



PARTHENON

Pharmaceutical Market Trends

External research and findings

Alex Jung
2017



The “Traditional” Pharma Value Chain

The current pharma value chain has numerous players, each bringing their unique value into the economic model

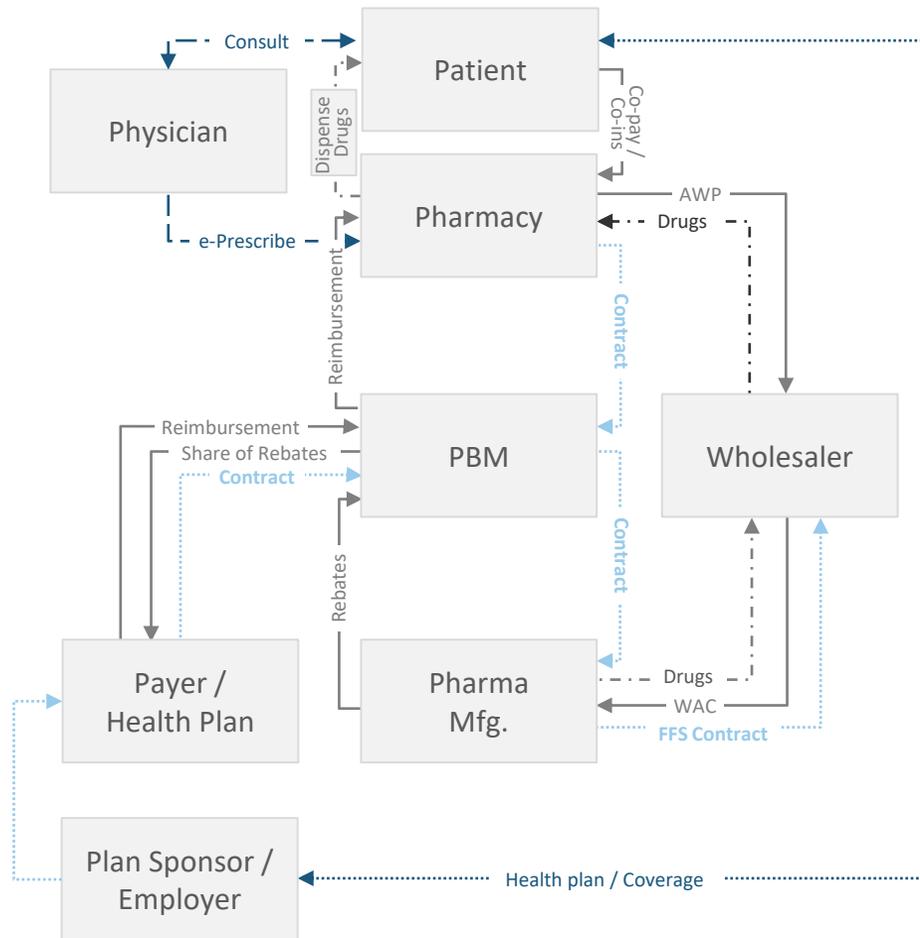
Stakeholder	What’s their role?	What’s their value?
Pharma Manufacturer	<ul style="list-style-type: none"> ▶ Supplier / manufacturer of generic, branded, specialty, and biologics drugs 	<ul style="list-style-type: none"> ▶ Provides therapies beneficial to patient outcomes, selling to wholesalers; facilitates access to therapies through access programs
Wholesaler	<ul style="list-style-type: none"> ▶ Middleman, group purchaser of drugs, distribution infrastructure 	<ul style="list-style-type: none"> ▶ Purchases drugs from manufacturers and provides supply chain to ensure therapies flow from manufacturers to pharmacies
Pharmacy	<ul style="list-style-type: none"> ▶ Chain and community pharmacy, point of patient distribution 	<ul style="list-style-type: none"> ▶ Purchases drugs from wholesalers and collects co-pays or OOP costs from patients; may provide additional consultative services
Plan Sponsor / Employer	<ul style="list-style-type: none"> ▶ Employers provide employee coverage 	<ul style="list-style-type: none"> ▶ Collects money from employees to pay PBMs for therapies in pharmacy setting and providers through medical benefit for inpatient
Payer / Health Plan	<ul style="list-style-type: none"> ▶ Health plan / insurer control cost associated with health spend 	<ul style="list-style-type: none"> ▶ Collects money from beneficiaries to pay PBMs for therapies in pharmacy setting and providers through medical benefit for inpatient
Physician	<ul style="list-style-type: none"> ▶ Driver of script volume, drug mix and prescription trends 	<ul style="list-style-type: none"> ▶ Gatekeeper and decision-maker for use of a given Rx therapy
PBM	<ul style="list-style-type: none"> ▶ Middleman for drug plan design, adjudication, and formularies 	<ul style="list-style-type: none"> ▶ Multi-functional player—processes claims from pharmacies and payment from health plans, manages formularies, and negotiates / passes rebates from manufacturers to health plans, etc.
Patient	<ul style="list-style-type: none"> ▶ Consumer of prescription drugs and pharmacy services 	<ul style="list-style-type: none"> ▶ Ultimately pays for therapies in the form of deductibles and co-pays to health plan

The “Traditional” Pharma Value Chain

The flow within the current economic model is complex, with numerous exchanges of product and funds that ultimately get therapies to patients

Mapping the Pharmacy Value-Chain

How do they collaborate / engage?



Stakeholder

- Pharma Manufacturer
- Wholesaler
- Pharmacy
- PBM
- Payer / Health Plan
- Plan Sponsor / Employer

How do they make money?

- ▶ Wholesaler / distributor purchase of drug (at WAC price)
- ▶ Pharmacy purchase of drug (at AWP price)
- ▶ Reimbursement and dispensing fees from PBMs; co-pays from patients per prescription
- ▶ Various administrative fees collected from payers / plan sponsors; percentage of rebates; pricing spread; co-pay “clawbacks”
- ▶ Fees from employers to manage benefits; rebates from manufacturers passed through PBMs
- ▶ Employee contributions / premiums to benefits; rebates from manufacturers passed through PBMs

Market Trends

Several key factors across pharma and retailing shape the macro landscape

Drug & Pharmacy Trends	Pharmacy Retailing Trends
Prescription Drug Growth	Retail Spend & Growth
▶ Continued rise of chronic diseases in an aging population, new drug discoveries and longer mortality is driving more prescription volume	▶ U.S. Drug Store sales hit \$250B in 2015 and are expected grow 2.6% YoY to reach \$284B by 2020
Industry Pricing Pressures	Efficient Footprint
▶ Pharmacies are facing pressure from declining payer reimbursement, growth in mail order and PBM strength	▶ Retailers rationalizing footprint to make more efficient use of space and introducing reimbursable services to drive growth
Collaboration & Consolidation	Omnichannel
▶ Recent acquisitions in the space have created convergence where just a handful of companies control drug discovery and distribution	▶ Growth in omnichannel solutions (mobile and eCommerce) shifting revenue sources but overall growth continues in all platforms
Emerging Therapies / Specialty Drugs	Store Experience & Loyalty
▶ Momentum in scientific discovery and genomics has resulted in more novel drugs, biologics, specialty medications and patient services	▶ New store layouts, design, loyalty programs and customer experience improvements drive foot traffic into the store
Clinical Trends	Technology
▶ Pharmacies are increasingly offering clinical services in a retail setting, competition with providers and capturing more customer value	▶ Improvements in automation, operating systems, data analytics, handheld and mobile applications helping protect share

Prescription Drug Growth

The aging US population and rise of chronic disease are likely to drive steady increase in drug spend / utilization

Commentary

Over the next three decades, the 65+ population is expected to increase at a rate of 1.7% per year

- ▶ This increase in the 65+ age demographic will likely cause a corresponding rise in demand for pharmaceutical products
- ▶ Many of the regions with the highest growth rate in this population segment are located in the Midwest and Great Plains regions, where Nile already has a strong presence

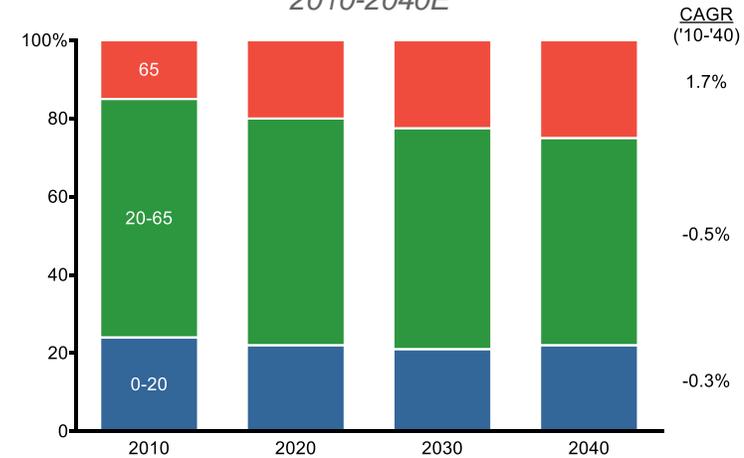
Growth in chronic conditions in the U.S. has been rising in recent years and is forecasted to continue to rise

- ▶ In 2014, chronic disease affected approximately 133m people in the U.S.; that figure is expected to rise to 157m by 2020
 - ▶ 81m people are expected to be affected by multiple chronic conditions by 2020
- ▶ Top growing chronic conditions include obesity, diabetes, heart disease, and depression

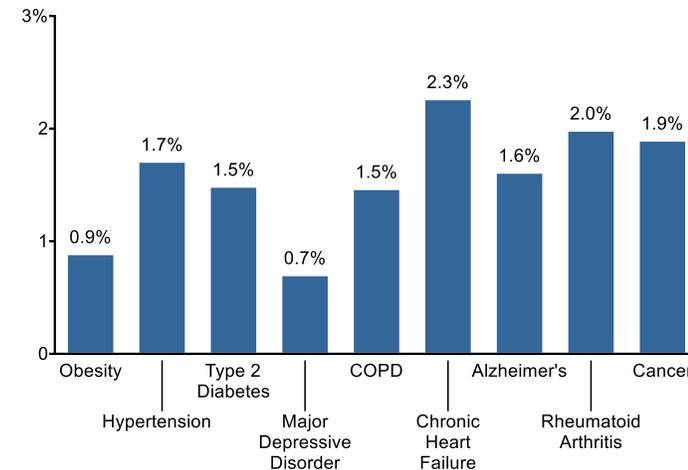
Robust pharmaceutical pipeline and new specialty and biologic therapies will drive continued growth as well

- ▶ By 2018, the FDA could approve 200 new drugs
- ▶ Most anticipated disease categories for FDA approvals include liver disease, oncology, HIV, multiple sclerosis, hepatitis C, psoriasis, rheumatoid arthritis, Parkinson's Disease, and atopic dermatitis

Total U.S. Population by Age Group
2010-2040E



CAGR of Selected Chronic Conditions in U.S.
2015-2020E



2015 Prevalence	96m	81m	29m	16m	16m	5m	4m	2m	1m

Collaboration & Consolidation

Competitive dynamics in pharma and payer landscapes have changed due to significant recent M&A activity

Commentary

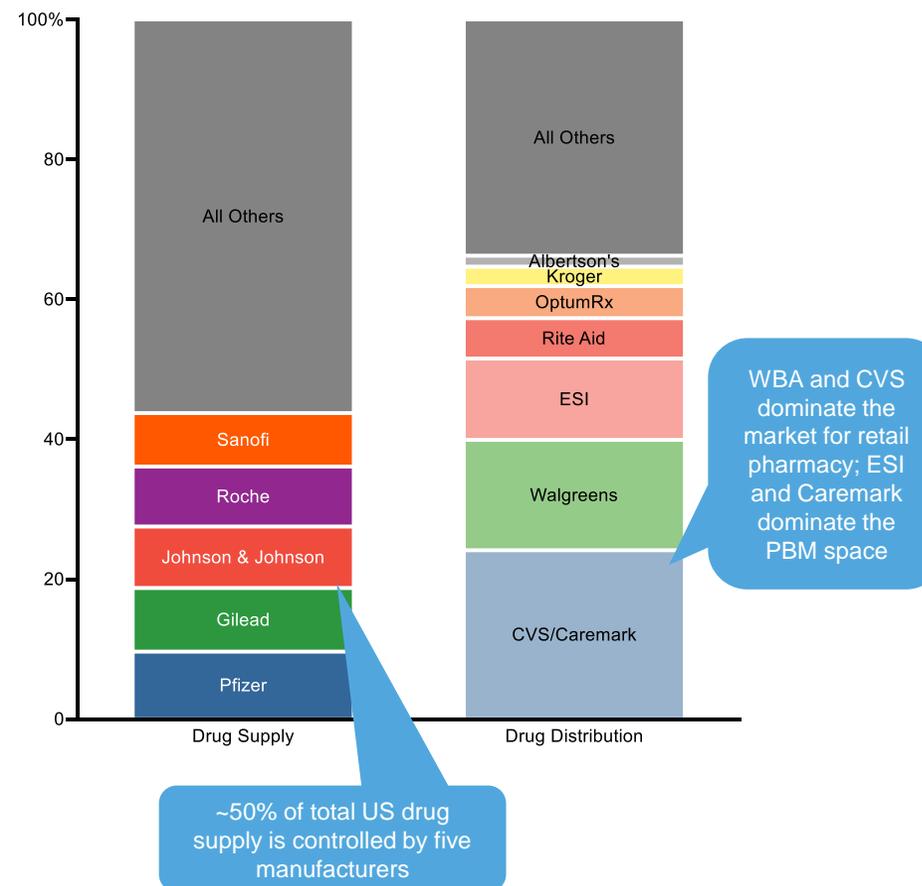
Significant M&A activity has occurred within healthcare in recent years, with this activity expected to continue for the foreseeable future

- ▶ 2014 and 2015 were both record breaking years for M&A activity
- ▶ If recent proposed mergers between health insurers take place, three major players will dominate the insurance market by 2017

Companies across the healthcare value chain utilize acquisitions to reduce costs and accelerate growth

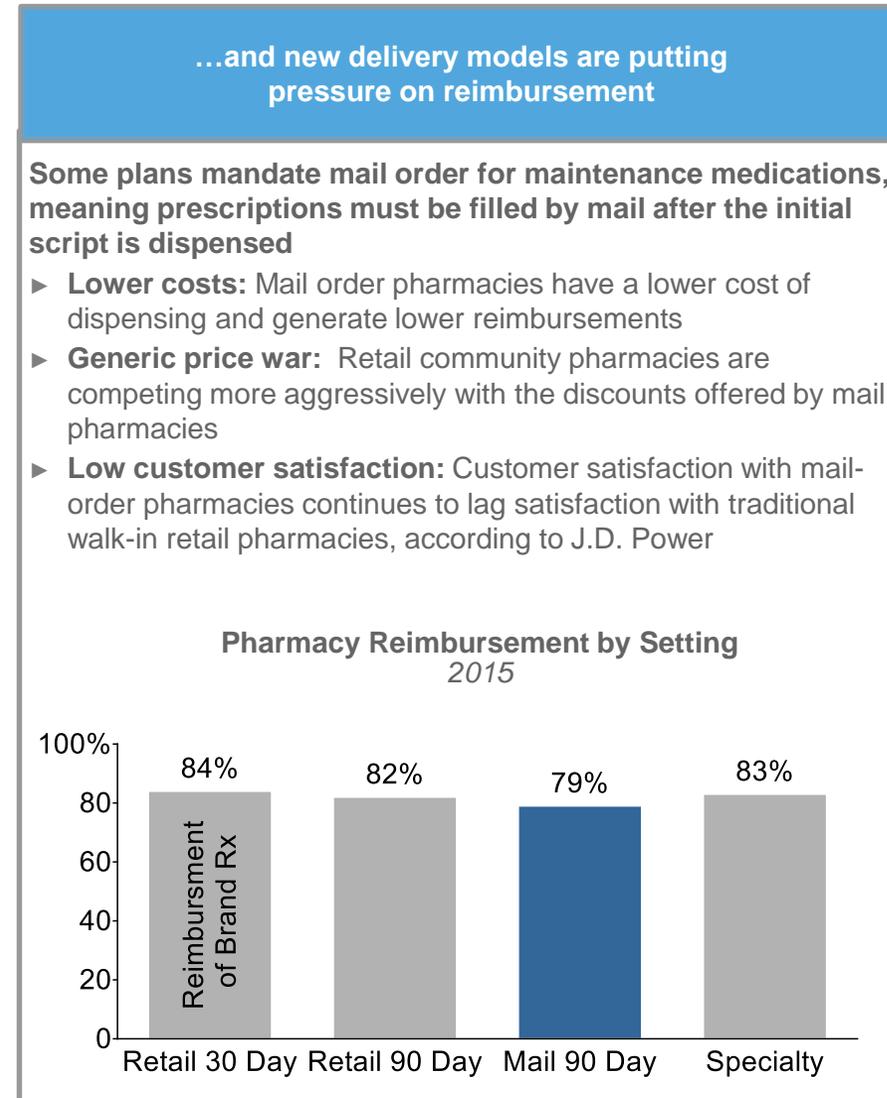
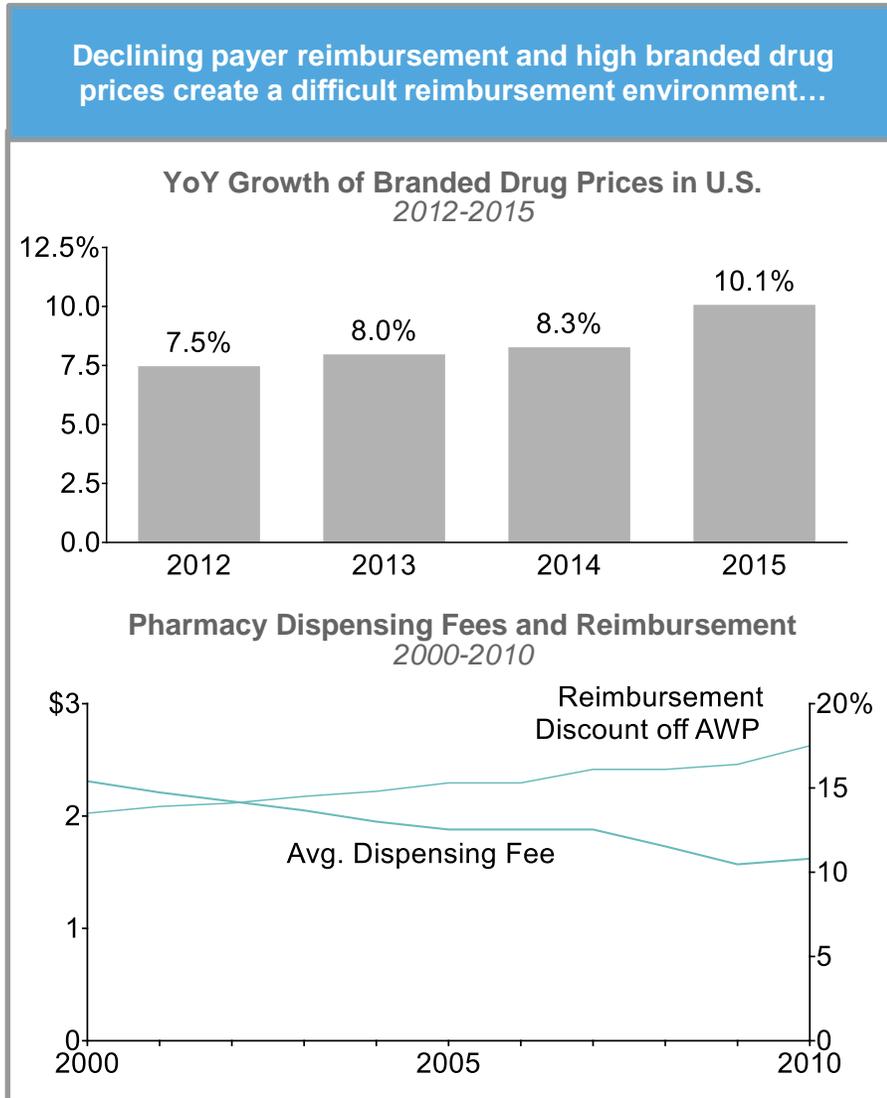
- ▶ As consumer trends continue to evolve across the retail industry, pharmacies and drug stores are being viewed as an integral provider between patients and physicians. As a result, acquisitions will become key to managing costs and streamlining care
- ▶ Executives are increasingly utilizing alliances to accelerate growth; 40% plan to enter alliances with other companies or competitors to help create value from underutilized assets
- ▶ Drug companies are looking beyond traditional M&A by acquiring “beyond-the-pill” products and services to bolster their portfolios and drug pipelines
- ▶ Independent hospitals and clinician groups will find it difficult to compete on their own. Attempting to generate more touchpoints with existing customer bases, large physician management companies are acquiring complementary groups

Top Pharmaceutical Manufacturers and Distributors in U.S.
2014 (Drug Supply), 2015 (Drug Distribution)



Industry Pricing Pressures

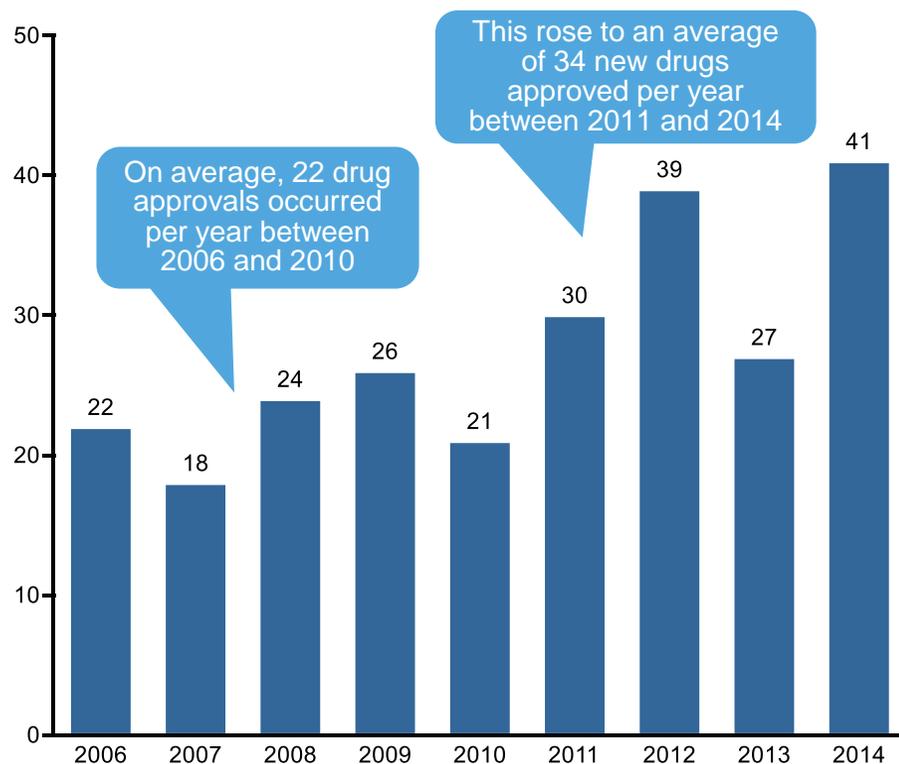
Declining payer reimbursements, PBM strength, and mail order mandates are pressuring profits



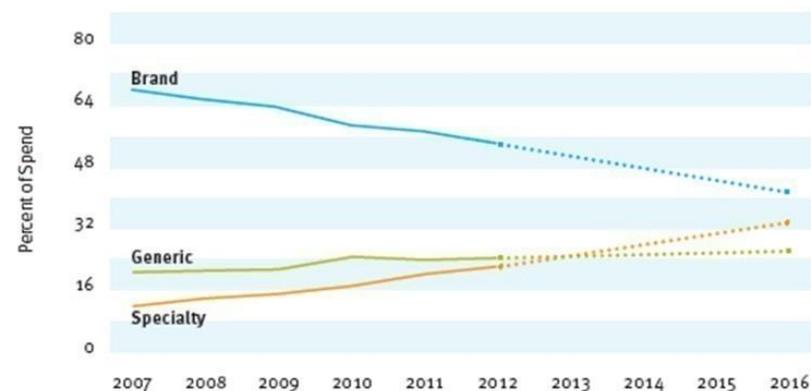
Emerging Therapies/Specialty Drugs

Strong growth in scientific discovery has resulted in significant new cures and specialty medications

Number of NME Approvals by the FDA
2006-2014



Pharmacy Benefit Spend (By Drug Type)
2007-2016



High growth in specialty pharmaceuticals has been driven in part by significant profitability opportunities

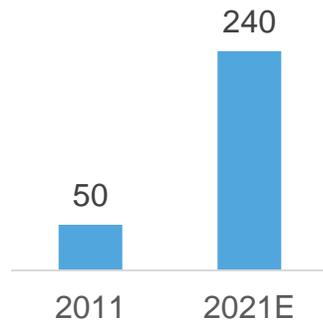
- ▶ 600 drugs are currently in Phase II or higher clinical trials, with cancer treatments dominating the pipeline
- ▶ Gross margins for non-hospital specialty pharmacies range from 13% to 30%
- ▶ Cost to patient for a one-month supply of specialty prescription is 28-times that of traditional prescription
- ▶ Specialty drugs are expected to increase from 27% of pharmacy industry revenues in 2015 to 44% in 2020

Continuing the wave of innovation in scientific discovery, nearly 200 new drugs are forecasted to be launched in the next five years, with a high number of NMEs expected every year due to a rich specialty drugs pipeline

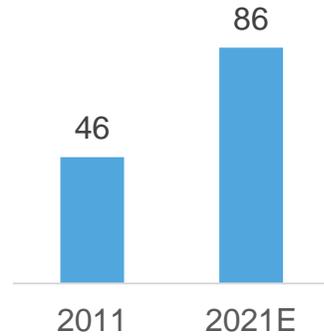
Specialty Pharmacy

Double-digit growth in specialty drug trend to serve as macro tailwinds

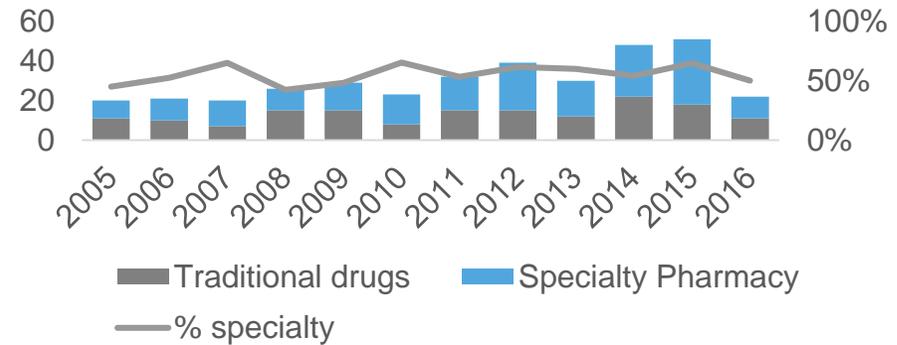
Specialty spend under pharmacy benefit to grow ~4.8x (from \$50b to \$240b)



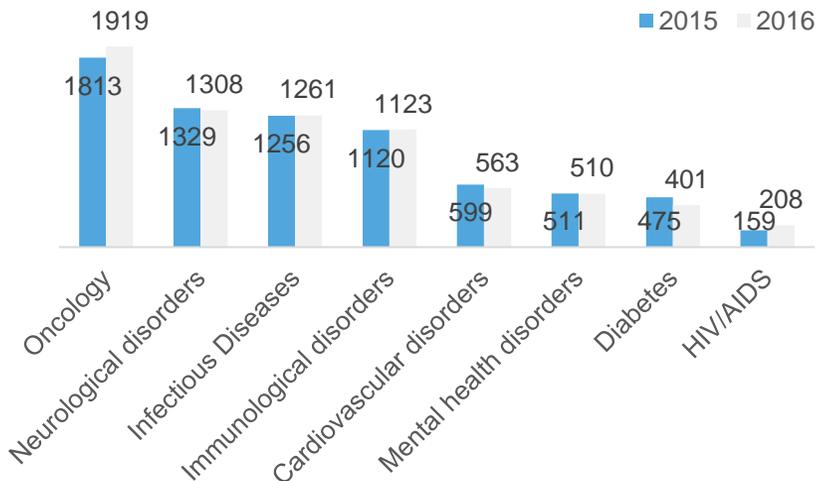
Rapid growth in the oncology market from \$46b to \$86b



FDA now approves more specialty drugs than traditional drugs: Robust pipeline of specialty drugs should continue to drive growth in specialty



Drugs in pipeline by therapeutic class



Specialty drug manufacturers are shifting toward limited distribution panels

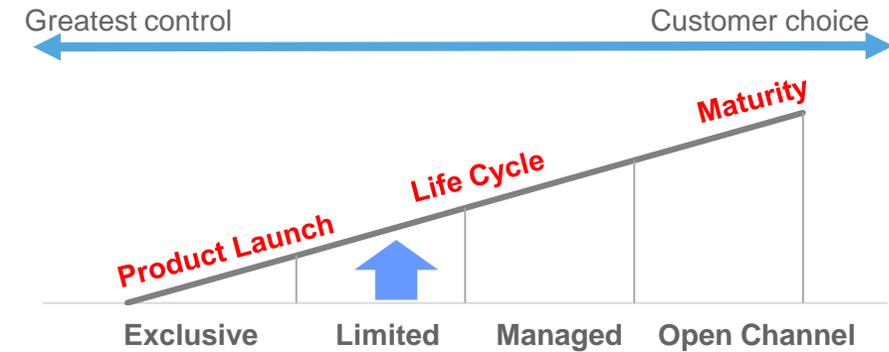


Illustration: Diplomat Pharmacy



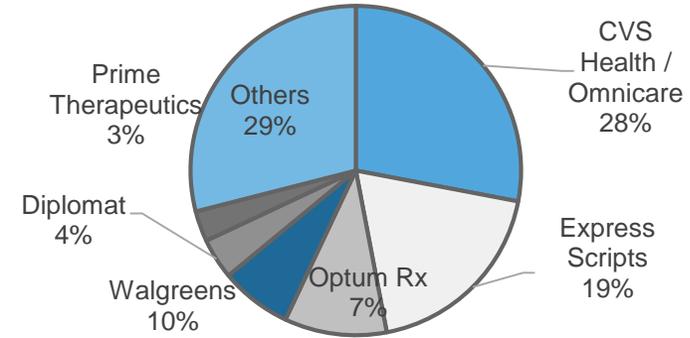
Specialty Pharmacy

Drivers of growth: increasing utilization, price inflation and lack of specialty generics, or biosimilars

Fragmented Landscape

- 4 ► Four large competitors with almost 2/3rd of market share: CVS Health, Express Scripts and Optum Rx and Walgreens.
- 1/3rd market is fragmented ► Fragmented landscape for the rest of the 1/3rd market with a number of small providers (most focused on one or a few disease states). **Consolidation opportunity in the lower middle market.**

2016 Market Share (\$115b market size)



Notable deals and investments

Target	Acquirer / Investor	Deal rationale	Value \$m
Walgreens Infusion Services	MDP [®] <small>MADISON DEARBORN PARTNERS, LLC</small>	One of the nation's largest providers of home and alternate treatment site infusion services	- (2015)
db AFFINITY, tnh, Burman's SPECIALTY PHARMACY, BioRx	DIPLOMAT	Grow its oncology and infusion businesses with increased access to drugs and broader geographic reach	~\$460m (2015-17)
BIOMATRIX	ACON, Triton Pacific <small>Capital Partners, LLC</small>	Network of seven pharmacies, it is a provider for patients with blood disorders, organ transplants and other chronic and acute diseases and conditions	- (2016)
MODERN HEALTH	Kroger	Altamont Capital Partners backed Modern Health was acquired by retail giant Kroger	- (2016)
Biologics	McKesson	*Acquired with Vantage Oncology (integrated cancer care)	*\$1,200 (2016)

Outlook

- 'Ultra-limited' distribution drugs are rising where only ~ 4-5 pharmacies in the nation have access to those drugs.
- Specialty pharmacies need to be increasingly strategic to create niche regional markets within to sustain competition (e.g. Avella Specialty Pharmacy).
- The wave of health systems entering the specialty market could open up opportunities for specialty pharmacies to cover the scripts that hospitals can't handle (e.g., limited distribution drugs, 340b, etc.); ~10% of the specialty pharmacy market is likely to move to the hospital space.
- Headwinds facing the business—DIR fees, lower hepatitis C spending, and lower inflation—are stabilizing

Compliance considerations

Regulations increase accountability for pharmacies in managing scripts, patient safety, and social responsibility

Recent changes in regulatory and compliance policy will impact day-to-day operations...

Federal False Claims Act

- ▶ Strengthened by Affordable Care Act
- ▶ States must update their own false claims act laws to reflect federal changes
- ▶ Likely to expand liability for providers and opportunities for whistleblowers

Corresponding Responsibility Rule (21 CFR 1306.04)

- ▶ Rx must be “for a legitimate medical purpose” by prescriber “acting in the usual course of his professional practice”
- ▶ Prescriber is responsible, “but a corresponding responsibility rests with the pharmacist who fills the prescription”
- ▶ Liability risk increases as pharmacist is responsible for determining legitimate medical purpose of prescription

...Therefore pharmacies are adjusting their strategies to address these changes

Compliance Strategies

Know Your Patients & Prescribers

- ▶ Check state databases (PDMPs)
- ▶ Manage physician pushback (AMA)

Know Your Pharmacies

- ▶ Look for outliers that dispense unusual amounts; determine what’s driving and why
- ▶ Avoid “suspicious order” accusations

Inform Your Pharmacists

- ▶ Heightened training, checklists

Preparing for State and Federal Audits

Each state has its own audit process; common features:

- ▶ Authority to request records to justify payments
- ▶ Ability to recoup overpayments
- ▶ Afford appeal rights to challenge state findings

States are taking action primarily due to state budget pressures and increased federal requirements; potential areas for review include:

- ▶ Incorrect diagnosis codes
- ▶ Failure to sufficiently document counseling
- ▶ Failure to use tamper-resistant prescription pads

Key Strategic Alliances

Along with value chain consolidation, several interesting alliances are forming in the market

Recent Alliances & Partnerships		
<p style="text-align: center;">Walgreens & OptumRx</p> <p>Description:</p> <ul style="list-style-type: none"> ▶ PBM OptumRx and Walgreens partnered to sell pharmacy and drug management services to clients. As part of the partnership, OptumRx will charge its customers less for certain drugs if patients fill prescriptions at Walgreens locations. The program applies to 90-day prescriptions aimed at maintaining chronic diseases <p>Objective:</p> <ul style="list-style-type: none"> ▶ Through the partnership, Walgreens hopes to capture a larger share of the prescription market <p>Industry Dynamic Implication:</p> <ul style="list-style-type: none"> ▶ The partnership may result in an increased share of the pharmaceutical market for WBA, and increased patient loyalty <p>Commentary</p> <ul style="list-style-type: none"> ▶ <i>“It’s a partnership aimed at improving costs” – CEO, PBM</i> 	<p style="text-align: center;">Target & CVS/Pharmacy</p> <p>Description:</p> <ul style="list-style-type: none"> ▶ CVS acquired Target’s pharmacy and clinics for ~\$1.9B. CVS now owns Target’s 1,672 pharmacies through a store-within-a-store format. All Target pharmacies will be rebranded as CVS, and the clinics will become MinuteClinics. New target locations with pharmacies will also be CVS-branded <p>Objective:</p> <ul style="list-style-type: none"> ▶ Target is able to focus on other business segments and drive additional in-store foot traffic, while CVS expands its brand presence in retail pharmacy <p>Industry Dynamic Implication:</p> <ul style="list-style-type: none"> ▶ The partnership may result in increased share for CVS, as prescription programs attract customers to CVS locations <p>Commentary</p> <ul style="list-style-type: none"> ▶ <i>“Today’s milestone in our relationship with CVS Health is an important step in driving Target’s strategic priorities forward while giving our guests easy access to industry-leading health care services” – CEO, Mass Merchandiser</i> 	<p style="text-align: center;">CVSHealth and CardinalHealth</p> <p>Description:</p> <ul style="list-style-type: none"> ▶ CVS Caremark and Cardinal Health entered into a 10-year joint venture. The JV formed the largest entity in the U.S. to negotiate prices with drug manufacturers. The JV sources and negotiates generic supply contracts for both CVS and Cardinal Health. CVS receives \$25M quarterly payments from Cardinal Health as part of the JV <p>Objective:</p> <ul style="list-style-type: none"> ▶ The JV will assist in generic drug sourcing and pricing for CVS, and allow Cardinal Health to expand its presence <p>Industry Dynamic Implication:</p> <ul style="list-style-type: none"> ▶ CVS may gain a larger share of the generic drug market over the next 10 years due to its ability to negotiate lower generic drug prices as a result of the JV <p>Commentary</p> <ul style="list-style-type: none"> ▶ <i>“We view this agreement positively as it provides an effective way to drive better purchasing through increased scale without a large capital commitment or increased complexity of international markets” – Lisa Gill, Analyst, JP Morgan</i>
<p>These narrow networks will increasingly challenge competitors and limit access to customers / patients</p>		

Summary of Trend Implications

Trends vary in expected impact but overall offer insights regarding potential for differentiation and strategic focus

Drug & Pharmacy Trends	Impact	Commentary	Pharmacy Retailing Trends	Impact	Commentary
Prescription Drug Growth		➤ Aging of the U.S. population and the rise in chronic diseases will drive growth and likely necessitate focus on specialty drug offerings	Retail Spend & Growth		➤ Although slightly lagging forecasted total U.S. retail spending, drug stores sales are projected to grow at pace with recent historical rates
Industry Pricing Pressures		➤ Everyone is facing pressure from declining payer reimbursement, growth in mail order and PBM strength	Efficient Footprint		➤ Retailers are optimizing footprint and finding new ways to engage with customers and offer new services
Collaboration & Consolidation		➤ Future expectations for collaborative efforts mirror existing conditions of dependence on alliances and M&A activity for growth and cost savings	Omnichannel		➤ Retail trends and existing omnichannel offerings are likely to become increasingly important as shopping habits shift
Emerging Therapies / Specialty Drugs		➤ Increases in generics and specialty drugs will require operational changes, although impacts in this area are currently occurring	Store Experience & Loyalty		➤ Improved loyalty programs will increase stickiness in this market, making competitive offerings a key factor for success
Clinical Trends		➤ Increasing clinical services offer the opportunity to capture additional revenue streams while increasing consumer touch points	Technology		➤ Technology will continue to improve customer experiences and driving data-driven insights for strategy



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Alex is a partner in Parthenon-EY Strategy where she works primarily on growth strategy projects. She helps clients define and implement their strategy and build organizational capabilities to deliver sustainable business results both through organic and inorganic approaches. She is a thought leader in the industry and specializes in asset repurposing and optimizing value propositions.

Alex Jung is a partner in Parthenon EY. Prior to joining EY, she was the Senior Vice President of Walgreens Corporate Strategy based in Deerfield, IL.

Mrs. Jung has over 30 years of experience working on strategic growth and risk mitigation engagements. She began her career with Arthur Andersen and after ten years moved into consulting with Mercer as the leader of the National Health Care Analysis Unit, helping to architect one of the first data analytics platforms.

She later became the Managing Director for the General Board of Pension and Health Benefits of the United Methodist Church. Alex returned to consulting to lead the health care practice at Aon Consulting and their significant growth into the number one consulting firm in the space.

She is a regular speaker at events such as the California Governor's Women's Conference, World Healthcare Congress, Midwest Business Group on Health, Crain's Annual Health Care Conference, the Benefits Management Expo, the Self Insurance Association of America, John Marshall Law School, and HRMAC where she serves as the Chair for the Total Rewards Interest Group. She sits on the advisory board of the Michael Reese Health Trust and the Healthy Chicago initiative. She is also a member of the Board of Directors for the Respiratory Health Association and Chair of the Health and Wellness Council of the City of Chicago's Chamber of Commerce.

Alex has worked globally with Fortune 500 companies and has developed and implemented large scale strategy, operations and financial projects. She specializes in asset repurposing and value proposition development. Her domain expertise in healthcare spans from hospital operations, clinical intervention programs, benefit plan designs and funding, commercialization strategy for new products and growth strategies including M&A.

She has performed work on several large scale transactions, mergers and acquisitions including the divestiture of Walgreen's PBM, acquisition of AllianceBoots and other assets while at Walgreens. She also architected the health and wellness strategy for the company as part of the pharmacy transformation.

She has developed new business models, redesigned operating models, labor models and workflow processes in many environments including real estate footprint redesign, go to market/commercialization strategies for new products and services including launch strategies for pharma and medical device companies. She has also helped redesign countless products, service offerings, medical devices and value propositions for providers, payers and patients.

She has been quoted in numerous articles in Kennedy Research, Forrester, Forbes Magazine, The Chicago Tribune, Business Insurance, Workforce Management Magazine, Crain's Chicago Business and other industry publications. She is on the editorial board of Inside Patient Care magazine.

Education

- B.S., Business Management, Northeastern Illinois University, Northwestern University
- Licensed broker health, accident and life
- Certified project manager (CMP) and trained in Juran and W. Edward Deming Quality Process
- CEBS, International Foundation of Employee Benefits

Knowledge & Skills

- Corporate and usiness strategy, asset repurposing and business model redesign
- Operations and process improvement
- Mergers & acquisitions
- Clinical program development
- Employee benefits strategy, plan design and funding strategies

Industries

- Healthcare providers/hospitals/retail clinics
- Managed care/Insurance payers
- Life Sciences/Pharmaceuticals
- Medical Device/Diagnostics
- Clinical Interventions
- Consumer Products/Retail

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