Historical volume growth drivers slowed or declined in 2010

## Protected Brand Volume Spending Growth



Source: IMS Health, National Sales Perspectives, Dec 2010

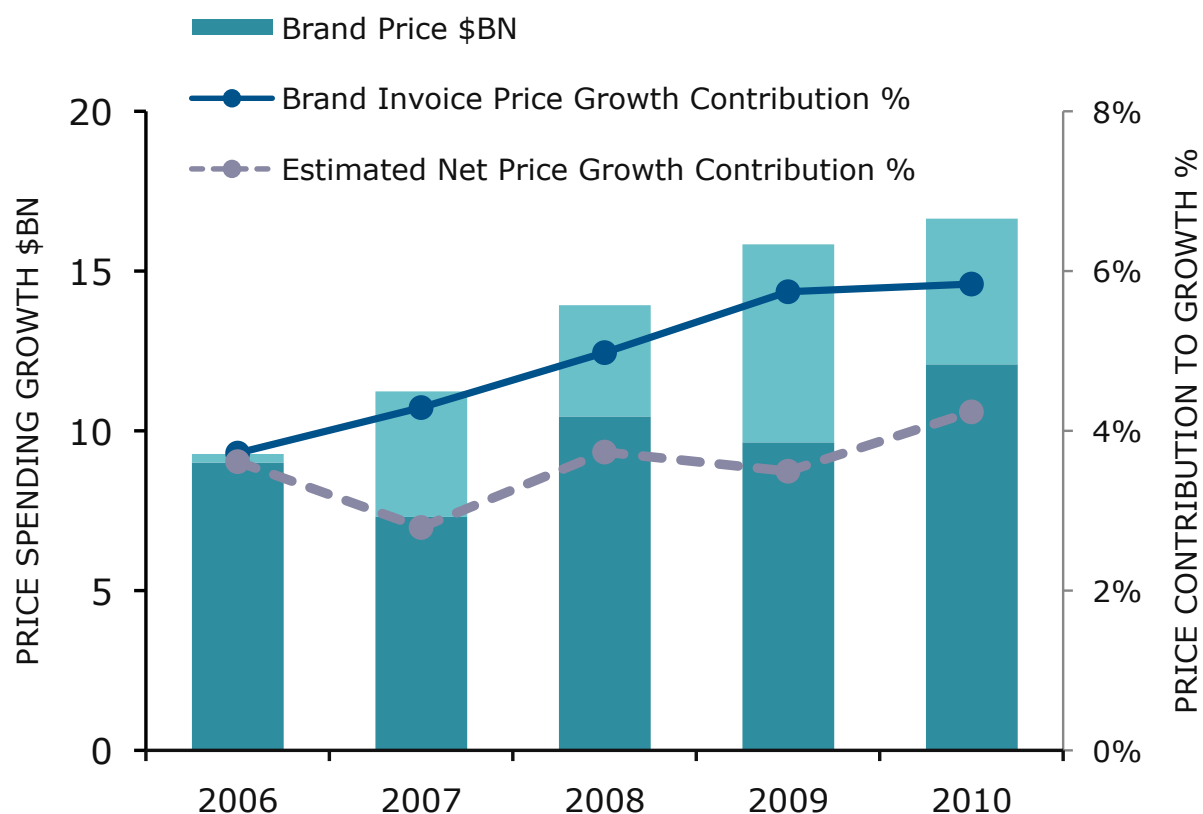
- Increased spending caused by higher volume of brands was \$2.6Bn in 2010 compared to \$4.2Bn in 2009.
- Declining spend due to lower volume was \$4.3Bn in 2010 vs. \$0.4Bn in 2009.
- The largest volume spending increases in 2010 were Crestor<sup>®</sup> (rosuvastatin), Lucentis<sup>®</sup> (ranibizumab) and Lantus<sup>®</sup> SoloSTAR<sup>®</sup> (insulin glargine).
- The products with the largest volume declines, each over \$500Mn, were due to a combination of upcoming patent expiries and patients transitioning to newer therapies: Lipitor<sup>®</sup> (atorvastatin) has steadily declined since 2006 and will lose patent protection later in 2011; Seroquel<sup>®</sup> (quetiapine) patent will expire in 2012; Provigil<sup>®</sup> (modafinil) has declined since next generation sleep disorder product Nuvigil<sup>®</sup> (armodafinil) launched in 2009.

### Chart notes

Protected brands include brands before loss of exclusivity and excludes new brands on the market for less than 24 months. Volume growth is defined as dollar growth driven by volume and mix changes, excluding price changes. Top 10 gainers and losers include products with the highest absolute dollar change in volume driven spending.

# Spending due to brand pricing trended up, but offset by rebates

## Protected Brand Price Spending Growth



- Spending on protected brands increased by \$16.6Bn in 2010 due to invoice price changes, compared to \$15.8Bn in the prior year.
- Growth of spending due to protected brand invoice pricing contributed to overall spending growth by 5.8% in 2010, compared to 5.7% in 2009.
- Increasing levels of off-invoice discounts and rebates have accompanied these invoice price increases resulting in an estimated \$4.5Bn or 1.6% (+/- 0.25%) lower net price growth contribution for protected brands.

### Chart notes

Protected brands include brands before loss of exclusivity. Price spending growth is dollar growth driven by invoice price changes and excludes the impact of rebates and contract pricing agreements.

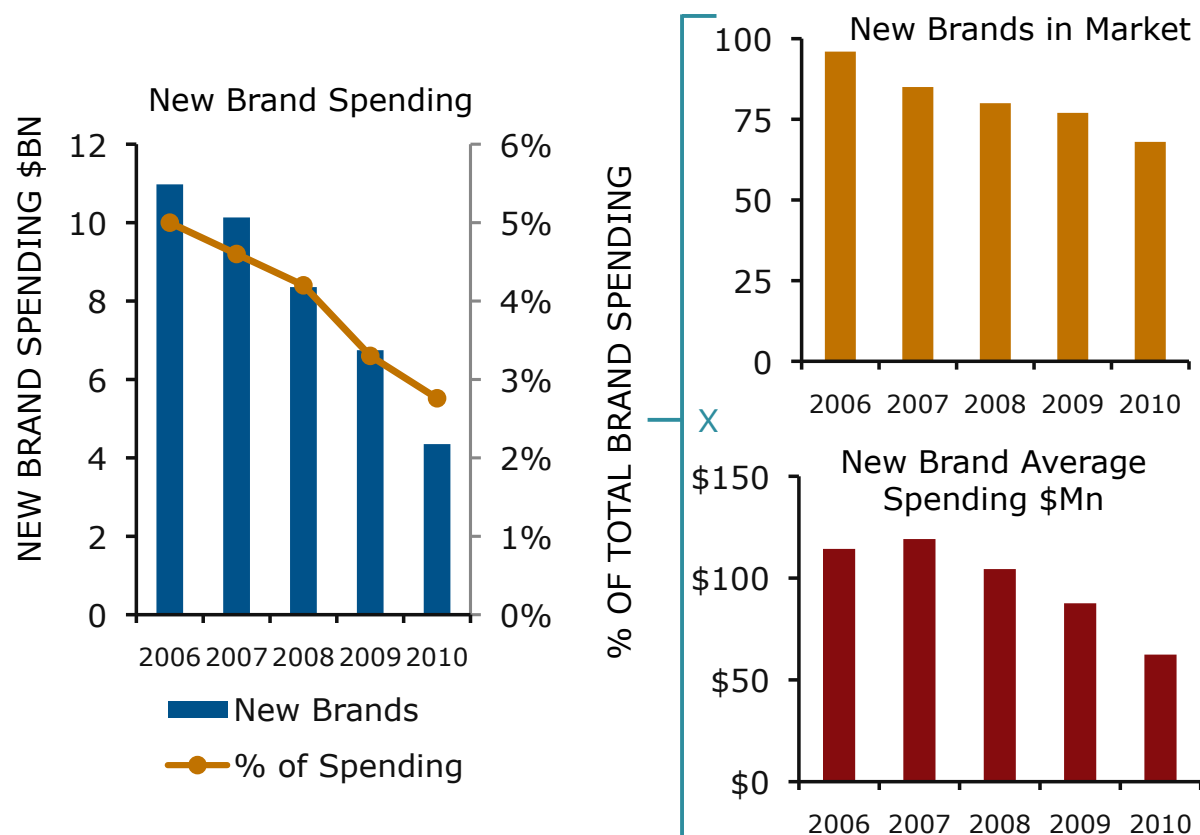
Price contribution to growth is contribution to market growth and does not reflect a price growth rate.

Estimated Net Price Growth is based on a comparison of company reported net sales and IMS reported sales at invoice prices from wholesaler transactions.

Source: IMS Health, National Sales Perspectives, Dec 2010

# New brands accounted for 2.8% of spending

## New Brand Spending



Source: IMS Health, National Sales Perspectives, Dec 2010

- Total drug spending on products that have been available to patients for less than 24 months has dropped to \$4.0Bn in 2010, down from \$6.7Bn the prior year, and \$11.0Bn in 2006.
- Spending on new medicines is now 2.8% of total brand spending, down from 5.0% in 2006.
- The number of products in this group totaled 69 in 2010, down from 96 in 2006, reflecting the decline in products emerging from research and development laboratories and receiving regulatory approval.
- Average spending per new branded product was \$62Mn in 2010, down from \$114Mn in 2006, reflecting a shift in the mix of new products toward orphan drugs and products with the same mechanism of action as existing products.

**Chart notes**

New brands defined as brands launched in the prior 24 months where sales are reported in NSP.

# Significant new therapy options became available to patients

## Brand Launches in 2010 by Type

BRAND LAUNCHES IN 2010				
	PRODUCT	INDICATION	PRODUCT	INDICATION
NEW MECHANISM	Actemra®	rheumatoid arthritis	Ablavar®	blood-pool agent
	Egrifta™	lipodystrophy	Actoplus Met®XR	type 2 diabetes
	Ella®	emergency contraceptive	Beyaz-28™	oral contraceptive
	Gilenya™	multiple sclerosis	Cysview™	imaging agent for bladder cancer
	Halaven™	breast cancer	Duet DHA™Balanced	prenatal vitamins
	Prolia™	osteoporosis	Dulera®	asthma
	Provenge®	prostate cancer	Ilotycin®	antibiotic
	Victoza®	diabetes	Iprivask™	thrombosis
	Vpriv®	Gaucher disease	Jalyn™	BPH
	Xgeva™	bone metastases	Kombiglyze™XR	type 2 diabetes
EXISTING MECHANISM	Fanapt®	schizophrenia	Lo Loestrin™FE	oral contraceptive
	Jevtana®	prostate cancer	Lumizyme®	Pompe disease
	Livalo®	cholesterol	Menveo®	meningococcal bacteria
	Natazia™	oral contraceptive	Mirapex®ER™	Parkinson's disease
	Pradaxa®	thrombosis	MuGard™	chemotherapy oral protectant
	Xeomin®	muscle activity	Prevnar 13®	pneumonia
ORPHAN	Ampyra®	multiple sclerosis, walking ability	Quadramet®	bone metastases
	Foloty®	T-cell lymphoma (CTCL)	Tekamlo™	hypertension
	Istodax®	T-cell lymphoma (CTCL)	Tozal®	macular degeneration
	Kalbitor®	angioedema	Tribenzor™	hypertension
	Zortress®	renal cell carcinoma	Vimovo™	osteoarthritis pain
		Zyclara®	skin irritation	
		Zyprexa®Relprevv™	schizophrenia	

- 10 innovative products were launched with novel mechanisms of action including a new oral therapy for multiple sclerosis, a monoclonal antibody for osteoporosis and bone metastases, and a therapeutic vaccine for prostate cancer.
- There were also 6 NCEs bringing new options with existing mechanisms including new treatments for rheumatoid arthritis, prostate cancer and meningitis.
- 5 orphan drugs were launched in 2010 bringing new options to patients in diseases with smaller prevalence.
- More than half of new brands in 2010 were not NCEs.

### Chart notes

Brand launches include all branded products launched in 2010 and exclude products approved in 2010 but not launched.

Other brands are not New Chemical Entities (NCE) or novel biologics; new and existing mechanism and orphan are NCEs.

New and existing mechanism products refer to whether they are first or subsequent to use the mechanism of action when launched in a therapy area.

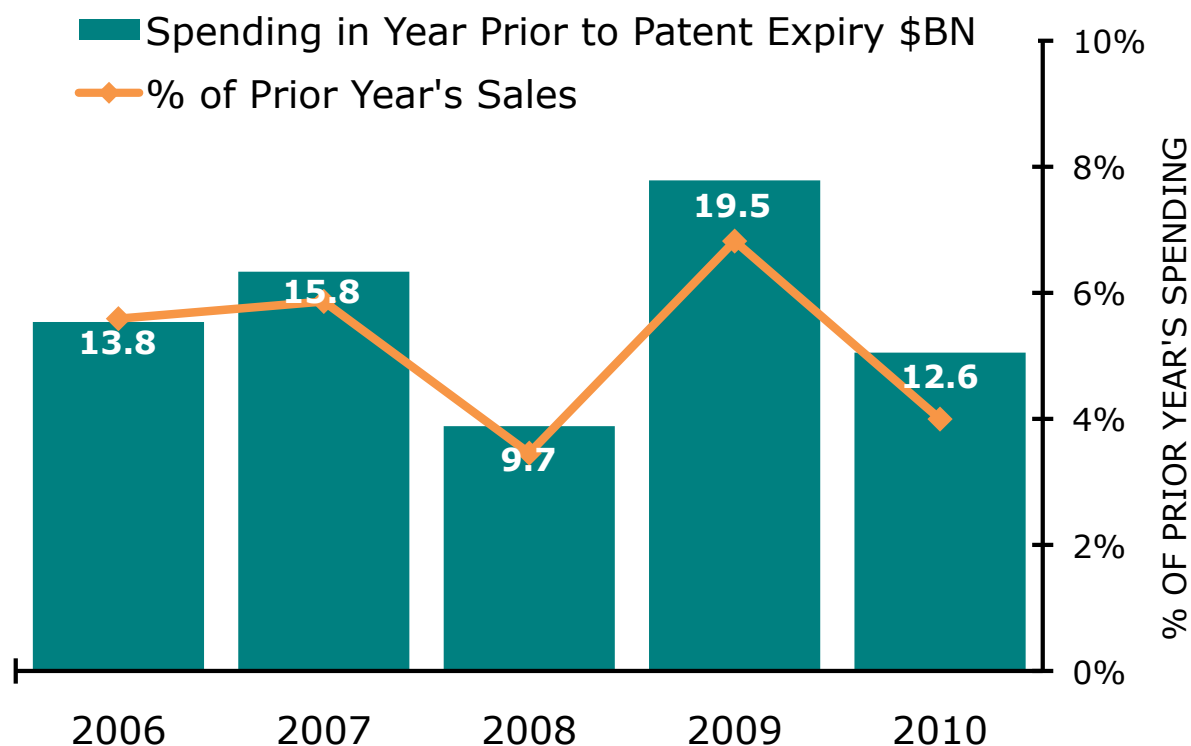
Orphan products are defined by FDA as treatments for diseases affecting less than 200,000 people per year.

Due to different approved indications, denosumab is marketed under two distinct names Prolia® and Xgeva®.

Source: IMS Institute for Healthcare Informatics

# Brands first exposed to generics totaled \$71.4Bn since 2006

## Spending on Products Before Generic Entry



Source: IMS Health, MIDAS, Market Segmentation, Dec 2010

- In 2010, \$12.6Bn in branded products faced patent loss and the entry of competition from generics compared to \$19.5Bn of products in 2009. This combined 2-year time period (\$32.1Bn) represents the highest amount ever.
- Major products that have had patents expiring in 2010 include Aricept<sup>®</sup> (donepezil), Lovenox<sup>®</sup> (enoxaparin) and Flomax<sup>®</sup> (tamsulosin), which each had annual spending above \$1Bn during the 12 months prior to their patent expiration.
- 2010 expiries bring the total share of the market facing generic competition for the first time to 25.7% over the past 5 years, up from 22.9% in the prior 5 years.

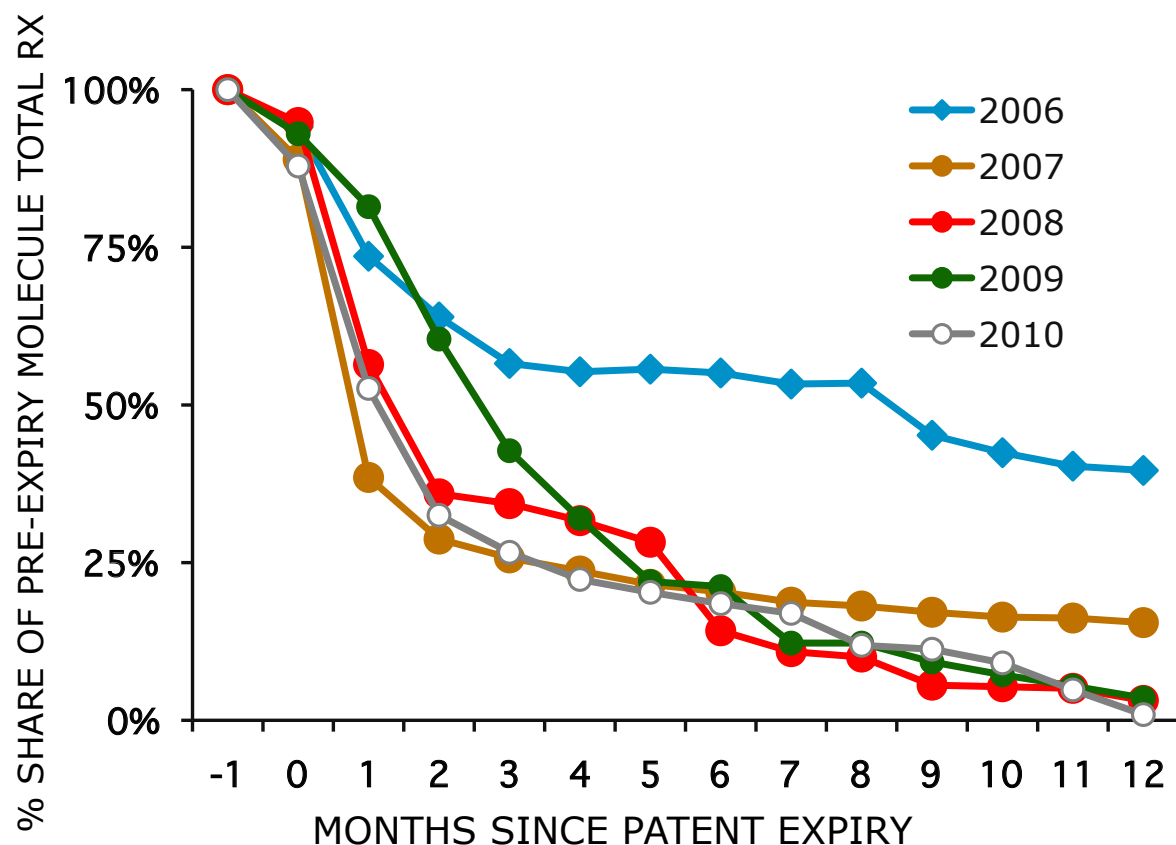
### Chart notes

Sales in prior year of brands that lost patent protection in each year.

Percentage of prior year spending represents the pre-expiry spending for products facing patent expiry compared to total market spending in the previous year.

# Generics capture over 80% of a brand's volume within 6 months

## Brand Prescription Share of Molecule Post-Expiry



Source: IMS Health, National Prescription Audit, Feb 2011

- Within six months of patent loss, patients received the generic form of the molecule 80% of the time in 2010.
- This reflected an increasingly efficient set of mechanisms for encouraging use of generics versus original brands and compared to 55% generic share of the molecule for those products that faced generic competition for the first time in 2006.

### Chart notes

Chart measures the percentage of branded pre-expiry (1 month) prescription share that remains in each month post expiry.

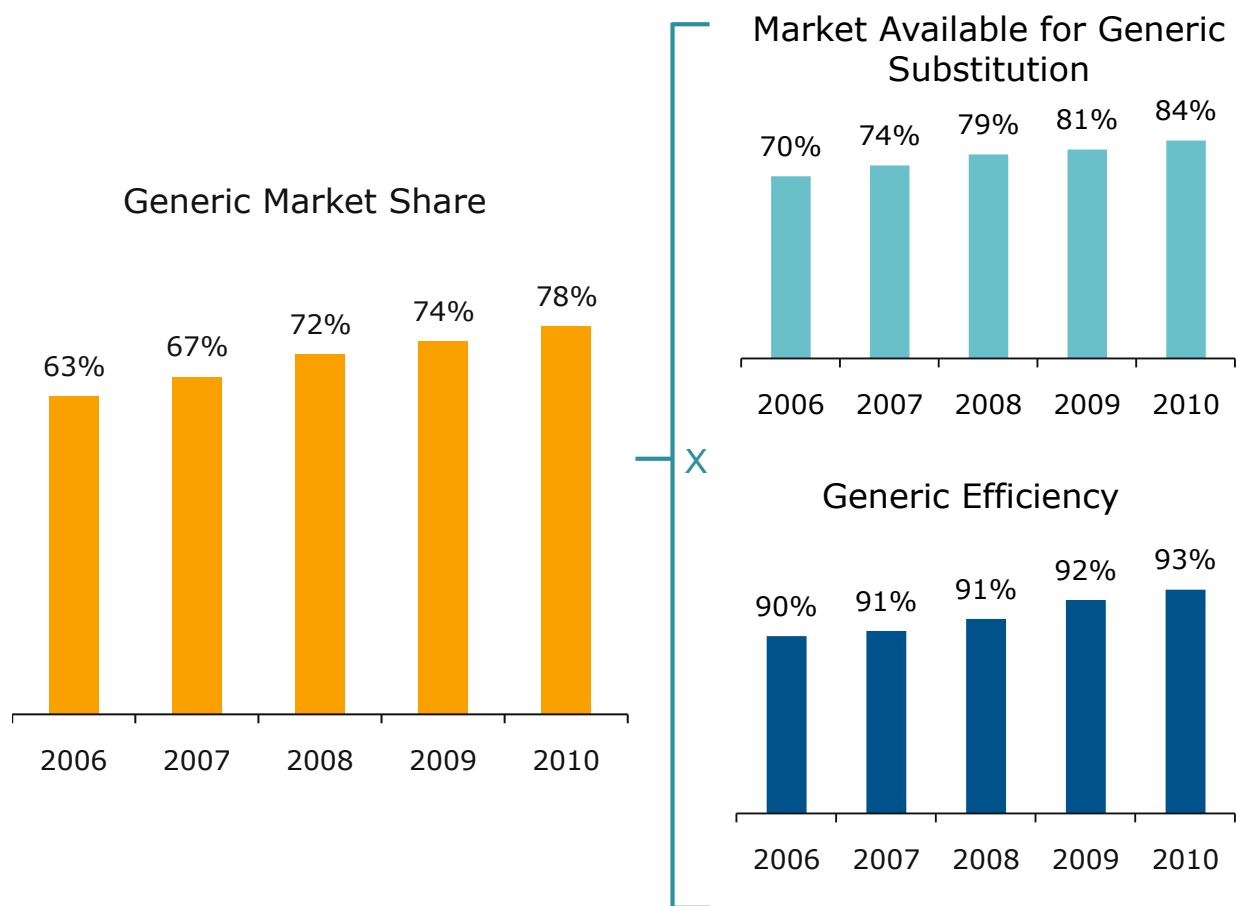
Brand shares include line extensions such as long-acting branded formulations of the molecule which may not be available generically.

Chart includes available data, and 2010 expiries have not all reached 12 months post-expiry.

Prescriptions dispensed include retail pharmacies, independent and chain drugstores, food store pharmacies, mail order and long-term care facilities.

# Total generic market share has risen over each of the past 5 years

## Generic Share of Total Prescriptions



Source: IMS Health, National Prescription Audit, Dec 2010

- Generic prescription share reached 78% in 2010 which was 4% higher than 2009 levels.
- This share gain is caused by a 3% gain in the available market for generics (81 to 84% in 2010) as well as a 1% gain in generic efficiency (93% vs. 92%).
- Most states allow pharmacists to substitute generics when available, others require a doctor's direct instruction or restrict substitution for specific therapies where differences between brands and generics may impact patients.
- The broad availability of discounted generics is a further positive influence on efficiency.

### Chart notes

Prescriptions dispensed include retail pharmacies and long-term care facilities.

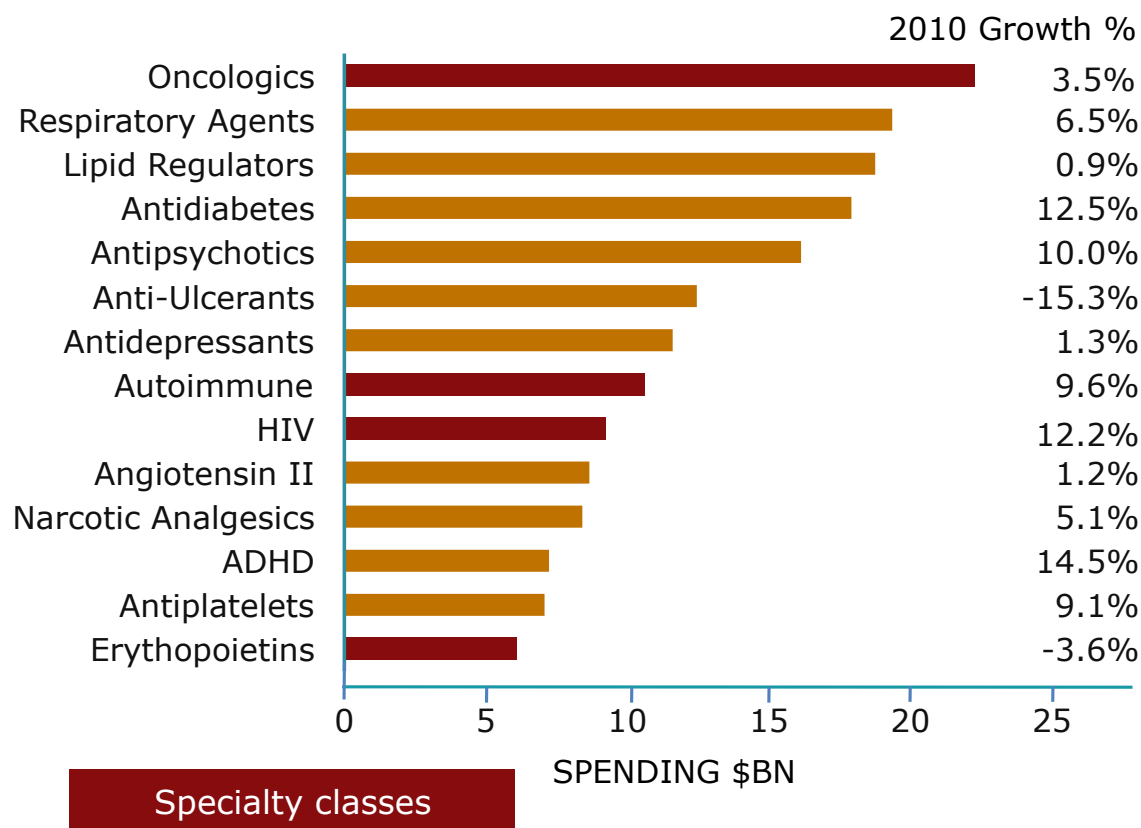
Generic prescription share represents the percentage of unbranded and branded generic prescriptions dispensed annually.

Generic availability is measured by evaluation of products at the form level that have a comparable generic available on the market in the time period.

Generic efficiency is calculated based on the percentage of generic prescribing of the generically available market.

# Therapy area spending growth reflected the innovation cycle

## Spending in Leading Therapy Classes



Source: IMS Health, National Sales Perspectives, Dec 2010

- The top 5 classes in 2010 based on spending were oncologics (\$22.3Bn), respiratory agents (\$19.3Bn), lipid regulators (\$18.7Bn), antidiabetes (16.9Bn) and antipsychotics (\$16.1Bn).
- Absolute spending growth gains were highest for antidiabetes, antipsychotics, respiratory agents, HIV antivirals and autoimmune disease.
- Specialty class spending was up more than 10% in HIV antivirals and autoimmune diseases, but up less than 3% in oncology and erythropoietins in 2010.
- 14 classes had over \$6Bn in spending in 2010 with anti-epileptics spending falling from \$6.8Bn to \$5.5Bn in 2010 following the entry of generics.

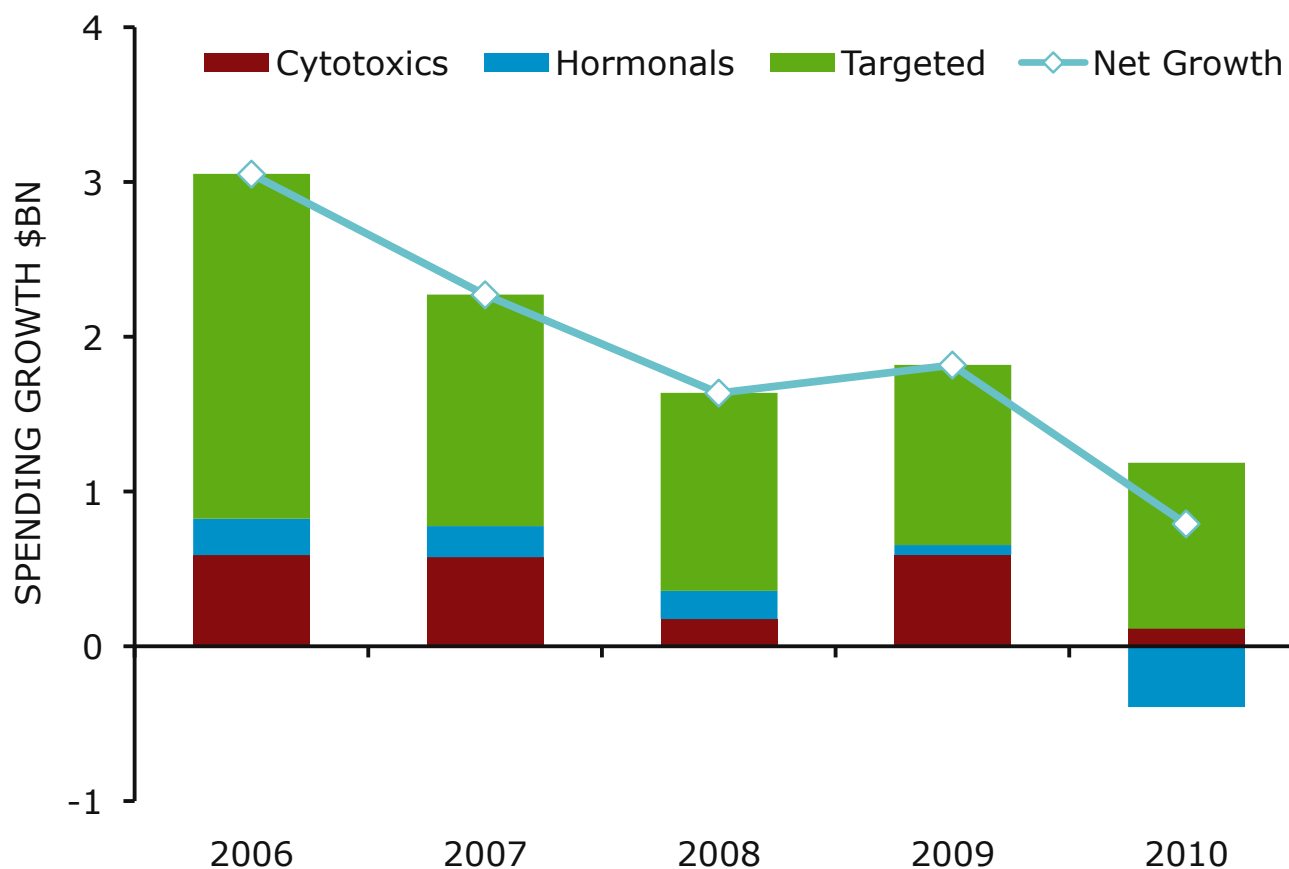
### Chart notes

Therapy class and Specialty definitions based on proprietary IMS Health definitions.

Value measured at Trade Price – the price paid to wholesalers or manufacturers by retail and non-retail channels and excluding off-invoice discounts and rebates that lower net prices received by manufacturers.

# Oncologics spending growth has slowed since 2006

Oncology Growth by Area



Source: IMS Health, National Sales Perspectives, Dec 2010

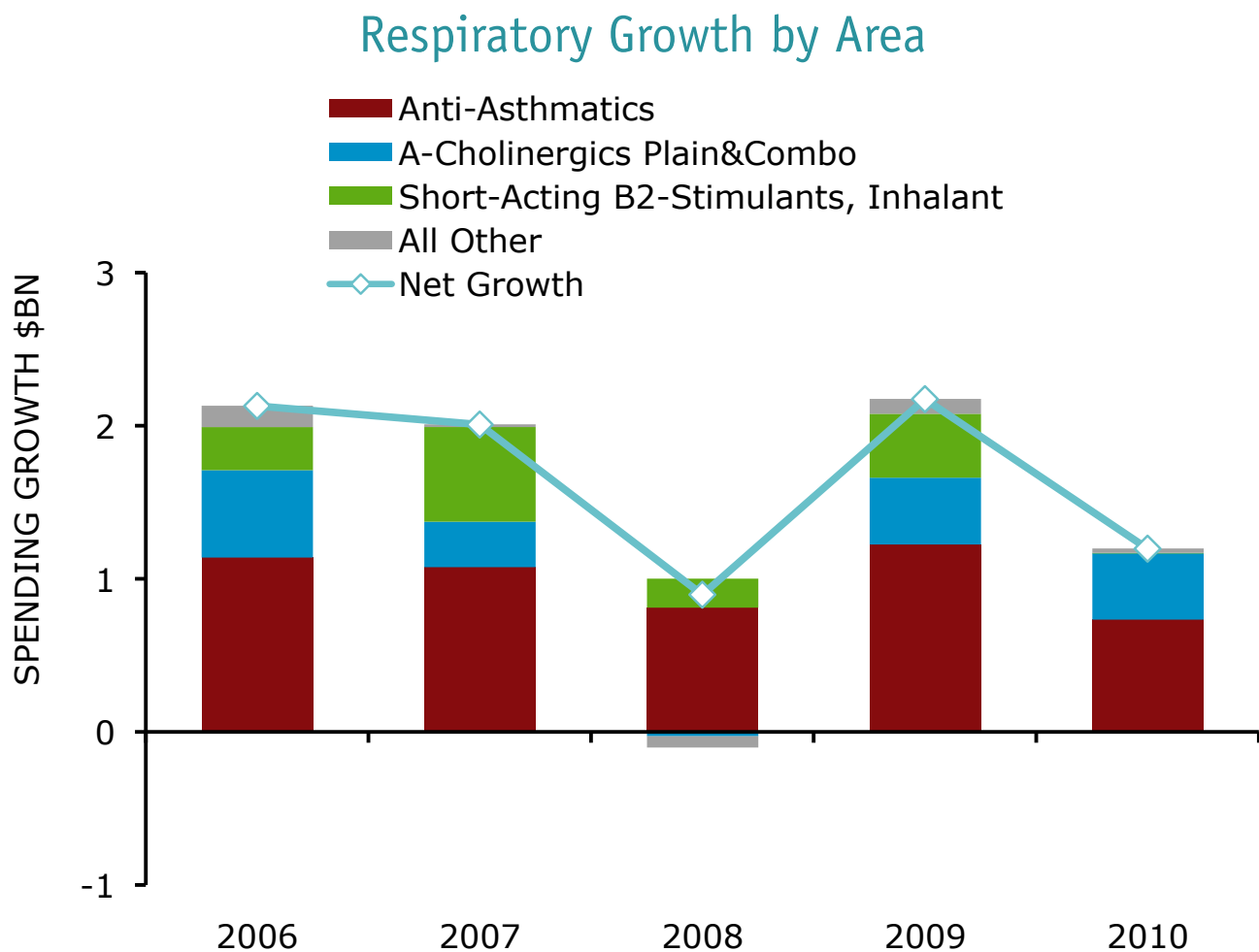
- Oncologics led all classes in spending in 2010 at \$22.3Bn.
- Spending grew by \$790Mn, the lowest level of growth in the past 5 years, and much lower growth than the \$3Bn recorded in 2006.
- Hormonal therapies, typically for breast and prostate cancer reduced spend by \$394Mn from the 2010 patent expiry for key product Arimidex® (anastrozole).
- Targeted agents – such as Avastin® (bevacizumab), Herceptin® (trastuzumab) and Rituxan® (rituximab) – have slowed spending growth from \$2.2Bn in 2006 to \$1.1Bn in 2010.

**Chart notes**

Therapy classes defined using ATC defined product groups and synthesized based on proprietary IMS Health definitions.

Spending growth defined as dollar growth driven by price, volume, new products and mix changes.

# Respiratory growth in 2010 slowed to half of 2009 growth



Source: IMS Health, National Sales Perspectives, Dec 2010

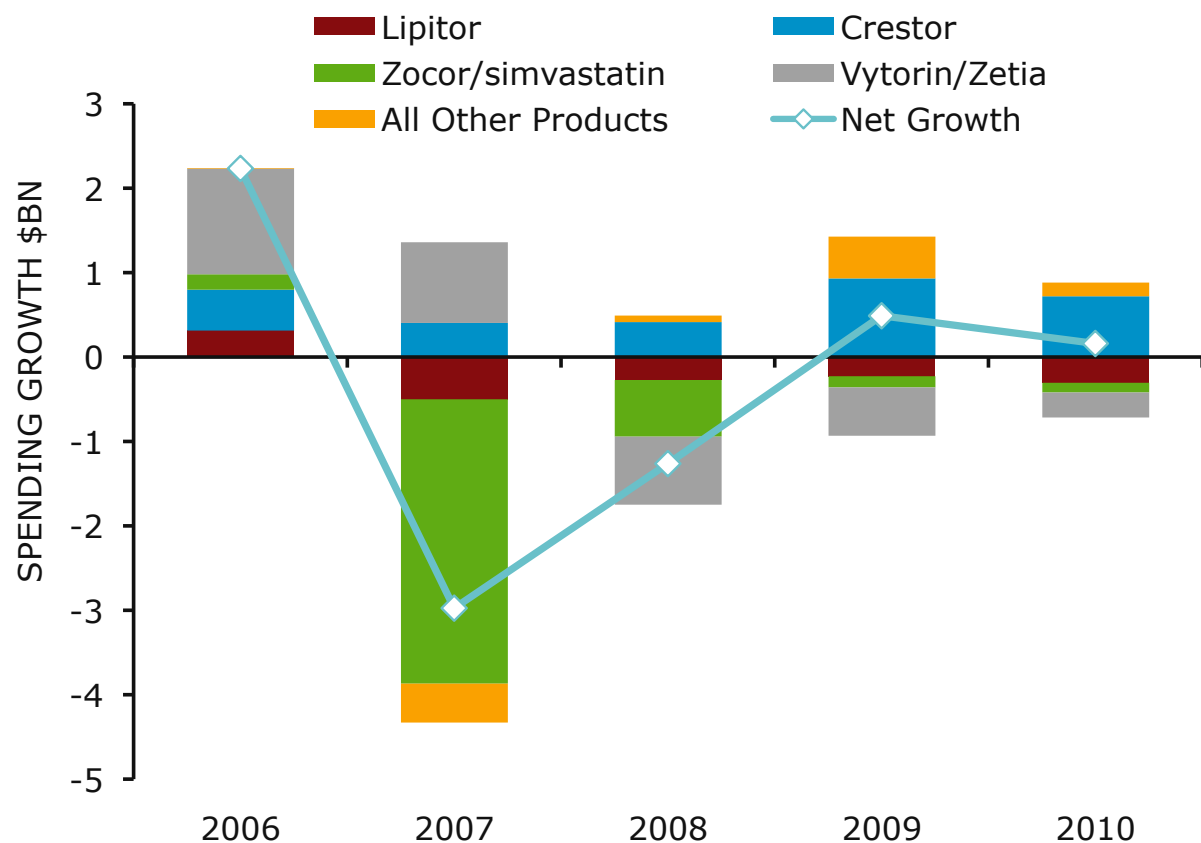
- Respiratory agent spending was \$19.3Bn in 2010. Spending growth slowed to \$1.1Bn in 2010 from \$2.2Bn in 2009, mostly due to slowing growth from B2-stimulants - often referred to as rescue inhalers - which saw spending growth slow to \$1Mn in 2010 from \$417Mn in 2009.
- Anti-asthmatics contributed 61% of the spending growth within respiratory in 2010 with \$730Mn in new spending. Anti-asthmatic products include Advair Diskus® (fluticasone/salmeterol) and Singulair® (montelukast).
- Anticholinergic agents used in the treatment of COPD contributed \$430Mn in growth in 2010, similar to 2009 levels. Products in this class include Spiriva® Handihaler® (tiotropium bromide inhalation powder) and Combivent® (albuterol and ipratropium inhalation).

**Chart notes**

Therapy classes defined using ATC defined product groups and synthesized based on proprietary IMS Health definitions. Spending growth defined as dollar growth driven by price, volume, new products and mix changes. COPD – Chronic Obstructive Pulmonary Disease.

# Spending on lipid regulators increased by \$160Mn in 2010

## Lipid Regulators Growth



Source: IMS Health, National Sales Perspectives, Dec 2010

- Lipid regulators were the third largest therapy class by spending in 2010 at \$18.7Bn, growing by only 0.9% with much of the class now available generically.
- 2010 growth of \$160Mn slowed from \$490Mn in 2009.
- Dispensed prescriptions exceeded 255Mn in 2010, up from 210Mn in 2006, with 54% of prescriptions filled with a generic and the remainder filled as brands, primarily Lipitor® and Crestor®.
- Crestor® (rosuvastatin) led spending increases in 2010 with \$717Mn in new growth.
- Lipitor® (atorvastatin) continues to lead spending in the class, but declined by 4.1% in 2010. It was second to generic simvastatin in prescription volume in the class, and is expected to face generic competition in late 2011.

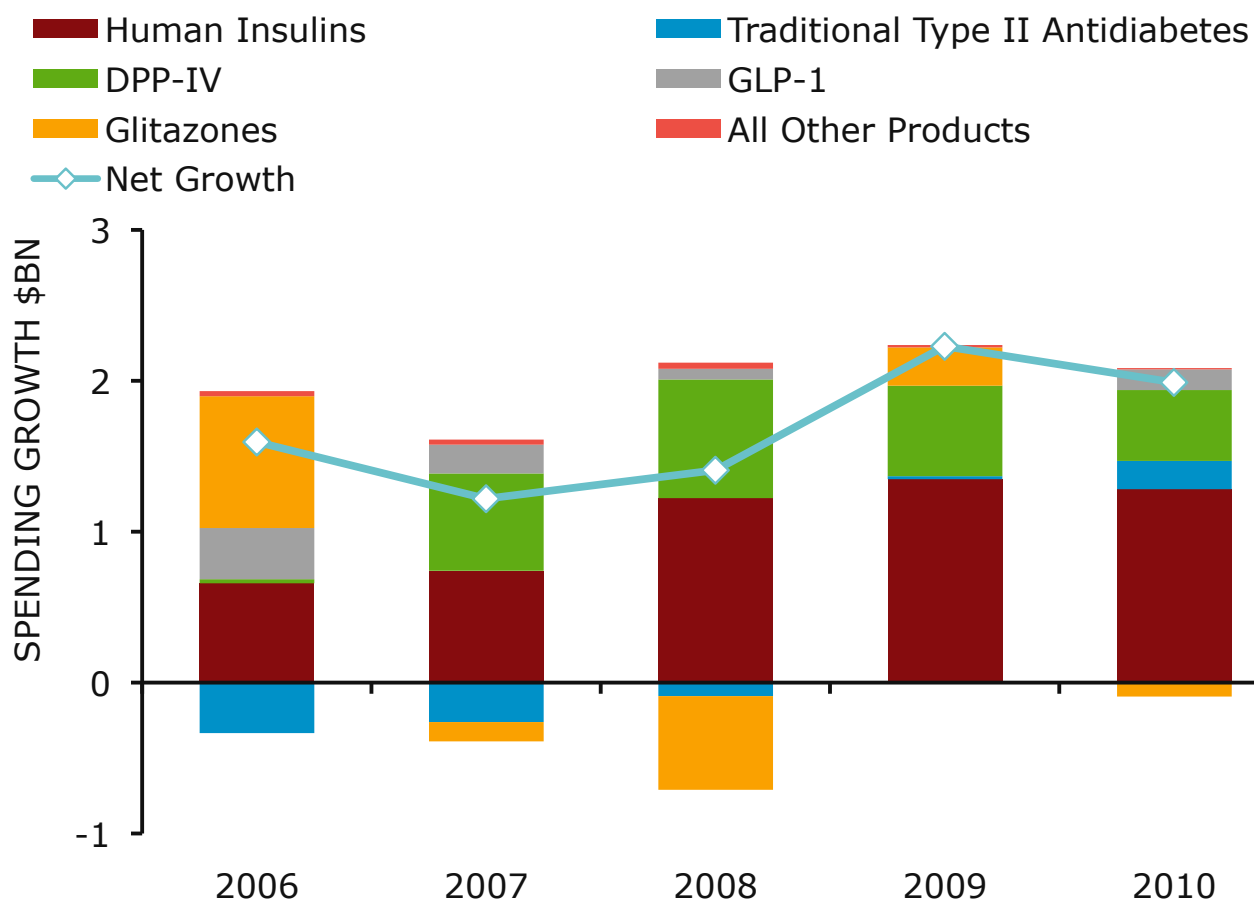
### Chart notes

Therapy classes defined using ATC defined product groups and synthesized based on proprietary IMS Health definitions.

Spending growth defined as dollar growth driven by price, volume, new products and mix changes.

# Antidiabetes spending grew by \$1.9Bn in 2010

## Antidiabetes Growth by Area



Source: IMS Health, National Sales Perspectives, Dec 2010

- Diabetes spending growth remained high at \$1.9Bn in 2010 versus \$2.2Bn in 2009.
- Patients filled 165Mn prescriptions in 2010, up 3.8% over 2009; additionally, more than 59% were filled with generics.
- Human insulins and synthetic analogues contributed 64% of growth (\$1.3Bn) led by Lantus® SoloSTAR® (insulin glargine).
- Products using the DPP-IV mechanism contributed steady growth since their initial introduction in 2007 and include Januvia® (sitagliptin) and Onglyza™ (saxagliptin).
- GLP-1 products Byetta® (exenatide) and Victoza® (liraglutide) together had spending growth of \$137Mn.

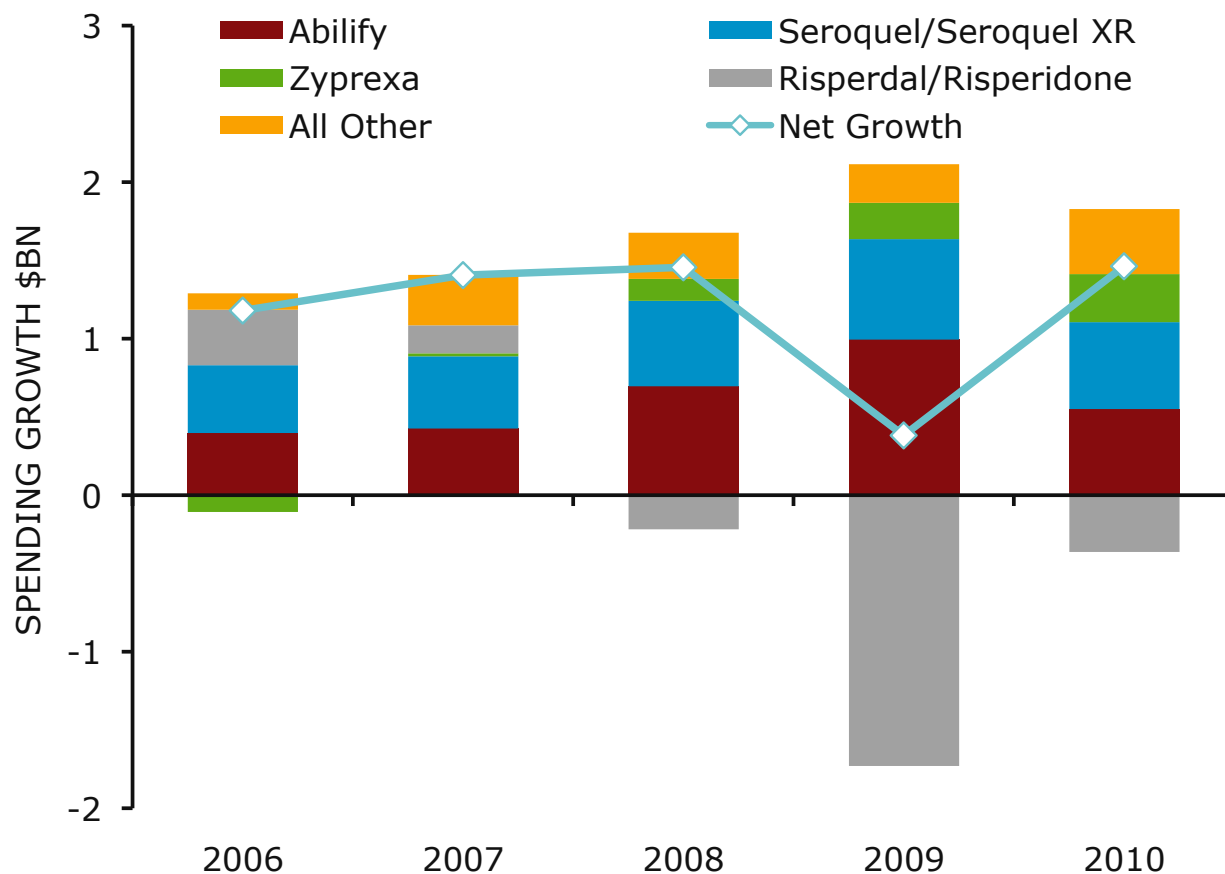
### Chart notes

Therapy classes defined using ATC defined product groups and synthesized based on proprietary IMS Health definitions.

Spending growth defined as dollar growth driven by price, volume, new products and mix changes.

# Antipsychotic spending grew in 2010 by \$1.4Bn

Antipsychotics Growth by Area



Source: IMS Health, National Sales Perspectives, Dec 2010

- Antipsychotic spending grew by \$1.4Bn in 2010 versus \$300Mn in 2009, when the patent expiry of Risperdal® (risperidone) in 2008 impacted spending.
- Patients filled 56Mn prescriptions in 2010, up 2.1%, with 90% prescribed newer generation atypical antipsychotics.
- Top brands Abilify® (aripiprazole), Seroquel® (quetiapine) and Zyprexa® (olanzapine) led spending growth in 2010 with a combined \$1.4Bn.

**Chart notes**

Therapy classes defined using ATC defined product groups and synthesized based on proprietary IMS Health definitions.

Spending growth defined as dollar growth driven by price, volume, new products and mix changes.

## Notes on sources

This report is based on the IMS services detailed in the panel on the right.

Analyses exclude OTC products and focus on prescription-bound products (including Insulins which are available without prescription). Spending is reported at wholesaler invoice prices and does not reflect off-invoice discounts and rebates.

**IMS National Sales Perspectives (NSP)<sup>™</sup>** measures spending within the U.S. pharmaceutical market by pharmacies, clinics, hospitals and other healthcare providers. It is the only source to report 100 percent coverage of the retail and non-retail channels for national pharmaceutical sales at actual transaction prices.

**IMS National Prescription Audit (NPA)<sup>™</sup>** is a suite of services that provides the industry standard source of national prescription activity for all products.

**NPA Market Dynamics (NPA-MD)<sup>™</sup>** is a national-level prescription offering that links NPA with anonymized patient-level data (APLD) which tracks patients over time and enables analysis such as whether a patient's prescription was new, switched from another medicine, or added to an existing regimen in the last year. Diagnoses, compliance and persistence, as well as ethnicity analytics are among other analyses that are possible.

**IMS Formulary Focus<sup>™</sup> & Plantrak CoPay<sup>™</sup>** are part of the IMS Managed Market Services suite and include tracking of health plan formulary design, link to IMS NPA suite, and measure copayments at the point of sale.

**IMS National Disease and Therapeutic Index (NDTI)<sup>™</sup>** is a database produced using a panel of physicians to project patient contacts for the universe of office-based physicians in the U.S. Each panel member reports on all patient contacts for two consecutive workdays each quarter for use in projections. Information collected includes patient demographics, diagnosis and treatment information, and physician demographics.

**IMS MIDAS<sup>™</sup>** is an analysis platform used to assess worldwide healthcare markets. It aggregates IMS's global audits and normalizes to international standards of product naming, company ownership, currency exchange rates, volume metrics, and product segmentations, and estimates of price levels at different points in the supply chain. Segmentations include therapy classes, forms, dosages, price levels and those related to brands, generics and patent protection. IMS has created a new international standard that measures the protected, unprotected and generics markets.

# Appendix 1

## Top Therapeutic Classes by Spending

SPENDING \$BN		2010	2009	2008	2007	2006
<b>TOTAL US MARKET</b>		<b>307.4</b>	<b>300.3</b>	<b>285.7</b>	<b>280.5</b>	<b>270.3</b>
1	Oncologics	22.3	21.5	19.7	18.1	15.8
2	Respiratory Agents	19.3	18.1	16.0	15.1	13.1
3	Lipid Regulators	18.8	18.6	18.1	19.4	22.4
4	Antidiabetes	16.9	15.0	12.8	11.4	10.2
5	Antipsychotics	16.1	14.7	14.3	12.8	11.4
6	Anti-Ulcerants	11.9	14.1	14.2	14.6	14.1
7	Antidepressants	11.6	11.5	11.7	11.7	13.3
8	Autoimmune Diseases	10.6	9.7	8.6	7.6	7.0
9	HIV Antivirals	9.2	8.2	7.1	6.2	5.6
10	Angiotensin II	8.7	8.6	7.6	6.5	5.7
11	Narcotic Analgesics	8.4	8.0	7.3	6.7	5.7
12	ADHD	7.2	6.3	5.2	4.6	4.0
13	Platelet Aggregation Inhibitors	7.1	6.5	5.7	5.0	4.7
14	Erythropoietins	6.1	6.3	6.9	8.4	9.8
15	Multiple Sclerosis	5.7	4.9	4.1	3.4	3.2
16	Anti-Epileptics	5.6	6.9	11.1	10.0	8.7
17	Vaccines (Pure, Comb, Other)	5.0	4.6	5.0	5.9	3.9
18	Hormonal Contraceptives	4.8	4.7	4.5	4.1	3.9
19	Anti-Alzheimers	4.5	4.0	3.4	2.9	2.5
20	Immunostimulating Agents	4.2	4.1	4.1	4.1	4.0

Source: IMS Health, National Sales Perspectives, Dec 2010

### Appendix notes

Therapy classes defined using ATC defined product groups and synthesized based on proprietary IMS Health definitions.

Report reflects Prescription-bound products including Insulins (and excludes other products such as OTC).

IMS routinely updates its market audits, which can and does result in changes to previously reported market size and growth rates.

Updated April 7, 2011.

## Appendix 2

### Top Therapeutic Classes by Prescriptions

DISPENSED PRESCRIPTIONS MN	2010	2009	2008	2007	2006
<b>Total US Market</b>	<b>3,995.2</b>	<b>3,949.2</b>	<b>3,866.3</b>	<b>3,824.9</b>	<b>3,706.4</b>
1 Lipid Regulators	255.4	249.7	237.1	228.8	210.4
2 Antidepressants	253.6	246.1	239.8	236.5	231.1
3 Narcotic Analgesics	244.3	241.0	238.6	230.5	220.7
4 Beta Blockers (Plain & Combo)	191.5	167.8	160.7	160.3	156.6
5 Ace Inhibitors	168.7	165.7	160.2	158.0	154.2
6 Antidiabetics	165.0	159.0	154.7	152.1	147.8
7 Respiratory Agents	153.3	152.4	146.3	146.0	139.8
8 Anti-Ulcerants	147.1	145.7	138.8	133.9	127.9
9 Diuretics	131.0	131.7	132.4	135.2	138.1
10 Anti-Epileptics	121.7	115.3	109.3	101.8	94.9
11 Tranquilizers	108.6	104.0	100.0	97.6	94.4
12 Thyroid Preps	107.2	105.3	105.5	102.8	101.4
13 Calcium Antagonists (Plain & Combo)	97.9	94.9	91.9	90.4	90.5
14 Antirheumatics	95.0	92.5	89.8	89.0	88.6
15 Hormonal Contraceptives	92.3	93.9	93.8	94.0	94.3
16 Angiotensin II	83.7	84.4	86.1	83.1	78.5
17 Penicillins	76.1	76.6	74.5	77.1	79.1
18 Macrolides & Similar Type	73.9	69.3	66.4	62.8	60.9
19 Vitamins & Minerals	71.9	69.8	64.7	61.6	60.6
20 Hypnotics & Sedatives	66.0	65.5	60.3	57.4	52.3

Source: IMS Health, National Prescription Audit, Dec 2010

#### Appendix notes

Therapy classes defined using ATC defined product groups and synthesized based on proprietary IMS Health definitions.

Report reflects Prescription-bound products including Insulins (and excludes other products such as OTC).

Includes all prescriptions dispensed through retail pharmacies - including independent and chain drug stores, food store pharmacies and mail order as well as long-term care facilities.

Prescription counts are not adjusted for length of therapy. 90-day and 30-day prescriptions are both counted as one prescription.

Updated April 7, 2011

# Appendix 3

## Top Products by Spending

SPENDING \$BN	2010	2009	2008	2007	2006
<b>Total US Market</b>	<b>307.4</b>	<b>300.3</b>	<b>285.7</b>	<b>280.5</b>	<b>270.3</b>
1 Lipitor®	7.2	7.6	7.8	8.1	8.6
2 Nexium®	6.3	6.3	5.9	5.4	5.1
3 Plavix®	6.1	5.6	4.8	3.9	2.9
4 Advair Diskus®	4.7	4.7	4.4	4.2	3.9
5 Abilify®	4.6	4.0	3.0	2.3	1.9
6 Seroquel®	4.4	4.2	3.8	3.4	3.0
7 Singulair®	4.1	3.7	3.5	3.4	3.0
8 Crestor®	3.8	3.0	2.1	1.7	1.3
9 Actos®	3.5	3.4	3.1	2.9	2.6
10 Epogen®	3.3	3.2	3.0	3.0	3.2
11 Remicade®	3.3	3.2	3.0	2.7	2.5
12 Enbrel®	3.3	3.3	3.1	3.1	3.1
13 Cymbalta®	3.2	2.8	2.4	1.9	1.2
14 Avastin®	3.1	3.0	2.5	2.2	1.7
15 Oxycontin®	3.1	2.9	2.3	1.0	0.8
16 Neulasta®	3.0	3.0	3.0	3.0	2.8
17 Zyprexa®	3.0	2.7	2.5	2.4	2.4
18 Humira®	2.9	2.5	2.1	1.5	1.2
19 Lexapro®	2.8	2.8	2.7	2.6	2.4
20 Rituxan®	2.8	2.6	2.4	2.2	2.0
21 Aricept®	2.5	2.3	1.9	1.6	1.4
22 Lovenox®	2.3	2.8	2.6	2.3	2.0
23 Atripla®	2.2	1.9	1.4	0.9	0.2
24 Copaxone®	2.2	1.7	1.4	1.1	1.0
25 Spiriva®Handihaler®	2.0	1.7	1.4	1.1	0.7

Source: IMS Health, National Sales Perspectives, Dec 2010

### Appendix notes

Report reflects Prescription-bound products including Insulins (and excludes other products such as OTC)

IMS routinely updates its market audits, which can and does result in changes to previously reported market size and growth rates.

Updated April 7, 2011

# Appendix 4

## Top Products by Prescriptions

DISPENSED PRESCRIPTIONS MN	2010	2009	2008	2007	2006
<b>Total US Market</b>	<b>3,995.2</b>	<b>3,949.2</b>	<b>3,866.3</b>	<b>3,825.1</b>	<b>3,706.4</b>
1 hydrocodone/acetaminophen	131.2	128.2	124.1	119.2	112.4
2 simvastatin	94.1	83.8	67.5	47.9	14.4
3 lisinopril	87.4	82.8	76.8	71.1	65.2
4 levothyroxine sodium	70.5	66.0	61.2	54.6	49.8
5 amlodipine besylate	57.2	51.3	44.6	27.9	—
6 omeprazole (RX)	53.4	45.4	35.1	26.6	18.0
7 azithromycin	52.6	53.8	51.0	46.3	36.5
8 amoxicillin	52.3	52.4	50.9	53.2	54.7
9 metformin HCL	48.3	44.3	42.3	40.2	38.4
10 hydrochlorothiazide	47.8	47.9	48.5	48.5	48.0
11 alprazolam	46.3	43.9	41.7	39.8	37.6
12 Lipitor®	45.3	51.7	58.5	65.8	74.0
13 furosemide	43.4	43.5	44.1	44.2	44.3
14 metoprolol tartrate	38.9	41.1	32.6	31.6	29.2
15 zolpidem tartrate	38.0	35.1	29.9	16.0	—
16 atenolol	36.3	39.3	41.8	44.7	46.1
17 sertraline HCL	35.7	34.2	32.7	31.6	10.8
18 metoprolol succinate	33.0	26.9	41.5	21.0	0.6
19 citalopram HBR	32.1	27.1	22.4	17.8	14.0
20 warfarin sodium	32.0	31.6	30.2	28.8	26.7
21 oxycodone/acetaminophen	31.9	30.2	28.4	25.9	22.8
22 ibuprofen (RX)	31.1	30.3	28.5	27.7	26.8
23 Plavix®	29.5	29.9	28.9	25.1	18.4
24 gabapentin	29.3	25.4	22.2	20.0	18.5
25 Singulair®	28.7	28.6	29.0	31.0	28.1

Source: IMS Health, National Prescription Audit, Dec 2010

### Appendix notes

Report reflects Prescription-bound products including Insulins (and excludes other products such as OTC).

Generics of the same molecule manufactured by different companies combined .

Includes all prescriptions dispensed through retail pharmacies - including independent and chain drug stores, food store pharmacies and mail order as well as long-term care facilities.

Prescription counts are not adjusted for length of therapy. 90-day and 30-day prescriptions are both counted as one prescription.

Updated April 7, 2011

## Appendix 5

### Dispensing Locations by Spending

SPENDING \$BN	2010	2009	2008	2007	2006
<b>Total US Prescription Market</b>	<b>307.4</b>	<b>300.3</b>	<b>285.7</b>	<b>280.5</b>	<b>270.3</b>
Chain Stores	108.1	105.4	99.7	96.0	91.9
Mail Service	52.6	51.5	46.5	44.1	42.7
Independent	37.9	37.3	36.9	37.5	36.5
Clinics	36.2	34.8	33.0	32.7	29.8
Non-Federal Hospitals	28.0	27.6	26.8	26.4	26.1
Food Stores	21.3	21.2	20.4	21.5	21.9
Long-Term Care	14.8	13.8	13.7	13.3	12.8
Federal Facilities	3.9	4.1	3.9	4.0	3.7
Home Health Care	2.5	2.5	2.5	2.5	2.4
HMO	1.1	1.1	1.3	1.5	1.6
Miscellaneous	1.0	1.0	1.0	1.0	0.9

Source: IMS Health, National Sales Perspectives, Dec 2010

#### Appendix notes

Report reflects Prescription-bound products including Insulins (and excludes other products such as OTC)

IMS routinely updates its market audits, which can and does result in changes to previously reported market size and growth rates.

Updated April 7, 2011

## Appendix 6

### Dispensing Locations by Prescriptions

DISPENSED PRESCRIPTIONS MN	2010	2009	2008	2007	2006
<b>Total US Prescription Market</b>	<b>3,995.2</b>	<b>3,949.2</b>	<b>3,866.3</b>	<b>3,825.1</b>	<b>3,706.4</b>
Chain Stores	2,173.6	2,129.5	2,046.8	2,012.0	1,946.8
Independent	748.3	754.6	769.4	782.7	764.8
Food Stores	490.3	487.8	481.2	478.1	475.5
Long-Term Care	318.8	316.0	307.4	295.0	287.1
Mail Service	264.2	261.3	261.5	257.3	232.2

Source: IMS Health, National Prescription Audit, Dec 2010

#### Appendix notes

Report reflects Prescription-bound products including Insulins (and excludes other products such as OTC).

Includes all prescriptions dispensed through retail pharmacies - including independent and chain drug stores, food store pharmacies and mail order as well as long-term care facilities.

Prescription counts are not adjusted for length of therapy. 90-day and 30-day prescriptions are both counted as one prescription.

Updated April 7, 2011

## About the Institute

The IMS Institute for Healthcare Informatics leverages collaborative relationships in the public and private sectors to strengthen the vital role of information in advancing healthcare globally. Its mission is to provide key policy setters and decision makers in the global health sector with unique and transformational insights into healthcare dynamics derived from granular analysis of information.

Fulfilling an essential need within healthcare, the Institute delivers objective, relevant insights and research that accelerate understanding and innovation critical to sound decision making and improved patient care.

With access to IMS's extensive global data assets and analytics, the Institute works in tandem with a broad set of healthcare stakeholders, including government agencies, academic institutions, the life sciences industry and payers, to drive a research agenda dedicated to addressing today's healthcare challenges.

By collaborating on research of common interest, it builds on a long-standing and extensive tradition of using IMS information and expertise to support the advancement of evidence-based healthcare around the world.

## RESEARCH AGENDA

*The research agenda for the Institute centers on five areas considered vital to the advancement of healthcare globally:*

---

Proving the effective **use of information** by healthcare stakeholders globally to improve health outcomes, reduce costs and increase access to available treatments.

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Demonstrating the **performance of medical care** to optimize and drive better understanding of disease causes, treatment consequences and measures to improve quality and cost of healthcare delivered to patients.

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Understanding the future **global role for biopharmaceuticals**, the dynamics that shape the market and implications for manufacturers, public and private payers, providers, patients, pharmacists and distributors.

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Researching the role of **innovation in health system products, processes, and delivery systems**, and the business and policy systems that drive innovation.

---

Informing and advancing the healthcare agendas in **developing nations** through information and analysis.

## GUIDING PRINCIPLES

*The Institute operates from a set of Guiding Principles:*

---

The advancement of healthcare globally is a vital, continuous process.

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Timely, high-quality and relevant information is critical to sound healthcare decision making.

---

Insights gained from information and analysis should be made widely available to healthcare stakeholders.

---

Effective use of information is often complex, requiring unique knowledge and expertise.

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The ongoing innovation and reform in all aspects of healthcare requires a dynamic approach to understanding the entire healthcare system.

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Personal health information is confidential and patient privacy must be protected.

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The private sector has a valuable role to play in collaborating with the public sector related to the use of healthcare data.