Understanding the Pharmaceutical Supply Chain

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IOM Standing Committee
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Spending on Medicines Increases

Medicine Spending & Growth 1995–2014

Source: IMS Health, National Sales Perspectives, Dec 2014; U.S. Census Bureau; U.S. Bureau of Economic Analysis
PHARMACEUTICAL DISTRIBUTORS: DELIVERING SOLUTIONS NATIONWIDE

Primary pharmaceutical distributors protect patient safety and access to medicines through the safe and efficient distribution of healthcare products and services. Distributors use their network of warehouses and distribution centers to securely deliver medicines nationwide.

90% of U.S. prescription drug sales are handled by primary distributors.

And each business day, national and specialty distributors deliver 15 million prescription medicines & healthcare products to healthcare providers and pharmacies in all 50 states.
Key Statistics

• 153 distribution centers through U.S.
• 89% of DCs deliver 5 days per week; another 8% deliver 6 days per week
• On average, the typical DC:
  – Picks 98,149 units per day
  – Processes 4,764 orders per day
  – Picks 35,782 invoice lines per day
  – Ships to 1,042 customer locations

In the US, Prescription drugs pass through distributors or flow directly to providers during the journey to the patient.

Manufacturers

Branded
Generic and
Specialty
Manufacturers

Distributors

Traditional Distributor

Specialty Distributor

3PL

Managed by Distributors

Providers

Big Box Retailers / Mass Merchandisers
Food Stores
Chain Pharmacies (Warehouses / Stores)
Hospitals
HMOs
Clinics
Nursing Homes
Independent Pharmacies
Mail Order
Specialty Pharmacies
Provider Offices

Direct to Provider

Retail Pharmacies
Specialty Pharmacies
Mail Order Pharmacies
Big Box Retailers / Food Stores
Provider Offices

Patients

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Traditional and specialty distributors handle ~ 92% of pharmaceutical revenue in the US making them a key integration point*

US Healthcare Distributor Rx Pharmaceutical Sales
Revenue by Category ($ B)

<table>
<thead>
<tr>
<th>Category</th>
<th>2010</th>
<th>2012</th>
<th>% of Change</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Branded</td>
<td>$188.91</td>
<td>$174.95</td>
<td>-7.4%</td>
<td>-$4.96</td>
</tr>
<tr>
<td>Brand-Specialty</td>
<td>$33.63</td>
<td>$55.32</td>
<td>64.5%</td>
<td>$21.69</td>
</tr>
<tr>
<td>Generic</td>
<td>$20.73</td>
<td>$37.06</td>
<td>78.8%</td>
<td>$16.33</td>
</tr>
<tr>
<td>Prescription Drugs (Total)</td>
<td>$243.26</td>
<td>$267.32</td>
<td></td>
<td>$24.06</td>
</tr>
</tbody>
</table>

Discussion

- Growth in pharmaceutical sales revenue through U.S. healthcare distributors has continued to increase in 2012
  - Growth in low-cost generics has accelerated while growth in branded pharmaceuticals has slowed
  - Specialty remains the fastest growing category, albeit off a small base
- Distributors handle 92% of overall industry sales revenue
- Traditional Distributors manage $301.14BN, or 91% of the $325.8 BN total U.S. Pharmaceutical revenue in 2012, up from 87% in 2010
- Distributors are gaining share from other alternatives, e.g. 3PLs, direct to customer

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Traditional distributors serve many different customer types, ranging from large chains to small, independent pharmacies.

Flow of US Prescription Sales ($B) and Contribution by Channel (%) in 2012

Total= $325.8B

Manufacturers

Direct Shipments

~10%

Specialty Distributors

~80%

Traditional Distributors

~10%

Distributors Total = ~90%

Multiple Provider Types

1) Total value of goods flowing through the supply chain as per IMS National Sales Perspectives™. Percentages represent contribution by channel towards the total flow of $325.8B.
2) Total value of goods flowing through traditional distributors, 2013-2014 enter for Healthcare Supply Chain Research Factbook (Tables 4, 5) — excludes all non prescription products, and sales to other distributors.
3) Specialty distributors defined as per the Specialty Pharmaceuticals and Role of the Specialty Distributor report published by the Center for the Healthcare Supply Chain Research in April 2011.
4) Manufacturers ship directly to Multiple provider types, including those served primarily by pharmaceutical distributors.
5) Chain pharmacies include national and regional drug store chains, mass merchandisers and food stores. Chain warehouses represent centralized warehouses for chain pharmacies.
6) Specialty distributors provide services to many provider types, including physicians offices and clinics, home care providers, hospital pharmacies and specialty pharmacies.

Source: 84th Edition HDMA Factbook, (2013-2014) Center for Healthcare Supply Chain Research (Table 4, & 84; IMS Health; Booz & Company analysis).
The US Pharmaceutical Supply Chain is complex, with many players collaborating to ensure delivery of drugs to patients.

- In 2012, on average, 1,108 Manufacturers delivered to distributors.
- The US healthcare supply chain was served by 32 HDMA distributors in 2012.
- These distributors managed distribution activities out of 144 warehouses.
- Approximately 200K ship-to points were served by traditional distributors.

Total = 197K
Manufacturer - Distributor operations ensure that drug inventory is readily available for distribution to providers

1. Manufacturers create forecasts using historical shipment data received from distributors, as well as latest market intelligence

2. Distributors order drugs from manufacturers using EDI technology

3. Manufacturers ship drugs to distributor warehouses

4. Distributors receive and put away goods from manufacturers
   - Describe the degree of automation and WMS technology utilized to ensure that goods are received, and put away in the warehouse
   - Bar-code scanning, RFID
   - Inventory tracking systems

5. Distributors send manufacturers reports and data to provide transparency into inventory levels and shipments
The provider order fulfillment process is highly efficient, ensuring safe, secure delivery of drugs in a timely manner.

**A Day in the Life of a Provider Pharmaceutical Order**

1. Provider places an order with their distribution partner (EDI, online ordering, phone or fax)
2. Distributor receives the order, which is routed to the distribution center
3. Sophisticated WMS systems are used to enable the pick-pack-ship operations to run smoothly and efficiently (examples of systems, and capabilities of sophisticated WMS systems)
4. Orders are picked using different technology based on inventory velocity and product handling requirements
5. Order is packed and shipped via UPS, Courier or a Delivery Truck, depending on the size of the order
6. Order is received at the provider, in some cases, as early as the same day of placement
Closing thoughts

- The US pharmaceutical supply chain is highly efficient and ensures that products are safely and reliably available to a wide variety of providers, meeting patients' needs.

- Patient safety and drug efficacy must be the top priority when designing the supply chain strategy for pharmaceutical drugs—and manufacturers, distributors, and providers all play important roles in delivering against this mission.

- Strong supply chain strategies and execution support the commercial success of branded and generic manufacturers—both for existing and new product launches.

- Manufacturers choose to create partnerships with distributors to distribute product on their behalf, and help ensure that product is available and accessible to providers.

- Providers have many choices from whom they will procure product, and distribution partners offer critical services which support providers in delivering patient care.