SESSION #9
FOCUSBING ON SUPPLY
CHAIN MARKETS
This session?

You can expect five key takeaways

- Basic introduction to concepts, tools, and insights to deal with supply chain issues
- Understanding pharmaceutical supply chains in developed and developing countries
- Examples and cases of market based supply chain improvement

Caveats

- We will strive for simplicity and attempt to boil messy supply chain phenomena down to some basic logical principles.
- On occasions the session will require you to abstract from the immediate problem at hand
Session overview

- Supply chain background
- Supply chain in OECD countries
- Supply chain in developing countries
- Policy tools for improving supply chains
- Sweden pharmaceutical distribution regulation case
- Tanzania case discussion
Supply chain: A system of organizations, people, technology, activities, information and resources involved in making a product reach the customer

Supply chains are the backbone of the health system- frequent stock-outs and high costs of commodity delivery can make health programs unsustainable

Supply chain also plays a crucial role in obtaining information about coverage, needs, and many other information sets crucial for planning

Supply chain management is a well developed scientific discipline

Supply chains are intrinsically suited to be run by market actors- require agility & flexibility
Supply chains in the structure vs. market spectrum

MORE STRUCTURE

- Acute Inpatient (Hospital)
- Diagnostics, Elective Surgery, Specialist Services
- Primary Care; Pharmacy Production & Distribution
- Retail, OTC Pharmacy

MORE MARKET
Supply Chains and “the more market vs. more structure” tradeoff

MORE STRUCTURE
Equity in Reach and Distribution
Great control over product quality
Lower prices?

MORE MARKET
Responsiveness
Productivity/Efficiency
Private Investment

Structuring & Market Forces Have Opposite Potential Strengths and Weaknesses
HEALTH PRODUCT SUPPLY CHAINS in OECD COUNTRIES
Health product distribution structure in OECD* countries

*Exceptions include Sweden pre-2009 (discussed later)
US healthcare supply chain

3 major full line wholesalers control 80% of the market

Approximately 57,490 pharmacies. 5-6 major national chains

Once a day (or more) deliveries to each pharmacy

26% out-of-pocket expenditure on medicines

Source: GAO Report 2006
Author’s analysis
US healthcare supply chain: Financial flows

Source: GAO Report 2006
Author’s analysis
US healthcare supply chain: Information flows

Manufacturers
Wholesalers
FDA
Pharmacy
Pharmacy Benefits Manager
Formulary Committee
Health Scheme
Info-broker
Prescriber
Patients

Source: Author’s analysis
106 wholesalers. Regional wholesalers (55 companies) command the largest part of the market share at 58%. Five big wholesalers control less than 40%

Many wholesalers are pharmacy cooperatives

Regulated margins
Wholesale margin= 9.6% for drugs costing <€78.34 and a fixed fee for drugs exceeding that price

Retail margin= 27.9% for drugs costing < € 91.63 and a fixed fee for drugs exceeding that price

21,000 community pharmacies. Deliveries to pharmacies are made 2-3 times a day from wholesalers. IT tool named BOT PLUS in every pharmacy
Many differences in OECD supply chains for medicines. **One commonality:**

Government plays multiple supporting, financing & rule defining functions while private actors manage transport, distribution (and retail)

### Private supply chain actors
- Wholesalers
- Distributors
- Retail Pharmacies

### Pharmaceutical manufacturers

### Membership Orgs
- Wholesalers association
- Pharmacy association
- Manufacturers association

### Gov’t Supply Chain Actors
- Gov’t procurement and distribution (CMS)

### Civil Society
- Patient advocacy groups
- Other civil society orgs

### Finance Tools of Govt

### Regulation Tools of Govt
- Social regulation
- Economic regulation
- Public information
Comparing the supply chains

<table>
<thead>
<tr>
<th>Factor</th>
<th>OECD</th>
<th>Developing country</th>
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<tbody>
<tr>
<td>Regulatory</td>
<td>▪ Strong and well-defined regulatory structure</td>
<td>▪ Weak, fragmented regulatory structures</td>
</tr>
<tr>
<td></td>
<td>▪ Good ability to enforce regulations.</td>
<td>▪ Poor ability to enforce regulation</td>
</tr>
<tr>
<td>Distribution systems</td>
<td>▪ Few large distributors with nationwide coverage</td>
<td>▪ Very fragmented private distribution market</td>
</tr>
<tr>
<td></td>
<td>▪ Relatively low markups in distribution</td>
<td>▪ Govt quasi-monopoly on distribution</td>
</tr>
<tr>
<td></td>
<td>▪ Wholesale and retail markup regulation in many</td>
<td>▪ Few or none with nationwide coverage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ High markups in distribution</td>
</tr>
<tr>
<td>Information and communication</td>
<td>▪ Well developed</td>
<td>▪ Skeletally developed</td>
</tr>
<tr>
<td>across supply chain actors</td>
<td>▪ In some instances facilitated by government</td>
<td></td>
</tr>
</tbody>
</table>

Source: Adapted from Yadav and Smith 2012
Government run medicine supply chains in developing countries
Pharmaceutical distribution in most developing countries

Government owns and operates large parts of the supply chain.
Pharmaceutical distribution in most developing countries

- **Operational Autonomy**
  - No conditionality: 0%
  - Total conditionality: 100%

- **Customer Competition**
  - No conditionality: 0%
  - Total conditionality: 100%

- **Market Prices**
  - No conditionality: 0%
  - Total conditionality: 100%

- **Freedom of Market Entry or Exit**
  - No conditionality: 0%
  - Total conditionality: 100%

- **Financial Autonomy Funding**
  - No conditionality: 0%
  - Total conditionality: 100%

- **Contract Conditionality**
  - Total conditionality: 100%
  - No conditionality: 0%
Challenges in govt owned and operated supply chains

Typical structure. May not hold for all countries and programs. Corruption and infrastructure issues are additional structural barriers.

- Uncertainties in timing of funds disbursement from MoF or external source
- MoF or other financing source
- State monopoly on distribution
- Creates weak incentives
- Poor information capture and flows for accountability
- Delays in procurement due to archaic procurement processes
- Poor quantification and planning
- Long supply lead times
- Weak staff capacity to manage inventory
- Poor or no consumption tracking

Lack of incentives and information flows throughout the system
The corrupting influence of distribution structure complexity

*Bull-whip effect*: Amplification in demand variability as it goes upstream in a multi tiered distribution system

Fewer layers in the distribution system help remain in sync with actual demand
The curse of the forecasting trumpet

- Higher frequency of shipments i.e. shorter resupply intervals between each stage in the system decrease forecast inaccuracy
- Reduced lead time
Examples of contract conditionality and shift towards market orientation

- YeksiNaa-Senegal
- KEMSA – competition and contract conditionality
- Tamil Nadu Medical Supplies Corporation
- Outsourcing management of medicines supply agency - numerous
Contract conditionality based market orientation has prerequisites

- Requires a healthy private market to provide supply chain services to the government run supply chain
  - Third party transport services
  - Warehousing and distribution services
  - Supply chain planning services
  - Information collection services
- Contract design and enforcement are challenging
- Better contract design and enforcement doesn’t always solve the incentive misalignment problem
In most countries there is a HUGE private retail and wholesale market

Government agencies often believe that:

1. this private market (for non subsidized medicines) had little direct impact on the performance objectives of the government run program

2. Even if it does, they have no direct tools or levers to influence this market

This session will focus mostly on this part.
Private supply chain shortcomings

1. High markups (wholesale and retail)
2. Inability to verify quality of product and services
3. Poor coverage/reach in rural remote regions (lack of equity in access)
4. Pharmacies do not stock “essential medicines” but only fast moving medicines
Common response to supply chain market shortcomings

There are shortcomings in the private supply chain

Belief that private supply chain does not serve the poor, charges high prices, distributes only fast moving medicines, and provides poor quality medicines

Invest in government run supply chain for essential medicines
Systematic understanding of root causes of supply chain shortcomings

- High markups
  - Lack of competition
  - Information asymmetry
  - Too many intermediaries

- Poor quality
  - Excessive fragmentation
  - Wrong targeting of limited quality enforcement resources

- Inequitable reach
  - Excessive fragmentation
  - Inadequate solidarity or USO contracting
  - Pick-up vs. drop-off

- Inadequate assortment
  - Slow moving medicines require much greater working capital than fast moving medicines
A policy toolkit for improving private sector (Retail/Wholesale) supply chain

- Facilitating retail competition through grants, loans and conditional entry contracts
- Facilitating wholesale consolidation through licensing-entry contracts
- Creating incentives for rural distribution-grant, loan and in some cases conditional entry contract
- Wholesale and retail markup regulation- Economic regulation
- Focused quality enforcement- Economic regulation
- Broadcasting price information – Social regulation and public information
Retail competition and markups

Study in 4 districts in Zambia by WB, UNZA and CHAI

Price charged for a full course of antimalarial in Zambian Kwacha

Competition Index = # of sources for anti-malarials in 1 km radius

Study in 4 districts in Zambia by WB, UNZA and CHAI
Facilitating greater retail competition

- Second-tier pharmacy models e.g. ADDOs

- Sweden re-regulation of 2009 increased the number of pharmacies

- Cco-ownership and chain ownership rules relaxed in many EU countries

- “Botiquines” (Spain) and Filialapotekare (Norway)-second tier pharmacies that operate under supervision of a community pharmacy
Understanding retail competition

Wholesaling and distribution have significant economies of scale.

Sub-scale wholesalers and distributors cannot make investments in logistics, infrastructure and technology needed for national coverage.

Wholesaler consolidation also eases quality enforcement.

China’s stricter enforcement of GDP standards and government support of mergers and acquisitions—number of wholesaler decreased from 16000 to 7000. Three larger players emerging with national coverage.

There is a complex political economy associated with wholesaler consolidation.
Creating incentives for rural distribution

- Hard-to-reach populations usually experience poor availability from private supply chains

- CSO Incentive Pool in Australia
- 4% wholesaler rebate in Greece
- Essential Small Pharmacies Schemes (ESPS) in the UK - financial assistance to pharmacies in rural or low population areas
- Norway public private arrangement for rural access
- Denmark’s rural pharmacy equalization scheme
- Professional recognition of rural pharmacists in Spain
Cash and carry model creates distribution inefficiencies

Poor credit flow limits stocking to inexpensive fast moving medicines

- 30-60 Days Credit for Some Manufacturer-Importer Dyads
- Most Manufacturer-Importer Dyads Buy on Letters of Credit

Delivery on 30 Days Credit or Post Dated Checks

Cash & Carry / Cash Van Sales

- MAJOR CITY
  - Large Retail Pharmacies

- SMALL TOWN or RURAL
  - Smaller Retail Pharmacies
Pharmaceutical Distribution Re-regulation in Sweden
Sweden case background

- Sweden 2012 population ~ 9.5m
- Per capita GDP= US$ 58,163
- Sweden had a state owned monopoly for pharmaceutical distribution since 1971.
- The Swedish government owned all the pharmacies in the country and they were run by a state-owned company called Apoteket AB.
- In 2006, the government initiated discussions about deregulating pharma distribution
- Deregulation was started in 2009 and completed in 2010
- Provides an opportunity to learn the challenges, successes and “things to watch for”
Sweden pharmaceutical market before 2009

- **OPERATIONAL AUTONOMY**: 0% (Total conditionality) - 100% (No conditionality)
- **CUSTOMER COMPETITION**: 0% (Total conditionality) - 100% (No conditionality)
- **MARKET PRICES**: 0% (Total conditionality) - 100% (No conditionality)
- **MARKET FREEDOM OF ENTRY / EXIT**: 0% (Total conditionality) - 100% (No conditionality)
- **FINANCIAL AUTONOMY**: 0% (Total conditionality) - 100% (No conditionality)
- **CONTRACT CONDITIONALITY**: Total conditionality - No conditionality
Sweden pre 2009

- Somewhere between an exclusive and selective regime
- Government ownership with some conditional contracting
- High entry barriers in wholesaler, exclusivity in retail
2009 deregulation objectives

- Increased access to pharmaceuticals
- Improved service and service range
- Low pharmaceutical costs
- A secure supply of drugs
- Making use of the pharmacies’ contributions to an improved use of pharmaceuticals
Overall structure pre-2009

- The government-owned monopoly, the National Corporation of Swedish Pharmacies (NCSP) (called *Apoteket AB*) operated approximately 925 pharmacies nationwide.
- The Swedish Dental and Pharmaceutical Benefits Board (DPBA) decided reimbursement levels.
- For a product to be included in the Swedish pharmaceuticals insurance (or patient reimbursement) system the prices had to meet a cost-benefit threshold in order to receive authorization from the DPBA.
- The NCSP’s retail margin for prescription pharmaceuticals was also regulated by the Swedish Dental and Pharmaceutical Benefits Board (DPBA).
- Approximately 9000 registered pharmaceuticals.
- The total pharmacy sales of medicines amounted to SEK 35.7 billion (€4 billion) in 2009, two-thirds were prescription drugs.
Other actors

Regulatory body for supervision over all pharmacies in Sweden.

The Swedish Dental and Pharmaceutical Benefits Board (TLV)
POS information flow and SJUNET

- eRecept (electronic prescription) were transmitted from the doctor to the pharmacy using an electronic network known as Sjunet.
- The ePrescriptions was a joint effort between each county council in Sweden and Apoteket the government owned retail chain.
- A larger number of prescriptions in Sweden were electronic as compared to other members states.
Pharmaceutical distribution pre-2009

Source: Tamro reports
During the monopoly Sweden had a single channel distribution system

The single channel distribution concept means that a pharmaceutical company is required to supply the entire market with its product through a single distributor

It was seen as a cost effective distribution system and also easier to ensure product quality/traceability

There were only two wholesalers/distributors on the market

No pre-wholesaling
Distribution post-2010

- Pharmacies allowed to set up their own distribution chain
- Some of the larger pharmacy chains started their own distribution and established more effective distribution models
- The one channel distribution system gave way to pluralistic distribution.
Pharmaceutical distribution 2012

Market situation in the end of 2012

<table>
<thead>
<tr>
<th>Pharmaceutical companies</th>
<th>Wholesalers</th>
<th>Pharmacies</th>
</tr>
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<tbody>
<tr>
<td>RX</td>
<td>Oriola</td>
<td>Cura, Kronans, DocMorris Apoteket, Vård + apoteket, apoteksgruppen, Medstop apoteket, Apoteket, APOTEK, Tamro</td>
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<tr>
<td>TG</td>
<td>Tamro</td>
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<tr>
<td>OTC</td>
<td>TG</td>
<td>DB Schenker, Apoteket</td>
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<tr>
<td>TG</td>
<td>postnord</td>
<td>APOTEK</td>
</tr>
</tbody>
</table>

Source: Tamro reports
Channel pricing structure post 2009

- Wholesale price (WP) ≤ 75.00 SEK Retail price = (WP x 1,20) + 31.25 SEK + 10.00 SEK
- Wholesale price > 75,00 - 300,00 SEK Retail price = (WP x 1,03) + 44,00 SEK + 10,00 SEK
- Wholesale price > 300,00 - 6000,00 SEK Retail price = (WP x 1,02) + 47,00 SEK + 10,00 SEK
- Wholesale price > 6000,00 SEK Retail price = WP + 167,00 SEK + 10,00 SEK

Source: Bergman MA, Granlund D and Rudholm N., Reforming the Swedish pharmaceuticals market – consequences for costs per defined daily dose.
Effect on price

- The retail price per DDD fell by 19 percent and the wholesale price fell by 35 percent.
- The results also indicate that, at the retail level, the price-cap effect and the general reform effect account for roughly half of the total price effect each, while at the wholesale level the effect stemming from the price cap is somewhat smaller than the general reform effect.
- The reforms reduced the DDD cost for consumers while maintaining healthy sustainable margins for retail pharmacies, wholesalers and pharmaceutical companies.

Source: Bergman MA, Granlund D and Rudholm N., Reforming the Swedish pharmaceuticals market – consequences for costs per defined daily dose.
Effect on geographical access

- The number of pharmacies, just less than three years after the abolition of the monopoly, had risen by 316, which is an increase of just over 34 percent.

Source: Tamro reports
Effect on geographical access

- The majority of new pharmacies have been established in urban areas or in places in proximity to urban areas.
- New pharmacies have opened in a number of areas that previously lacked such a service.
  - At least one new pharmacy has been established in each county, but the relative increase in the number of pharmacies varies greatly between counties. Stockholm County has witnessed a 56 percent rise in the number of pharmacies, while Jämtland County has only seen a 4 percent increase.
- No pharmacies have been established in sparsely populated areas, while there have been six more pharmacies in rural areas close to densely populated areas. At the same time, around thirty of the new pharmacies have been established at locations where no pharmacy had previously existed.
- In addition to the new pharmacies, 5600 new sales outlets for sales of certain OTC medicinal drugs have been established.

Source: Statskontoret report
Effect on geographical access

- Opening hours of pharmacies have increased
- The average weekly opening hours of pharmacies has increased from just over 45.5 hours in 2008 to 52 hours in 2012. The number of pharmacies in the country that are open on Sundays has increased from 154 to 422.
- Stockholm County has the longest opening hours, Jämtland County has the shortest.
- Inventory positioning had deteriorated but is improving

Source: Statskontoret report
Effect on distribution

- A competitive market for distribution
- Higher frequency of deliveries to pharmacies
- New distribution warehouses
- LSP and pre-wholesaling models have emerged
Distribution market competition index

<table>
<thead>
<tr>
<th>Wholesaler Shares</th>
<th>Celesio</th>
<th>Phoenix</th>
<th>Alliance Boots/Anzag</th>
<th>Sanastera</th>
<th>Oriola</th>
<th>Mediq</th>
<th>International Wholesaler % Share</th>
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</table>

19 Countries       14.8  16.9  16.1  6.0  2.2  1.3  57.2
Transitioning the electronic prescription system

- eHälsomyndigheten (Swedish eHealth Agency) is responsible of the infrastructure and service systems that used to be administered by Apoteket AB.
- The systems concerned are e.g. the pharmaceutical registry, the prescription registry and the annual health care fee limit data base. The systems were transferred to this state-owned company in order to make them available to private as well as state-owned pharmacies.
Key pre-requisites for the success of the reform

- Dental and Pharmaceutical Benefits Agency's (TLV)
- The Swedish Agency for Public Management (Statskontoret)—an agency under the Ministry of Health and Social Affairs that evaluates and follows-up state-funded initiatives - created public accountability and confidence
- The "Svenskt Kvalitetindex" (EPSI - Extended Performance Satisfaction Index), an index of customer satisfaction - created public accountability and confidence
- Private capital providers- PE Firms

Enforcement of quality standards for wholesaling and retail pharmacies
DISCUSS TANZANIA CASE STUDY