

From 3 to 1 Stock and storage in the Supply chain for Hospitals Pharmacies

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Financial Disclosure for Jan Mørch

- No relevant financial relationships exist for any health care product or services mentioned in this presentation

From 3 to 1

Experience during the last 3 years from merging 3 stocks to one central stock, while servicing 14 hospitals

Challenges:

- Merging while still getting the drugs to the customers in time
- In the beginning many complaints from hospitals due to problems to deliver
- We couldn't find the drug and we couldn't deliver

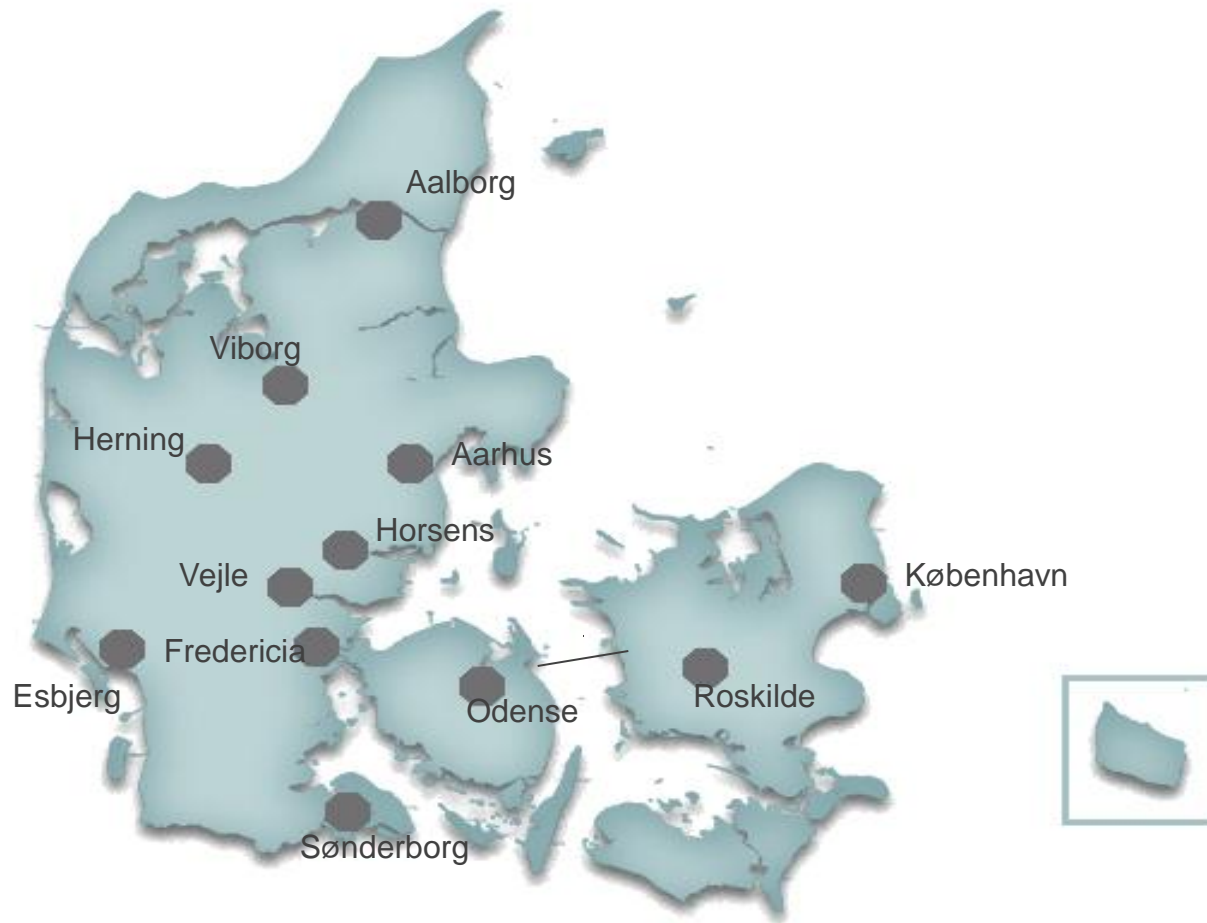
Solution:

- Arranging the stock in a smart way
- Ensure that packages are correctly stored
- Ensure that the IT stock reflects the actual stock

Agenda

- Danish key figures for logistics in hospital pharmacy
- The supply chain from hospital pharmacy to patient
- Organising stocks i Capital Regional Pharmacy

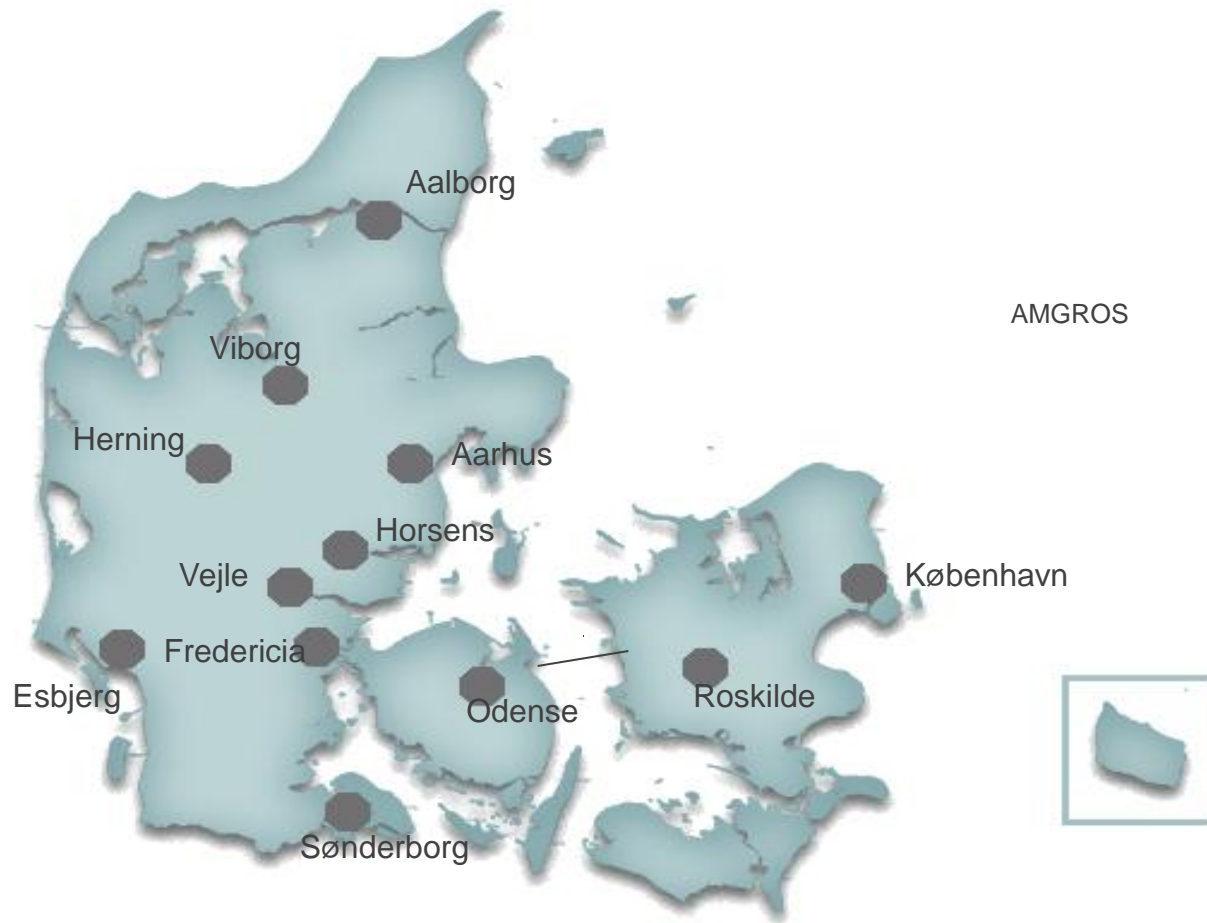
Denmark



Key Figures for Denmark

- Inhabitants: 5.500.000 (Oct. 2009)
- Area: 43.000 km²
- Regions: 5, formed in 2007, Regions is responsible for patient care
- Distance from west to east: 300 km
- Distance from north to south: 450 km
- Density of population: 127 inhabitants/km²
- Numbers of general hospitals: 53 (No nursing homes)
- Total drug consumption via hospitals (2009): 712 million Euro

Hospital Pharmacies in Denmark



AMGROS (www.amgros.dk)

Amgros I/S

Amgros is a public company owned by the five Danish regions. The organization has the lead in tenders and procurement of publicly used pharmaceuticals and other medicinal products, as well as hearing aids in the Danish public health service.

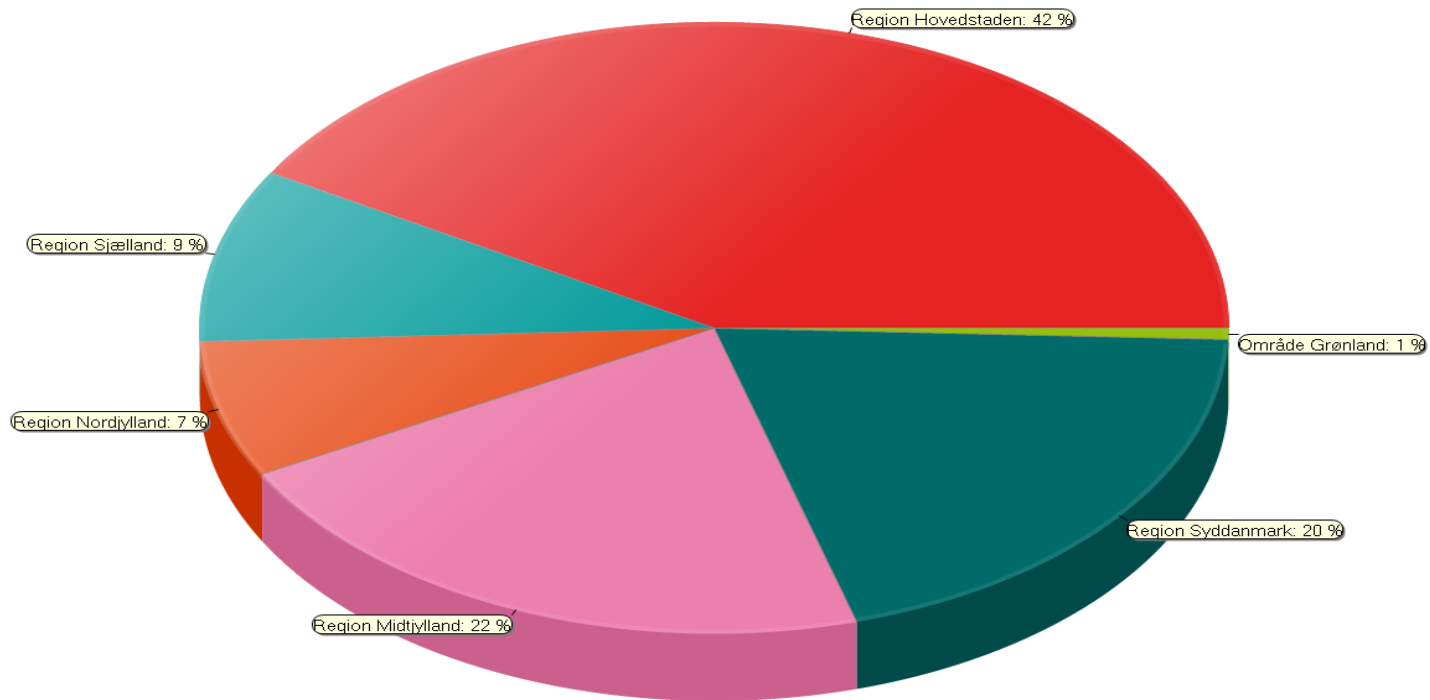
Amgros is the holder of the marketing authorisation for all pharmaceuticals manufactured by the Danish public hospital pharmacies.

Amgros organizes, publishes tenders, and purchases pharmaceuticals for all the public hospitals in Denmark which approximately is 30 percent of all public acquisition of pharmaceuticals. In addition

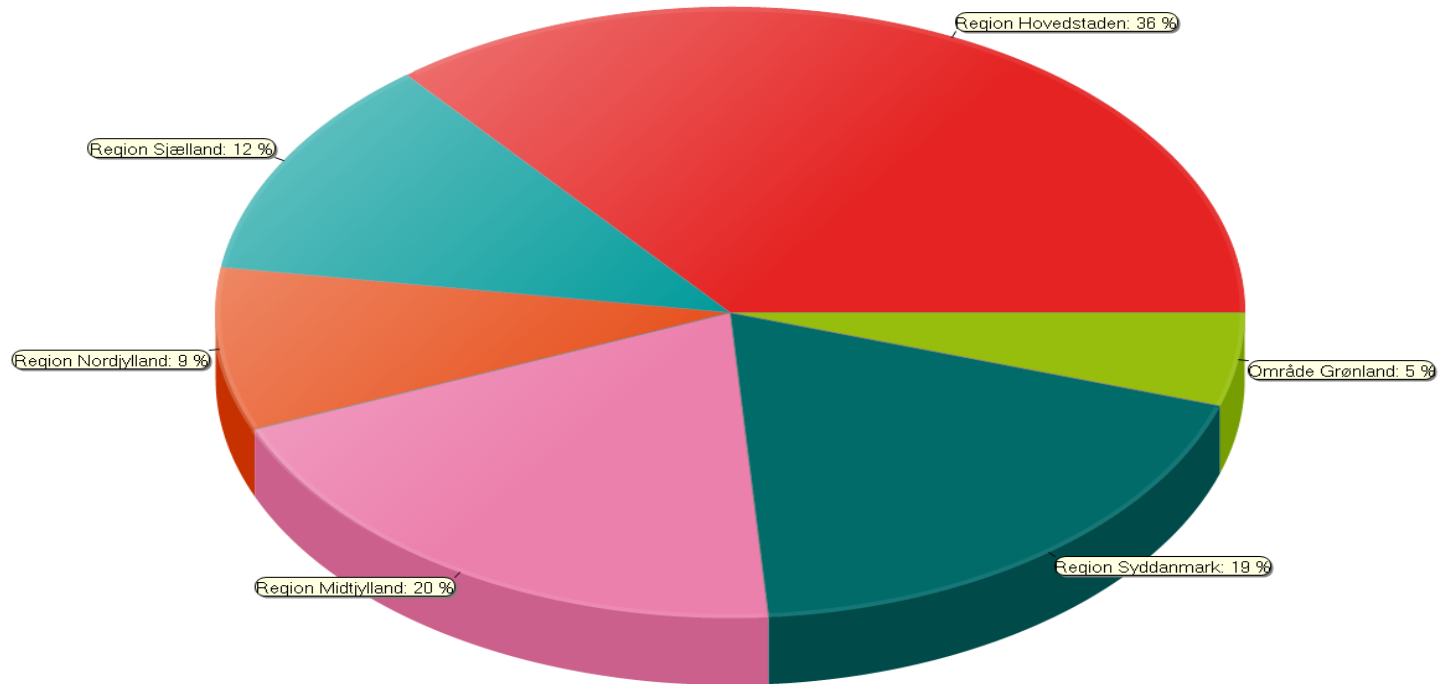
Amgros specializes in tender procedures, securing high quality in the handling of the proces, complying with the complex legal requirements of public tenders. Amgros develops advanced solutions for handling electronic, internet based systems for securing an effective and simplified proces from the tender offer to the procurement of the articles.

Amgros.dk is an important part of our program for proactive communication so our partners, among these politicians, civil servants, hospitals, hearing clinics, vendors, journalists and so on, can keep updated and informed about Amgros work, initiatives and position.

Turnover by Region (2009). Total 712 milion EURO



Number of Packages by Region (2009)

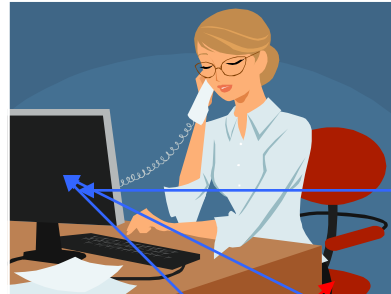




Supply Chain for Hospital Pharmacies

Quality assurance,
Controlling &
economy

IT function



AMGROS



Procurement

Expedition

Pakning &
forsendelse

Hospital

Drug Suppliers



Prescribing &
Dispensing
at hospital ward



Receipt
of Goods



Stock for
finished
goods



Dosis
dispensing



Medicin
Service



Service
Production



Stock for
Raw material

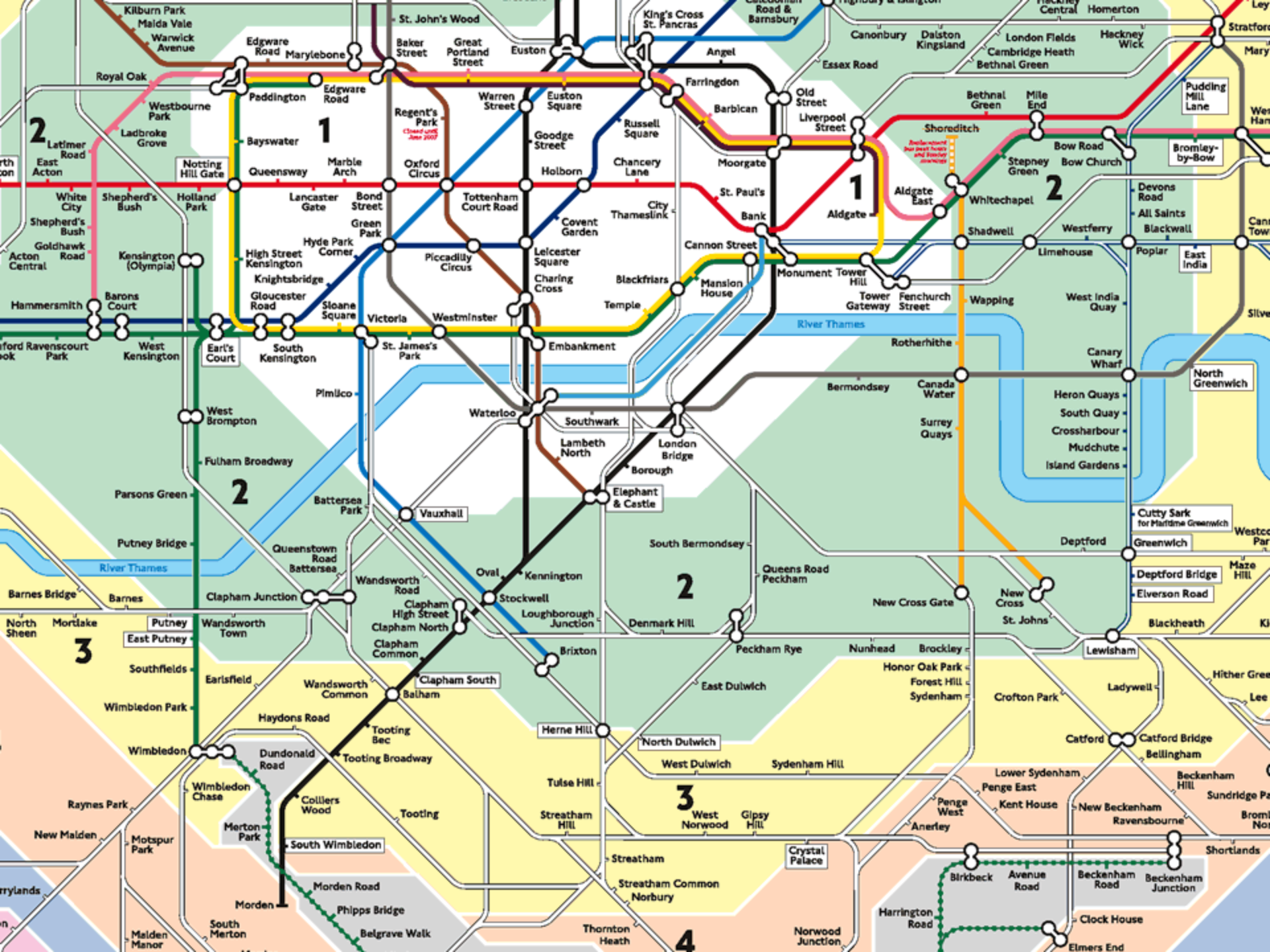


Industrial
Production



Clinical Pharmacy

Blue arrow: Pursage order
Red arrow: Flow of drugs
Green arrow: Knowledge



Pharmacy for 14 hospitals in The Capital Region



The Capital Region, Key Figures

- Inhabitants 1.680.671 (2010) app. 30% of DK
- Population yearly growth +3% (2007-2040)
- Healthcare expenses 2000 Euro/person/year
- Main tasks of the Region:
 - ✓ Health care (hospitals and health insurance)
 - ✓ Psychiatry
 - ✓ Regional future development
 - ✓ Superior coordination of the social institutions

The Capital Regional Pharmacy

- In 2007, 5 Regions were formed by fusion of 13 counties
- Capital Region Pharmacy was established January 2007 as a result of this
- Turnover 2009: 330 million Euro / 5,0 mill. packages
- Approx. 470 employees
- Pharmacists and pharmacy technicians at all hospitals in the region
- Centralized pharmacy functions at:
 - ✓ Marielundvej , Herlev
 - ✓ Rigshospitalet
 - ✓ Frederiksberg Hospital
 - ✓ Bispebjerg Hospital
 - ✓ Hillerød Hospital

Employees for Capital Region Pharmacy January 2010

Category	Number
Pharmacists and other academic staff	100
Pharmacy technicians	213
Lab technicians	32
Unskilled personnel	98
Others	35
Total	478

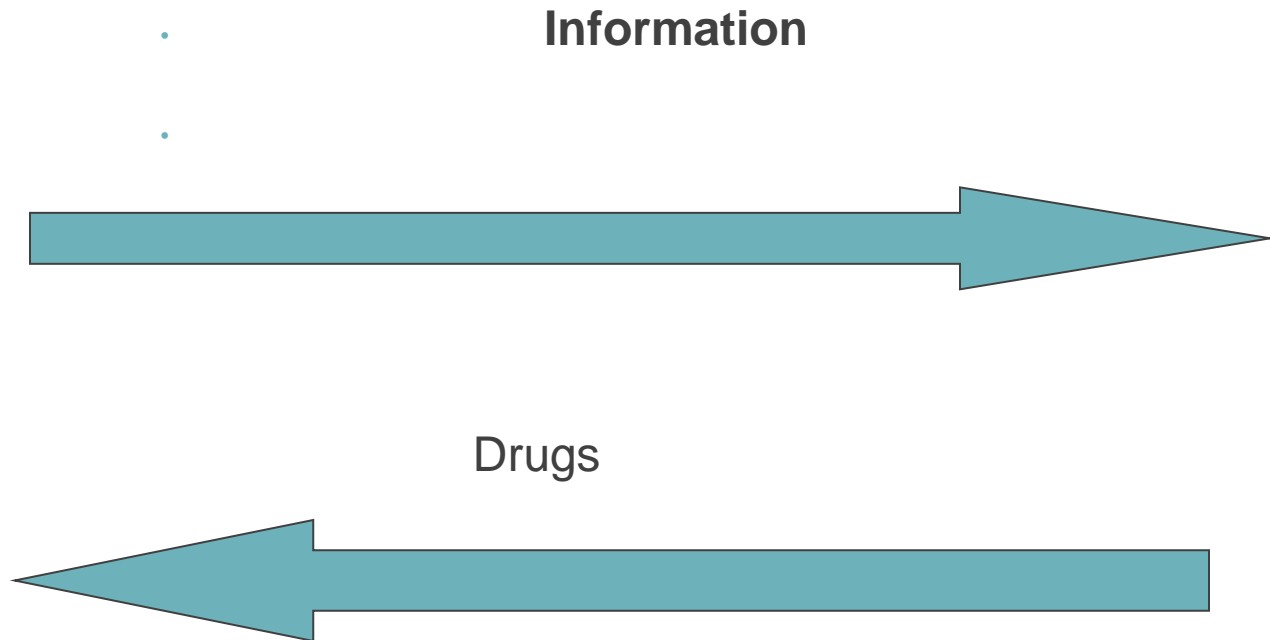
Department of Logistics

- Distribution (and returning) of drugs to all hospitals in The Capital Region incl. Greenland
- Import of non registered drugs
- Invitation of tenders in cooperation with Amgros
- In charge of contacts with the wholesalers and Amgros regarding all supplies

Some Key Figures for Logistic Department at Region Capital Pharmacy

- Around 3.000 drug items in stock (120.000 packages)
 - 1.200 shelf meters
 - 250 pallets
 - 300 shelf meters refrigerated
- Total value of stock 11 Million EURO
- Stock turnover 30-35 per year
- Around 4.000 m²
- Around 20 daily deliveries to 14 hospitals day to day
- Around 55 employees working Monday to Friday 7 – 16
 - 25 Pharmacy technicians employes
 - 26 Porters employes
 - 4 employees with academic degree

What is Logistics



Logistics is:

- Right drug
- Right time
- Right location
- Right quality
- Right price

What is on stock?



Guidelines on Good Distribution Practice of Medicinal Products for Human Use (94/C 63/03) (Text with EEA relevance)

- Receipt
- 7. Receiving bays should protect deliveries from bad weather during unloading. The reception area should be separate from the storage area. Deliveries should be examined at receipt in order to check that containers are not damaged and that the consignment corresponds to the order.
- 8. Medicinal products subject to specific storage measures (e.g. narcotics, products requiring a specific storage temperature) should be immediately identified and stored in accordance with written instructions and with relevant legislative provisions.
- Storage
- 9. Medicinal products should normally be stored apart from other goods and under the conditions specified by the manufacturer in order to avoid any deterioration by light, moisture or temperature.
- Temperature should be monitored and recorded periodically. Records of temperature
- should be reviewed regularly.
- 10. When specific temperature storage conditions are required, storage areas should be equipped with temperature recorders or other devices that will indicate when the specific temperature range has not been maintained. Control should be adequate to maintain all parts of the relevant storage area within the specified temperature range.
- 11. The storage facilities should be clean and free from litter, dust and pests. Adequate precautions should be taken against spillage or breakage, attack by micro-organisms and cross contamination.
- 12. There should be a system to ensure stock rotation ("first in first out") with regular and frequent checks that the system is operating correctly. Products beyond their expiry date or shelf-life should be separated from usable stock and neither sold nor supplied.
- 13. Medicinal products with broken seals, damaged packaging, or suspected of possible contamination should be withdrawn from saleable stock, and if not immediately destroyed, they should be kept in a clearly separated area so that they cannot be sold in error or contaminate other goods.

What is a well organised and effective stock

- Goal: To deliver what the customer has ordered
- You know what is in stock
- You know where the goods are located
- You are able to pick from stock
- You have a well organized dep. for receipt of drugs
- You have a proper IT system

Small Packages on Shelves



Well-organised? Changing stock layout



Well-organised? Changing stock layout



Well-organised? Changing stock layout



How to organize a stock of drugs in Capital Regional Pharmacy

- Basics

Yearly picking 1.5 mio order lines

Yearly picking around 3 mio packages of drugs

- Big packages (fluids)

- Medium packages

- Small packages

- Narcotics

- Refrigerated packages

- Frozen boxes

- Flammable liquids

- Trolleys for liquids

How to organize a stock of drugs in Capital Regional Pharmacy

- Five different 'stocks' in the same location:
 - Small packages 2500 items, approx. 600 m², 1200 shelfmeters
 - Big packages (Liquids) 300 items, approx. 400 m², 350 pallets
 - Semi big packages 200 items approx. 100 m², 30 pallets
 - Narcotics 200 items, 50 m² 50 shelfmeters
 - Refrigerated drugs 300 items 100m², 150 shelfmeters
 - Flammable liquids 30 items, 50m², 10 pallets

Organising stock for small parcels

- Goal: Picking shall be as easy as possible

Prerequisites:

- 10 -12.000 packages picked per day
- All picking is done 7-15, Monday to Friday by skilled/unskilled employees
- Manually picking by hand
- Each picker picks 4-700 packages per day
- Each picker walks around 6-10.000 steps per day
- Important to pick the right goods first time

How is picking done?

MS: Linda Romsted
 HH: Gøtztri søngeaafst
 1330
 111210

Leveres Af: MS: Linda Romsted

HH

Plek
 Side 1

Region Hovedstadens Apotek
 Distribution
 Marielundvej 25

10. maj 2010 - 10.03

Kuademr. 1330210

Plek nr. LPC901349

Varenr.	Antal	Enhed	Beskrivelse	Rekv. type	Sælgepris	ATC-kode
Ordrer nr. 808952867 BCM0001						
Placering: 1.09.5 Stålrørl- højfrekvente varer						
138073	10	10	Vancomycin "Hospira", pulv. i inf. væske, opl. 1 g, 1 mg, a 1 g	M	386,00	J01XA01
Placering: 1.21.2 Stålrørl- højfrekvente varer						
461442	2	203	Acivir, creme, 50 mg/g, 2 g Lohn. "93470", Udfærdigelsesdato 01-06-11	M	11,05	D06BB01
Placering: 1.36.6 Stålrørl- højfrekvente varer						
046825	1	60ST	Paracetol Retard, depotkapsler, hårde, 200 mg, 60 stk.	M	123,89	B01AC06
Placering: 1.40 Palleplade højfrekvent						
436485	2	10X1,5G	Cefuroxim "Stragon", pulv. i inj. væske, opl. 1500 mg, 10 x 1,5 g Lohn. "070112", Udfærdigelsesdato 01-01-12	M	185,03	J01DF01
Placering: 1.63 Palleplade ved væg						
079748 79749	2	5X1G	Diclocl. Inj. og inf. substans, 1 g, 5 x 1 g	M	192,85	J01CF06
Placering: 2.12.3 Stålrørl						
210335	1	60ST	Saccharol, Kaps., 60 stk.	M	106,00	A07FA01
Placering: 2.36.6 Stålrørl						
202959	1	1ST	Handi-Haler, 1 stk.	M		V07A
Placering: 3.33.2 Stålrørl						
009328	1	100ST	Selo, zok, depottableter, 25 mg, 100 stk.	M	11,00	D07AB

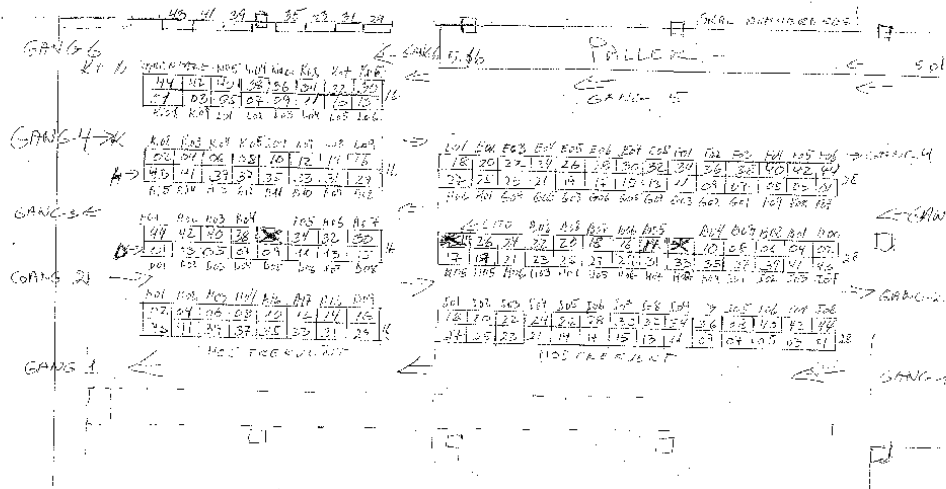
Picking of Packages



Organising stock for small packages

- 140 shelves with 7 shelves of 1 meters length each, in total 980 shelfmeters
 - Each shelf: 100 cm x 60 cm
 - 1 – 6 different items on each shelf
 - Each items is placed in a plastic box
- Use Pareto 80/20 rules. Fast movers – slow movers
- Use of bar code – no extra control necessary
- Fixed location of packages – same location each time
- Fast-movers kept together in one area!

Stock layout for small packages



Pareto's 80/20 rule

- 80% of picks concerns 20% of the items
- 80% of a company's turnover derive from 20% of its clients
- 80% deliveries from stock concerns 20% of the items
- 80% of all errors derive from 20% of the activities
- 80% of a company's purchase are from 20% of its suppliers

Picking small packages



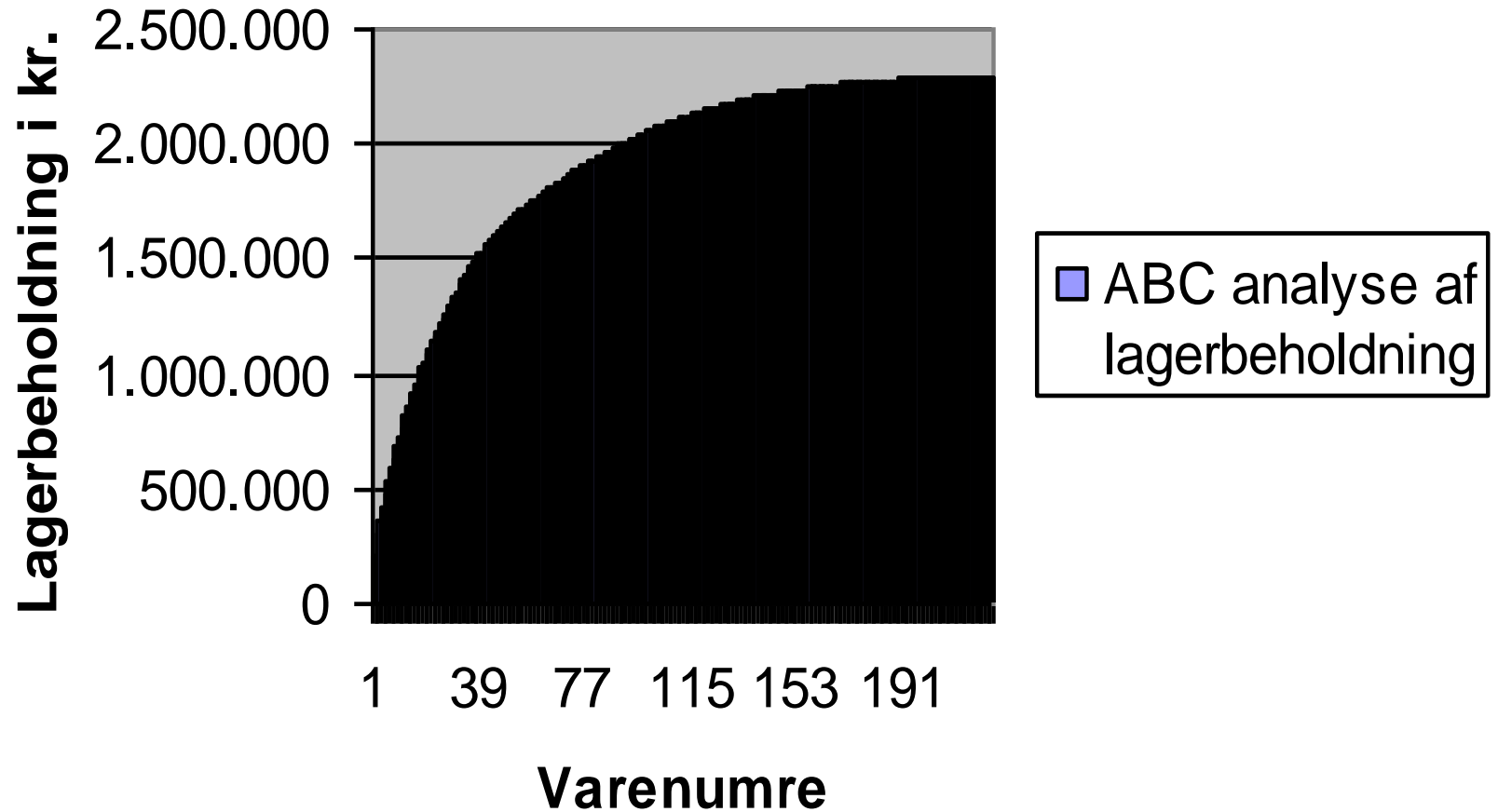
Picking small packages



What is the Paretos 80/20 rule good for?

- Reducing logistic costs
- Working smarter for less resources
 - Use of resources where you get the most outcome
- Competition parameter
- Earn more money
- Use the saved resources to develop new products/processes

ABC analyse af lagerbeholdning



Use of ABC analyses

- Identify critical items, which must always be on stock
- Get an overview of the stock (number and price)
- Organise the stock based on ABC evaluation of each item

Refrigerated Room



Organising stock for small packages

- Are there other solutions for organising a stock for small packages?
- Yes!!!

Pater Noster



Pater Noster





Apoteket

Video

Trolley for Liquids



Jan Mørch. Region Capital Pharmacy, Denmark

Stock for Big Packages (Liquids)



Stock for Big Packages (Liquids)



Ward Medicines Room



Boxes for Shipment of Drugs



Recommendations for stock layout

- Start with a manual solution
 - Use Pareto 80/20 rule to identify fast movers and slow movers
 - Decide fixed, floating, alfabetic, or Anatomical Therapeutical Chemical (ATC) code location af packages
 - Use proper logistic it-system integrated with the ERP system
 - Use commen sence

Conclusion on organising stock (I)

- Manuel picking stock
- Pro:
 - Cheap system
 - Very flexible
 - Not so sensitive to break down

- Cont:

Heavy use of ressources, interesting job i future

Heavy load on the body – repetitive work

Risk for failures

Conclusion on organising stock (II)

- Fully automaized stock
- Pro:
 - Use of few ressources
 - Low risk for failures
 - Need for limited space
- Cont:
 - Heavy investment
 - Not very flexible
 - Sensitive to break down

From 3 to 1

Challenges:

- Merging while still getting the drugs to the customers in time
- In the beginning many complaints from hospitals due to problems to deliver
- We couldn't find the drug and we couldn't deliver

Solution:

- Arranging the stock in a smart way
- Ensure that packages are correctly stored
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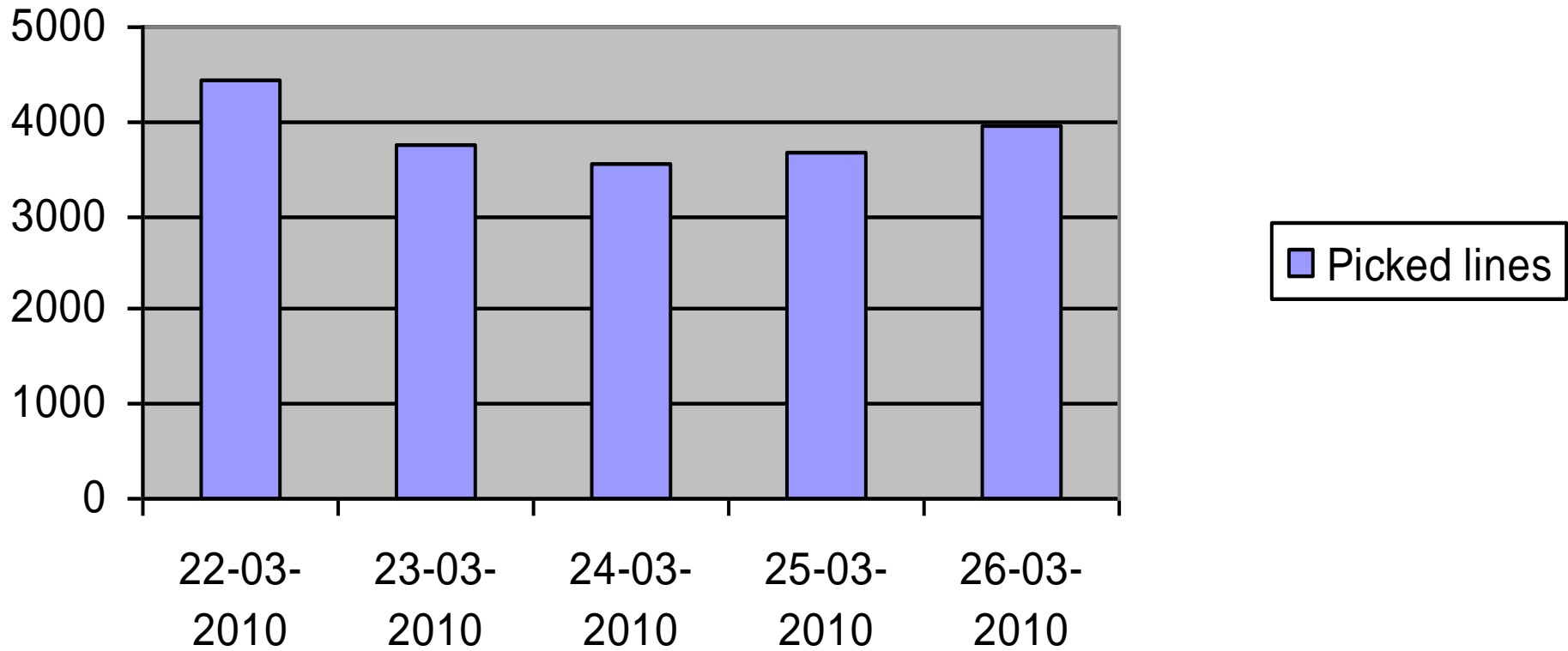
Result:

- We can find the drugs
- We can deliver
- The customers are satisfied

Conclusion on organizing stock (I)

- Very important link in the supply chain
- Manuel stock
- Semi automaized stock
 - At least picking 15-20.000 lines per day
- Fully automaized stock
 - At least picking 100.000 lines per day

Picked lines in week 12



Supply chain delivering drugs from pharmacy to Hospitals

In House Production



Quarentien



Receiving Goods → Stock → Picking → Packing → Sealing → Transportation → local stock → Patient

Purchase

Amgros

External supplier

Roche, Pfizer, Nomeco and Tjellesen Movianto (Pharmaceutical Wholesalers)