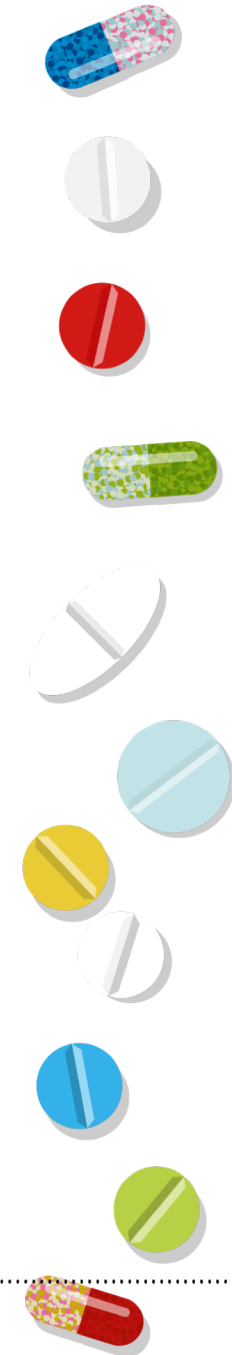

MEDICINES SHORTAGES – A REALITY CHECK?

A Danish perspective

Nils Linde-Laursen, Amgros I/S
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Mail: nll@amgros.dk

DISCLOSURE

- Conflict of interest: Nothing to disclose



QUESTIONS

1. Are the pharmacy able to influence the number of back orders reaching the hospital?
2. Is it good practice to manage all drugs at the pharmacy in the same way?
3. Is it worth to share information with the suppliers regarding forecast, back orders, delivery performance a.m.?



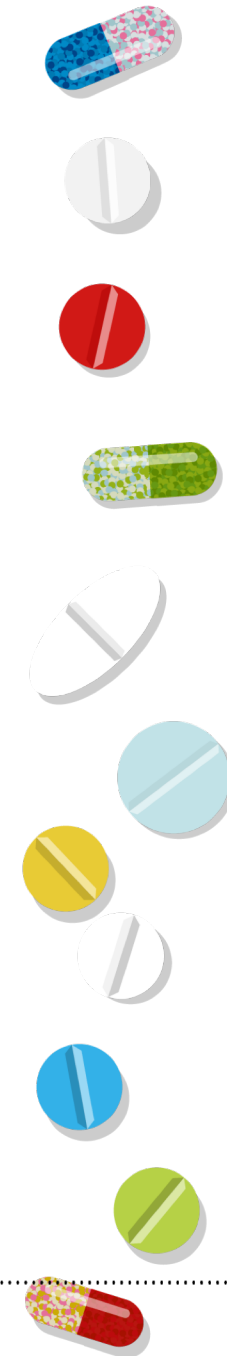
AGENDA

- Supply of medicines to Danish Hospitals
- Brief introduction to Amgros and the Danish supply chain
- Amgros' tender business and drug shortages
- Amgros' logistic business and drug shortages
- Operational handling of back orders
- Tactical planning avoiding future back orders
- Strategic development
- Reporting



*Nils Linde-Laursen, Logistic manager
Bachelor of Engineering, Bachelor in Supply Chain Management.
Working at Amgros since 2014
Experience: More than 20 years in European Pharmaceutical industry*

Nils Linde-Laursen



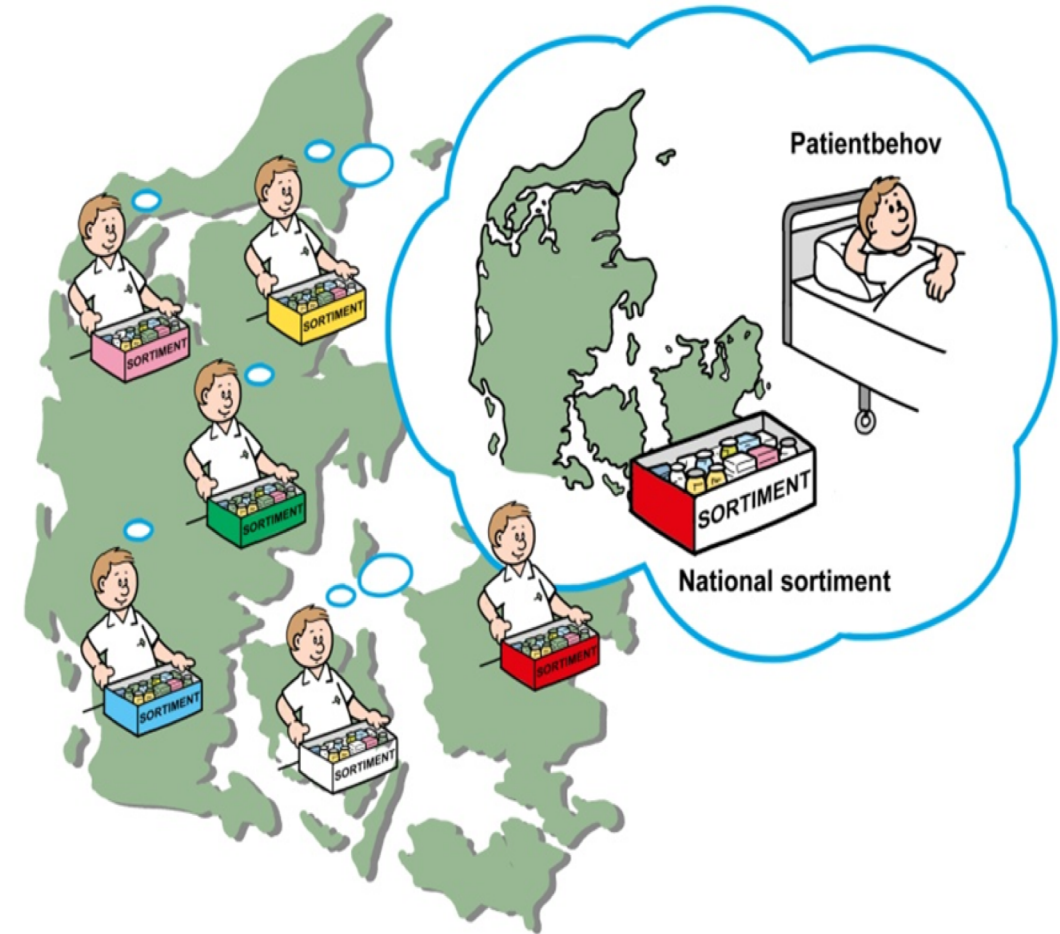


SUPPLY OF MEDICINES TO DANISH HOSPITALS

A BRIEF INTRODUCTION TO THE DANISH SETUP FOR SUPPLYING HOSPITAL MEDICINE - 1



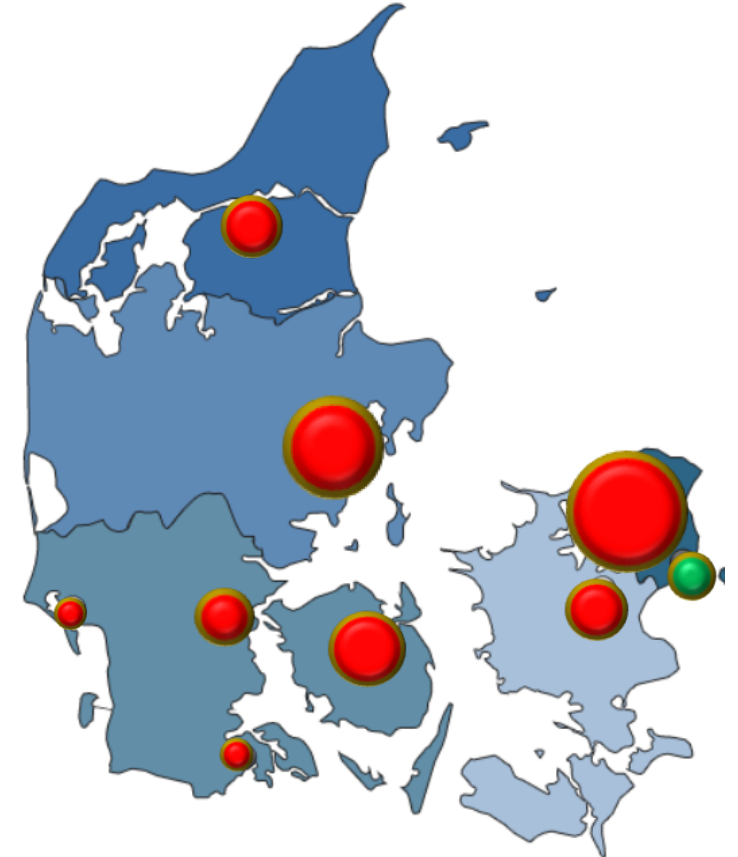
- Equal and free access to health care for all citizens
- No patient co-payment for hospital services, including pharmaceuticals
- **National** tenders and guidelines
- Prescription for most of the "advanced" pharmaceuticals are restricted to hospitals
- *Retail pharmacies (primary care) are private businesses*





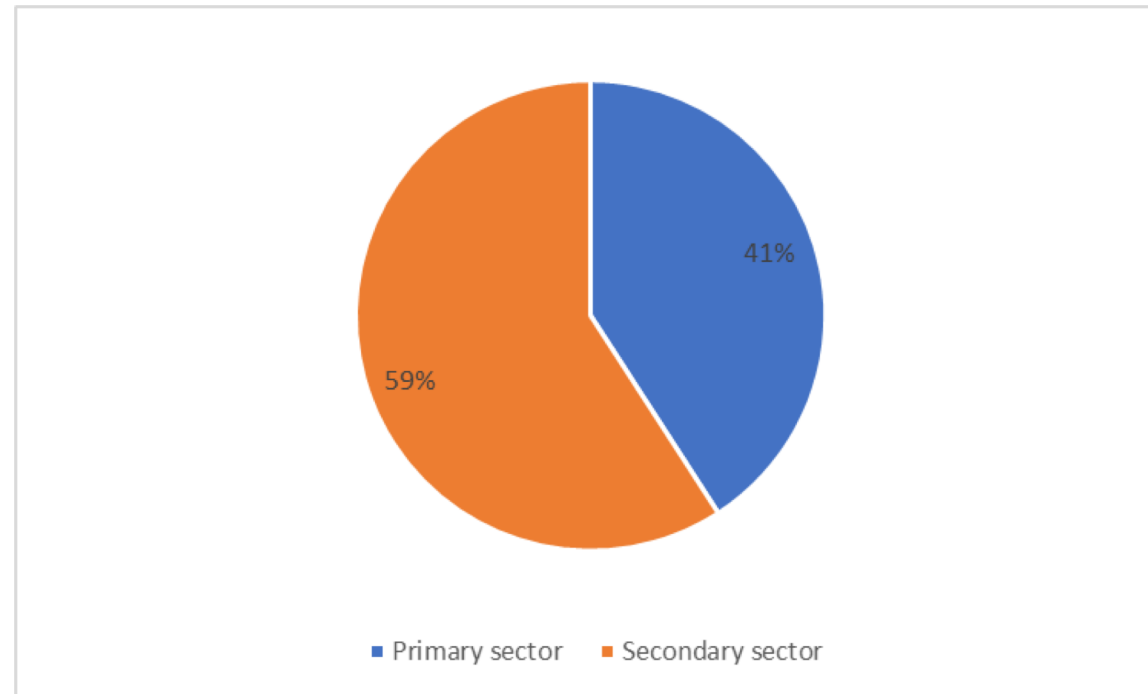
A BRIEF INTRODUCTION TO THE DANISH SETUP FOR SUPPLYING HOSPITAL MEDICINE - 2

- 5.7m inhabitants
- A public health care system owned by and managed individually by the 5 regions
 - Mainly financed through general taxes
- A few facts:
 - 50 hospitals
 - 8 hospital pharmacies ●
 - 1 national setup for procurement and supply ●



MARKET SHARE IN DENMARK

TOTAL MARKET (2017) – 2.6 BILLION EURO (PPP)



Hospital market share 59% (value)
Turnover 1.52 Billion EURO

Changes with annual EU tenders

8 hospital pharmacies + Greenland

Growth rate app. 5%

Primary care market share 41% (value)
Turnover 1.05 Billion EURO

Generic substitution every 2nd week

App. 210 private pharmacies

Growth rate >1%

Source: DLI



BRIEF INTRODUCTION TO AMGROS AND THE DANISH SUPPLY CHAIN

VERY SHORT ON ONE OF AMGROS' BUSINESS AREAS

- Ensure that the right pharmaceuticals are bought at the right price for Danish hospitals
- Cut administration costs and achieve volume discounts by consolidating procurement of hospital medicine.

3.171

MIO. IS HOW MUCH WE HAVE SAVED
THE REGIONS OVER THE LAST 12
MONTHS

(426 million €)

340

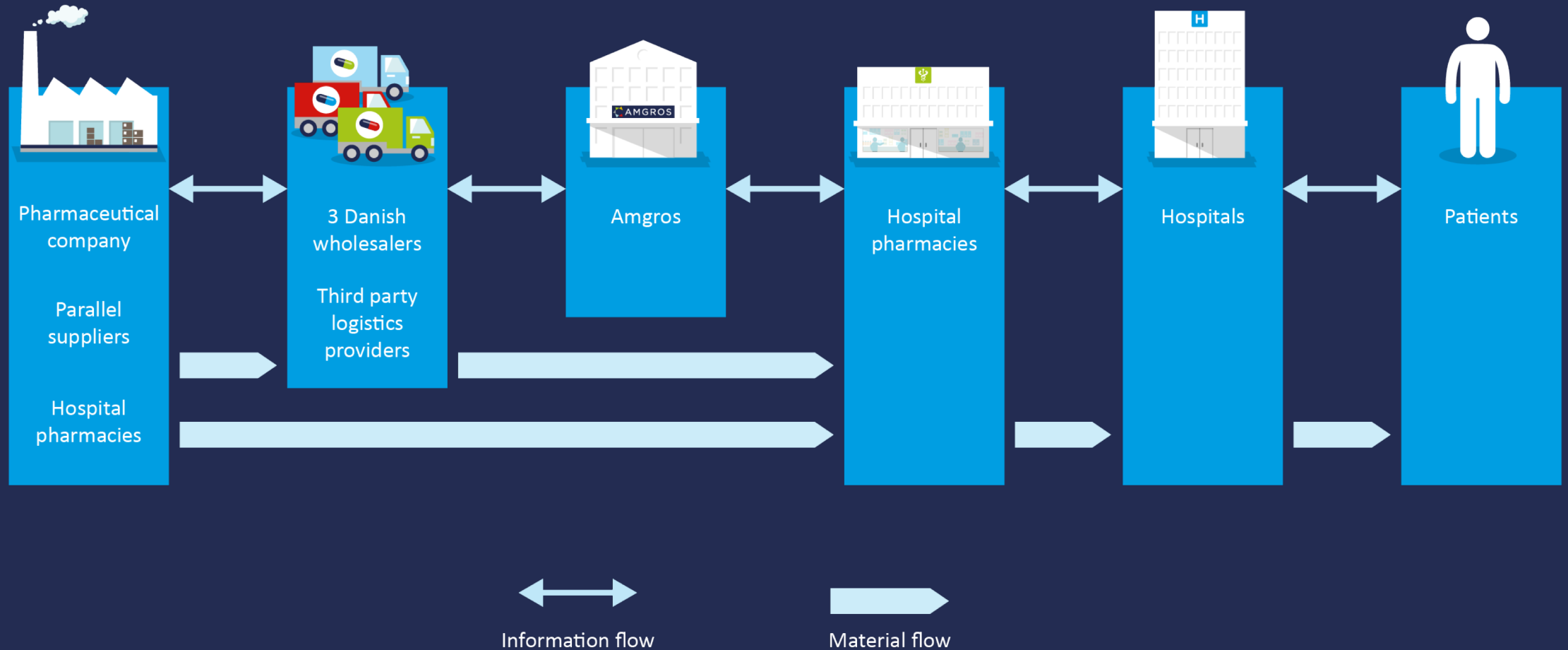
IS THE NUMBER OF EU TENDERS WE
HAVE HELD OVER THE LAST 12
MONTHS

27,28

IS THE AVERAGE PCT. DISCOUNT WE
HAVE ACHIEVED FROM SUPPLIERS
OVER THE LAST 12 MONTHS

- To learn more visit: <http://www.amgros.dk/en>

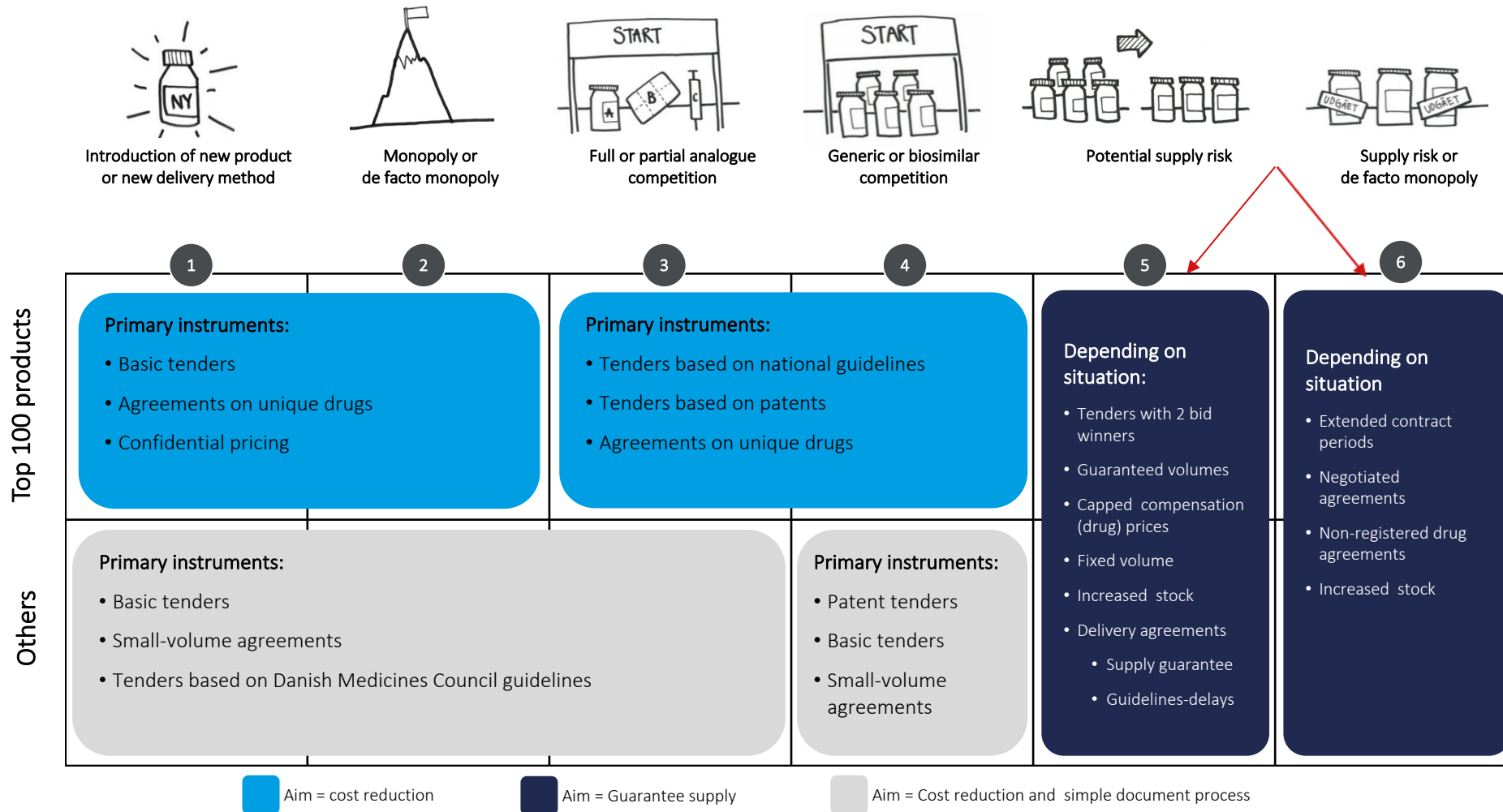
THE SUPPLY CHAIN FOR HOSPITALS





AMGROS' TENDER BUSINESS AND DRUG SHORTAGES

AMGROS' CATEGORY STRATEGY BASED ON THE LIFECYCLE MODEL COMBINED TENDER AND SUPPLY APPROACHES





AMGROS' LOGISTIC BUSINESS AND DRUG SHORTAGES

SOME NUMBERS FOR AMGROS SUPPLY CHAIN

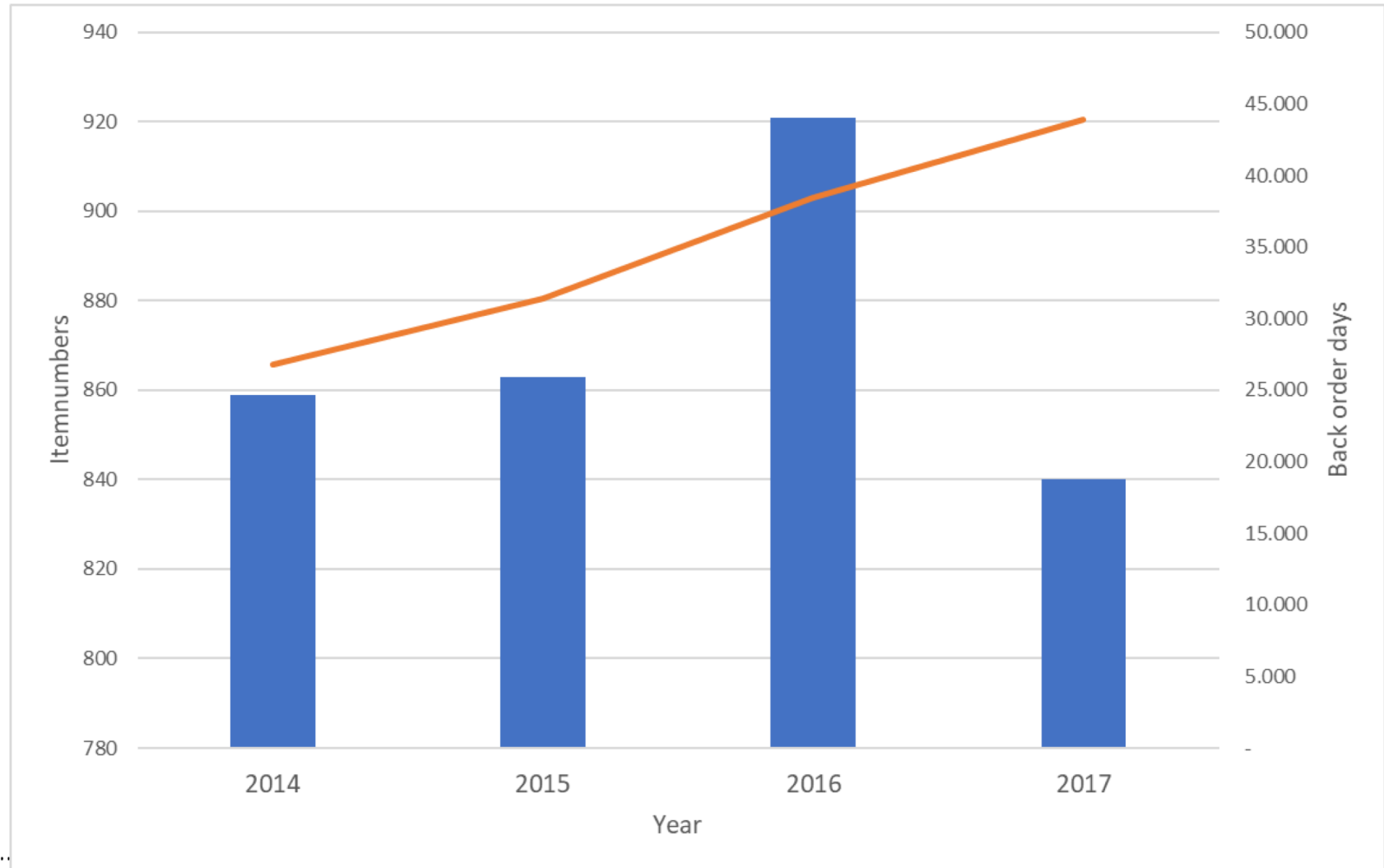
	2016	2017
Order lines		
Total for the year	309,395	312,300
Order lines delivered within 3 working days	299,450	302,537
Order lines delivered after 3rd working day	9,945	9,763
Delivery performance		
Share delivered within 3 working days	96.8%	96.9%
Share delivered within 10th working days	99.0%	98.9%
Back order periods		
Periods at least per year	1,394	1,323

ITEM NUMBERS IN BACKORDER AND BACK ORDER DAYS

(EU TENDER PRODUCTS)

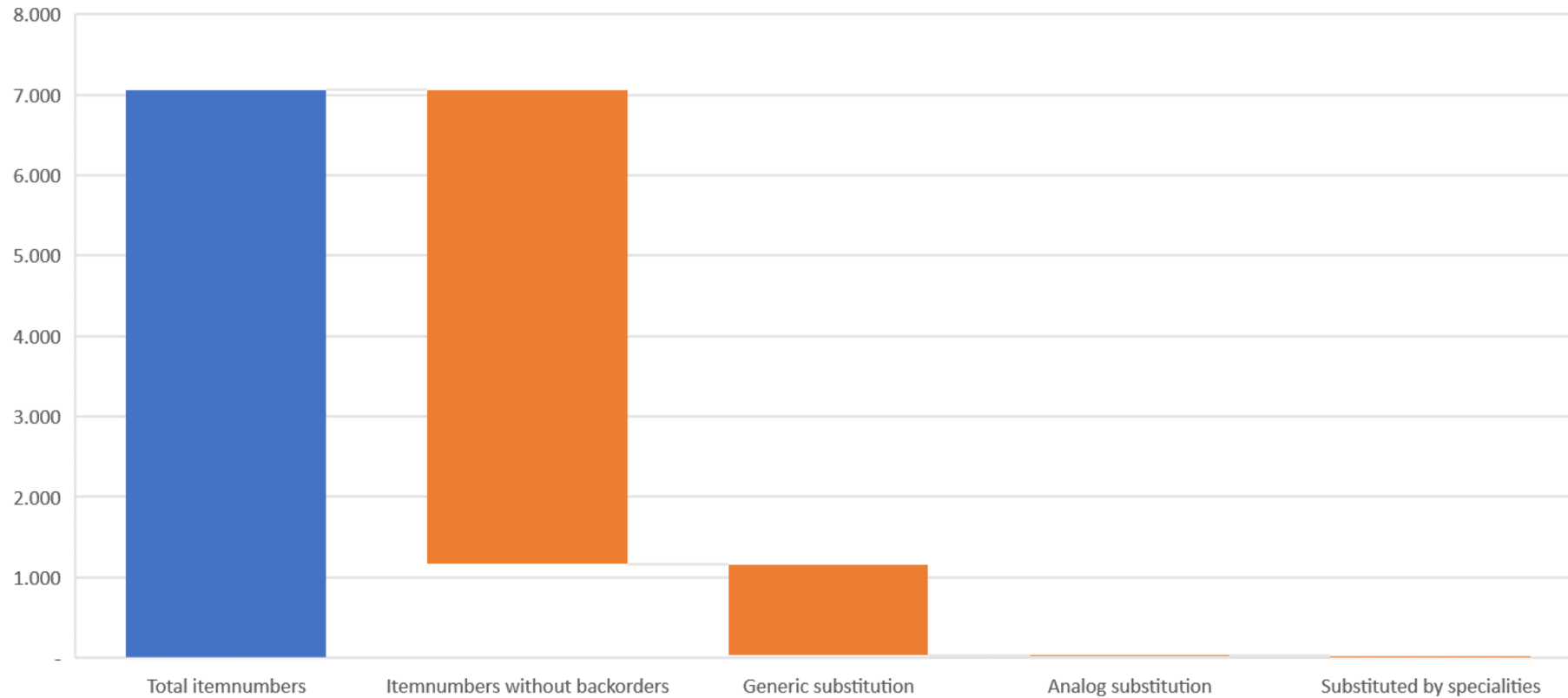
Definition of drug shortage:

Amgros register a drug shortage if a drug is not received at the Hospital Pharmacy within 3 days after ordering at the supplier



TOTAL NUMBER OF ITEMS, 2017

Itemnumbers bought through Amgros 2017



Back order solutions through Amgros:

Generic: 1,135 SKU
Analog: 5 API (9 SKU)
Specialties: 11 API (25 SKU)

Pharmacies do as well handle some situations on small volume products

A close-up photograph of a robotic gripper, likely from a collaborative robot. The gripper is made of a light-colored, possibly aluminum, metal. It features two black, cylindrical suction cups at the end of its fingers. The background is a soft, out-of-focus blue and white gradient. A white horizontal line is positioned above the main title text.

OPERATIONAL HANDLING OF BACK ORDERS

AMGROS BACK ORDER SYSTEM (AMRO)

System in Amgros (AMRO)



Opdr.dato	Atc	Varenr.	Varensnavn	Restordre A	Anfart Forv./Lev./Tid	Opfølgingsdato	Intern kommentar	Føljetekst	Lev.tekst	UdbudsGrp	Levingsd.	RADS Tilbud	Vinder	Lev.Nr.	Lev.Navn	Aftale	Årsag	Særet	Status
06-12-2017	J01GB03	423737	Gentamicin "B. Braun"	10					FO_1.202.a	2017	Nej	1	31313141	B. Braun Medical A/S	53 Mangler varemottagelse				
06-12-2017	J02AC01	587922	Fluconazol "Aurobindo"	7				Restordre fra tidligere ordre.	Ultimo uge 50	1.850.a	2017	Ja	1	49138342	Orion Pharma A/S	53 Mangler varemottagelse			
	L01XE25	446489	Melnicol	3				Restordre fra tidligere ordre.	Få dage	1.168.a	2017	Ja	1	66136000	Orifarm A/S	53 Mangler varemottagelse			
	LDAAA37	579910	Olumiant	3		18-12-2017		Deliverance - restordre følger.	Forv./lev. 18.12.2017	IN1.206.a	2017	Nej	1	38881700	Eli Lilly Danmark A/S	ikke oplyst			
	A04AD12	017331	Emend	500					FO_1.741.a	2017	Nej	1	43287766	MSD Danmark ApS	53 Mangler varemottagelse				
	h02bc	511963	TachoSil	4					FO_1.741.a	2017	Nej	1	36770052	Takeda Pharma A/S	53 Mangler varemottagelse				
09-06-2017	N03AX14	051766	Kevey	34		18-12-2017	21-11-2017 mail: Det er lige åbnet nu, så der går desværre 4 uger. Min fejl - Jeg skal nok sørge for at der ved bestill...		FO_1.4041.b	2017	Nej	1	70237733	Stragen Nordic A/S	11 Produktions problemer / - flaskehals				
	J02AC03	016382	Vfend	0					1.854.a	2017	Ja	1	44201101	Pfizer PFE ApS	ikke oplyst				
	J07BC01	004502	Engerix-Ø 10 mikrogram/0,5 ml	0					FO_1.401.a	2017	Nej	1	31759000	GlaxoSmithKline Pharma A/S	53 Mangler varemottagelse				
26-09-2017	N01BA02	553958	Instilagen	500		01-10-2017	AMRO mail		FO_1.305.a	2017	Nej	1	42818288	E. Tjelleesen	ikke oplyst				
01-02-2017	B05B801	141388	Natriumklorid Fres.Kabi 9mg/ml	0			TOP6 mail: Er ankommet og restordre leveret til SA'er 7/2		2.106.b	2017	Nej	1	32579000	Presenius Kabi	20 Restordre frigivet iflg. Leverandør				
03-04-2017	V08DA05	589726	SonoVue	0					1.702.a	2017	Nej	1	66136000	Orifarm A/S	50 Restordre årsag ikke oplyst af leverandør				
18-09-2014		119654	TachoSil	0			er på lager mgl. release af ordre						36770052	Takeda Pharma A/S	ikke oplyst				
11-07-2017		071567	Lumigan	20			2809 mail. aftale opsagt d.d. dog er ro frigives fra TMJ d.d.	Deliverance - restordre følger.	Lev. uvis producent	75152900	2care4 ApS			20 Restordre frigivet iflg. Leverandør					
		182036	Zypadhera	23		13-06-2013		Deliverance - restordre følger.	Forv. lev. Få dage	75152900	2care4 ApS			ikke oplyst					
		072800	Cloppal	1				Ansøgning ikke godkendt.	Få dage	75152900	2care4 ApS								

- Amgros register and update information for all backorders in AMRO
- AMRO is linked to our supplier portal
- Information updated on pharmacy portal, which can be accessed by all pharmacies

Information on pharmacy portal

Firma	Navn	Styrke	Disp.form	Paks.	Forv. lev. tidspunkt	Årsag	Kommentar	Erst.vnr.	Erst.v.navn	Udbudsgruppe	Vinder	Oprettet den	Ændret den	Forventet vnr.	Leverans
GlaxoSmithKline Pharma A/S	Havrix	1440 EU / ml	Inj.væske,suspension	0,5 ml (endosisprøje)	Uge 07 år 2018	11 Produktions problemer / - flaskehals	Uge 07 2018			BA1.1.b	BA	30-01-2015	05-09-2017	N/A	31759000
Presenius Kabi Kabi	Sterilt Vand "Presenius Kabi"	0	Solv. t.parent. brug	10 hgl. x 100 ml	Kommer ikke i udbudsperioden	53 Kommer ikke i udbudsperioden	Se K-1181 aftale opsagt pga RO og Uvis lev. gennem længere tid. Restordre slettes. Erstatningsløb til 31-03-2018			FO_1.12.a	1	02-06-2015	14-07-2017	N/A	32579000
Presenius Kabi Kabi	Natriumklorid Fres.Kabi	9 mg / ml	Solv. t.parent. brug	10 hgl. x 100 ml	Kommer ikke i udbudsperioden	52 Kommer ikke i udbudsperioden	Se K-1181 aftale opsagt pga RO og Uvis lev. gennem længere tid. Restordre slettes. Erstatningsløb til 31-03-2018			FO_1.12.a	1	08-10-2015	14-07-2017	N/A	32579000
Pfizer PFE ApS	Zoledronyre Hospira	40 mg / ml	Inf.væske, opløsning	100 ml	Uge 05 år 2018	11 Produktions problemer / - flaskehals	Lev. fra Pfizer rykket til uge 9-2018, erstatning vnr. 110222 fra Presenius som kommer uge 51			1.751.a	1	16-12-2015	15-12-2017	N/A	44001101
B. Braun Medical A/S	Remifentanyl "B. Braun"	1 mg	Pulv.t.konc. inj/inf	5 hgl.	Uge 05 år 2018	10 Problemer med at indkøbe råvare	AMGROS har indgået en leveringsaftale med B.Braun. 6.000 pk. leveres ultimo januar og herefter igen til april april 2018. Dose forløses på SA.			LA1.302.a	1	20-04-2016	12-12-2017	N/A	31313141
Presenius Kabi Kabi	Sterilt Vand "Presenius Kabi"	0	Solv. t.parent. brug	10 hgl. x 50 ml	Kommer ikke i udbudsperioden	52 Kommer ikke i udbudsperioden	Se K-1181 aftale opsagt pga RO og Uvis lev. gennem længere tid. Restordre slettes. Erstatningsløb til 31-03-2018			FO_1.12.a	1	06-06-2016	14-07-2017	N/A	32579000
GlaxoSmithKline Consumer Health	Nicotinell Mint	1 mg	Sugetabletter	96 stk.	Kommer ikke i udbudsperioden	52 Kommer ikke i udbudsperioden	Glaxo har ikke flere på lager.			1.409.a	1	07-11-2016	27-03-2017	N/A	48936700
B. Braun Medical A/S	Remifentanyl "B. Braun"	2 mg	Pulv.t.konc. inj/inf	5 hgl.	Uge 05 år 2018	10 Problemer med at indkøbe råvare	AMGROS har indgået en leveringsaftale med B.Braun. 8.000 pk. leveres ultimo og herefter igen til april 2018. Dose forløses på SA.			LA1.302.a	1	16-11-2016	12-12-2017	N/A	31313141

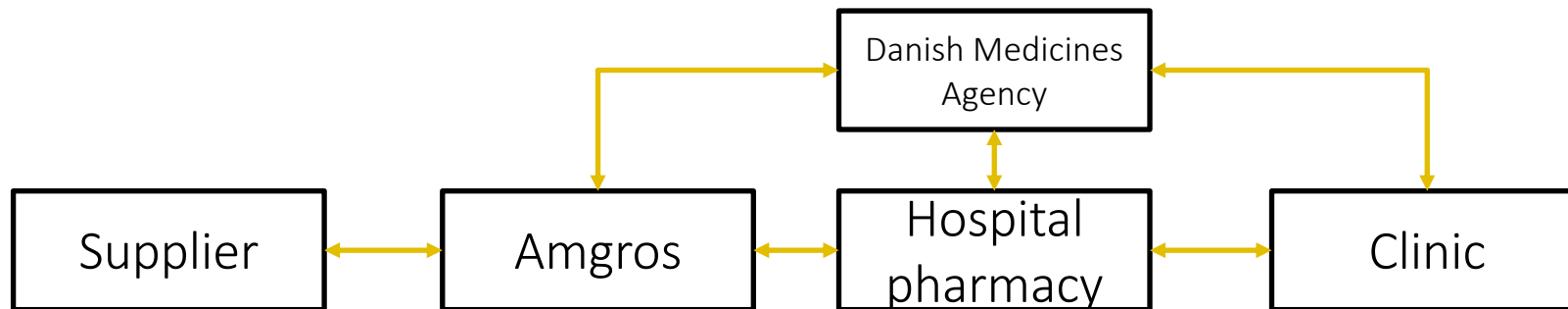
FOCUSED FOLLOW-UP WITHIN THE LOGISTIC DEPARTMENT

- Stand-up meetings every Tuesday at 10am
- Focusing on "the worst problems" such as critical drugs and supplier with most back orders
- "Top 6" suppliers. Who to meet next?



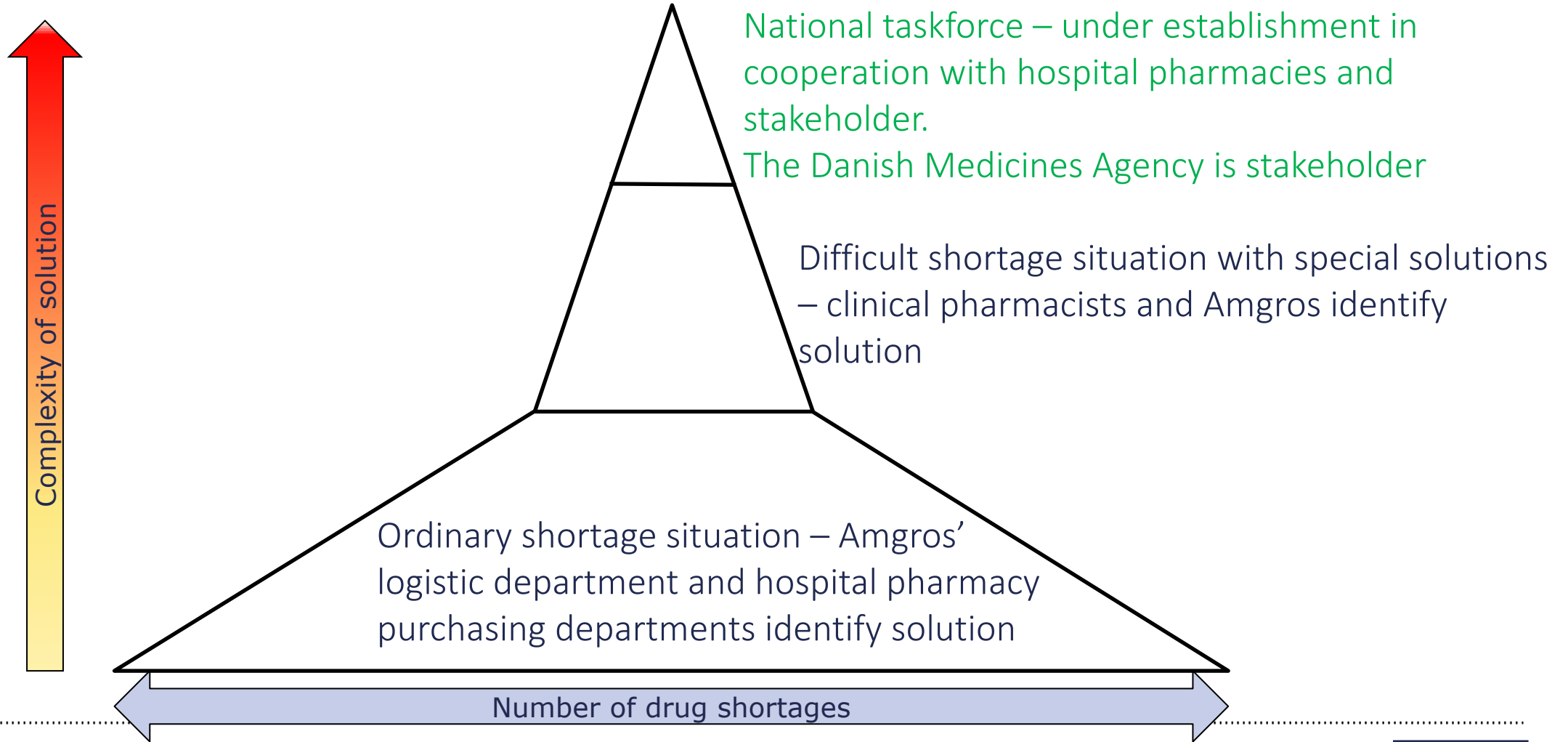
NOT REGISTERED SPECIALTIES

- Used as a solution for back order situations, where we cant find i registered drug
- National solutions handled by Amgros. Individual through local hospital pharmacy
- Resources from several parties involved
- Every clinic using the drug, need to get permission to use specialties, up to 2,000 clinics



IRS v.nr.	Erstatte v.nr.	Vare navn	dato	Forskel levning
729270	570904	Marcaïne Tyskland	14.01.17	UGE 38
905070	529735	Pro-Epanutin	15.09.17	UGE 38
935062	057422	Adda	27.8.17	UGE 39%
729271	570904	Marcaïne Tyske	05.10.17	Uge 41
870892	570904	Marcaïne Holland	05.10.17	Uge 41
870843	570904	Marcaïne Ungarn	11.10.17	Uge 41
729269	546838	Benzylpenicillin	6/9-17	Uge 39
982683	805338	Urokinase 100000/MEDAC	10/11.17	Uge 47
918924	066279	Zoledronsyre	24/1-17	Uge 47

HOW WE ESCALATE DRUG SHORTAGES



A close-up photograph of a mechanical assembly, possibly a valve or a connector, with a blue background. The assembly is made of metal and has several black plastic components. The lighting is dramatic, highlighting the textures and shapes of the parts.

TACTICAL HANDLING OF BACK ORDERS

AN EXAMPLE OF A USEFUL TOOL: SHARED LIST OF CRITICAL MEDICINES

Liste over kritiske lægemidler pr. 20. juni 2017

Kritiske lægemidler valgt af FILU

Antibiotika	
J01CA01	Ampicillin pulver til inj.
J01CF01	Dicloxacillin pulver til inj.
J01DH02	Meropenem
J01CR05	Piperacillin /Tazobactam
J01CA11	Selexid *)
J01XA01	Vancomycin pulver til inj.
J05AB01	Aciclovir pulver til inj.

Anæstesimidler	
N01AX10	Propofol
N01AH06	Remifentani (Ultiva)
N01AB08	Sevofluran
Kritiske lokalanalgetika	
N01BB01	Bupivacain
N01BB09	Ropivacain

Cytostatika	
L01XA02	Carboplatin *)
L01XA01	Cisplatin konc. *)
L01AA01	Cyclophosphamid pulv.t.inj. *)
L01BC01	Cytarabin *)
L01CD02	Docetaxel *)
L01DB01	Doxorubicin inf.væske og pulver *)
L01DB03	Epirubicin inf. væske og pulver *)
L01CB01	Etoposid konc. *)
L01BB05	Fludarabin konc. og pulver *)
L01BC02	Fluorouracil *)
L01BC05	Gemcitabin konc. væske og pulver *)
L01AA06	Ifosfamid *)
L01XX19	Irinotecan *)
L01BA01	Methotrexat inj. og konc. *)
L01XA03	Oxaliplatin *)
L01CD01	Paclitaxel *)
L01XX17	Topotecan pulver *)
L01CA02	Vincristin *)
L01CA04	Vinorelbine konc. *)
V03AF03	Calciumfolinat

Pressorstoffer m.fl.	
C01CA24	Adrenalin
C01BD01	Amiodaron konc. og inj.
C01CA03	Noradrenalin

*) Medtaget på listen baseret på restordrehistorik, forsyningsituation og besværlighed ved vareskift

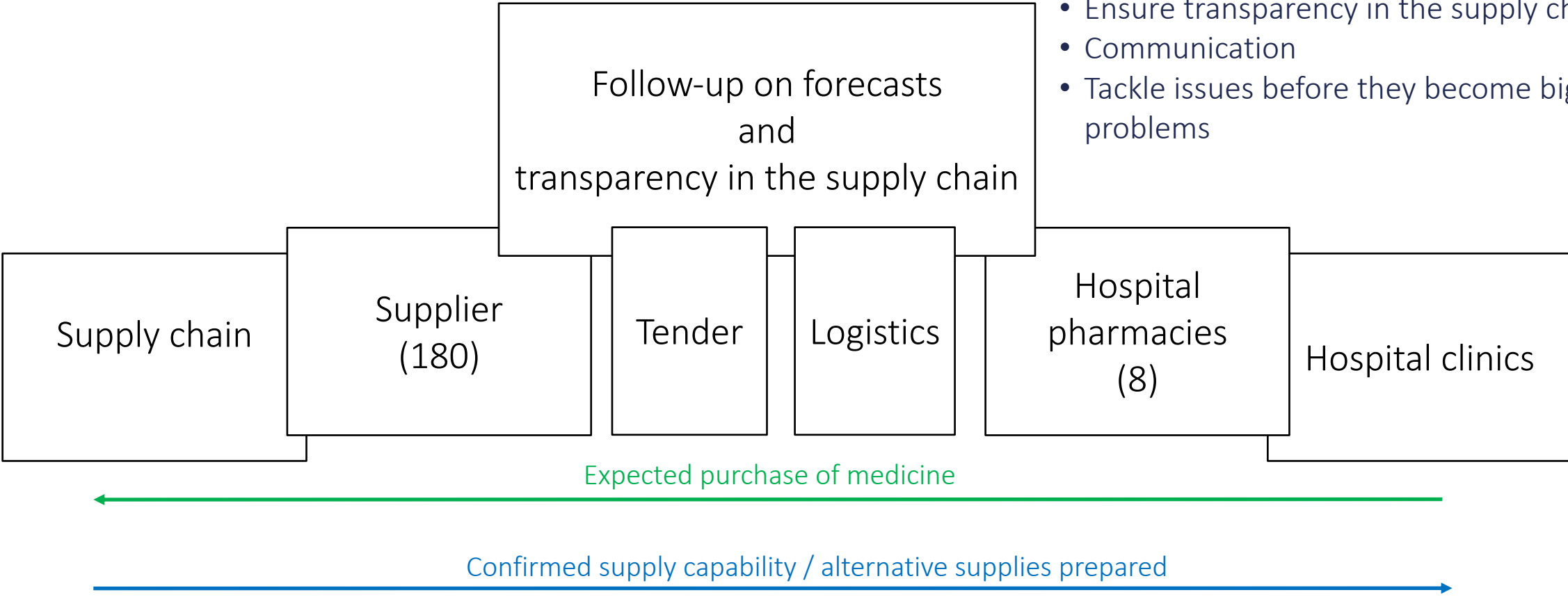
- The list is developed in cooperation with clinicians and hospital pharmacist and is updated annually
- The list includes drugs which are difficult to substitute in case of drug shortages
- Some drugs are included based on experience of handling previous drug shortages or drug substitution
- Inventory increased at hospital pharmacy where possible
- The list is used for daily prioritizing

MONTHLY PLANNING AND COMMUNICATION PROCESS

FOCUS ON EXPECTED PURCHASE VOLUME (PRODUCT NUMBER LEVEL)

Purpose:
Predict and solve supply disruptions by:

- Ensure transparency in the supply chain
- Communication
- Tackle issues before they become big problems





STRATEGIC DEVELOPMENT

STRATEGIC INITIATIVE IN AMGROS

A strategic goal in Amgros:

Optimize the on time and effective supply of drugs from supplier to hospital pharmacy

Initiatives under this strategic goal comprises among others :

- Establish a possibility to have a central inventory of critical drugs
- Establish monitoring system for potential critical back order situations, e.g. Pip Taz in 2017
- Develop our standard agreements with suppliers being more attractive to bid on contracts and supply according to these
- Participate in a Nordic group focusing on supply security (Nordisk Lægemiddel Forum, forsyningssikkerhed)
- National task force to manage critical back orders

AMGROS ACTIONS AND INITIATIVES

SYGGEHUSAPOTEKERNE I DANMARK

Indkøb, logistik og udbud af sygehuslægemidler
National strategi 2018-2019

AMGROS

Visión
Den rette medicin
- På rette sted
- På rette tidspunkt
- Til rette patient
- I rette dosis
- Fra rette hånd

Mål

Forsyningsklarhed	Lægemidler, viden og kompetencer	Kvalitet og sikkerhed	Økonomiske effektivitet
Styrke forsyningsklarheden via øget samarbejde og gennemsnitlig i den samlede forsyningskæde	Syggehusene tilbydes de rigtige lægemidler, der passer til sygehusenes og patienternes individuelle behov	Fælles tilgang til kvalitet og sikkerhed sikrer optimal logistik	Fremstøtninger af de rigtige lægemidler til den rigtige pris sikrer et højt helbreds-betragning

Projekter (alfabetsk orden)

Projekter	Forsyningsklarhed	Lægemidler, viden og kompetencer	Kvalitet og sikkerhed	Økonomiske effektivitet
Anvendelse af estimater til forebyggelse af forsyningsproblemer	•			•
ApeVision og graderingsprojekt - afledte handlinger			•	
Arbejdsplaner for udlevering af vederlagsfri lægemidler		•	•	•
Drift og vedligeholdelse af strekkodedata på primær emballage			•	
Fælles udbud af lægemidler og utersiler				•
Implementering af direktiv om forfalskede lægemidler i logistik			•	
Nationalt task force til håndtering af meget kritiske restordresituationer	•		•	•
Opdatering af krav i rammeaftaler	•		•	•
Støtte til implementering af medicinrådsbeslutninger		•		•
Tilbagekaldelse - niveauer og kommunikationskanaler			•	•

Strategien er udarbejdet af: Fagligt Forum for Indkøb, Logistik og Udbud (FLU)

November 2017

SYGGEHUSAPOTEKERNE I DANMARK

Indkøb, logistik og udbud af sygehuslægemidler
National strategi

AMGROS

Visión
Den rette medicin:
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Mål

Forsyningsklarhed	Lægemidler, viden og kompetencer	Kvalitet, sikkerhed og kompetencer	Økonomiske effektivitet
Styrke forsyningsklarheden via øget samarbejde og gennemsnitlig i den samlede forsyningskæde	Syggehusene tilbydes de rigtige lægemidler, der passer til sygehusenes og patienternes individuelle behov	Fælles tilgang til kvalitet, sikkerhed og kompetenceudvikling sikrer optimal logistik	Fremstøtninger af de rigtige lægemidler til den rigtige pris sikrer et højt helbreds-betragning

2016-2017

Indkøb

Projekter	Forsyningsklarhed	Lægemidler, viden og kompetencer	Kvalitet, sikkerhed og kompetencer	Økonomiske effektivitet
Udvikling af foresending af anvendte lægemiddelbeholdninger ved implementering af i klinikken	•	•		•
Udvalgte leverandører ved anvendelse af ikke betalende (NLE) ved	•	•	•	•
Prise til håndtering af meget restordresituationer	•		•	•

LØSING

Projekter	Forsyningsklarhed	Lægemidler, viden og kompetencer	Kvalitet, sikkerhed og kompetencer	Økonomiske effektivitet
produktion - forecast og	•	•	•	•
på udvalgte lægemidler	•	•	•	•
etiket og indkøb	•	•	•	•
udvalgte sygehusforbeholdninger i fortsat tilgang i eget hjem	•	•	•	•

UDBUD

Projekter	Forsyningsklarhed	Lægemidler, viden og kompetencer	Kvalitet, sikkerhed og kompetencer	Økonomiske effektivitet
Udvikling af sygehusapotekets restordrer i klinikken	•			•
Udvikling af sygehusapotekets restordrer i klinikken	•			•

Strategien er udarbejdet af: Fagligt Forum for Indkøb, Logistik og Udbud (FLU)

November 2015

SYGGEHUSAPOTEKERNE I DANMARK

Indkøb, logistik og udbud af sygehuslægemidler
National strategi

AMGROS

Visión
Den rette medicin:
- På rette sted
- På rette tidspunkt
- Til rette patient
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Mål

Forsyningsklarhed	Lægemidler, viden og kompetencer	Kvalitet, sikkerhed og kompetencer	Økonomiske effektivitet
Styrke forsyningsklarheden via øget samarbejde og gennemsnitlig i den samlede forsyningskæde	Syggehusene tilbydes de rigtige lægemidler, der passer til sygehusenes og patienternes individuelle behov	Fælles tilgang til kvalitet, sikkerhed og kompetenceudvikling sikrer optimal logistik	Fremstøtninger af de rigtige lægemidler til den rigtige pris sikrer et højt helbreds-betragning

2014-2015

Indkøb

Projekter	Forsyningsklarhed	Lægemidler, viden og kompetencer	Kvalitet, sikkerhed og kompetencer	Økonomiske effektivitet
Udvikling af foresending af anvendte lægemiddelbeholdninger ved implementering af i klinikken	•	•		•
Udvalgte leverandører ved anvendelse af ikke betalende (NLE) ved	•	•	•	•
Prise til håndtering af meget restordresituationer	•		•	•

LØSING

Projekter	Forsyningsklarhed	Lægemidler, viden og kompetencer	Kvalitet, sikkerhed og kompetencer	Økonomiske effektivitet
produktion - forecast og	•	•	•	•
på udvalgte lægemidler	•	•	•	•
etiket og indkøb	•	•	•	•
udvalgte sygehusforbeholdninger i fortsat tilgang i eget hjem	•	•	•	•

UDBUD

Projekter	Forsyningsklarhed	Lægemidler, viden og kompetencer	Kvalitet, sikkerhed og kompetencer	Økonomiske effektivitet
Udvikling af sygehusapotekets restordrer i klinikken	•			•
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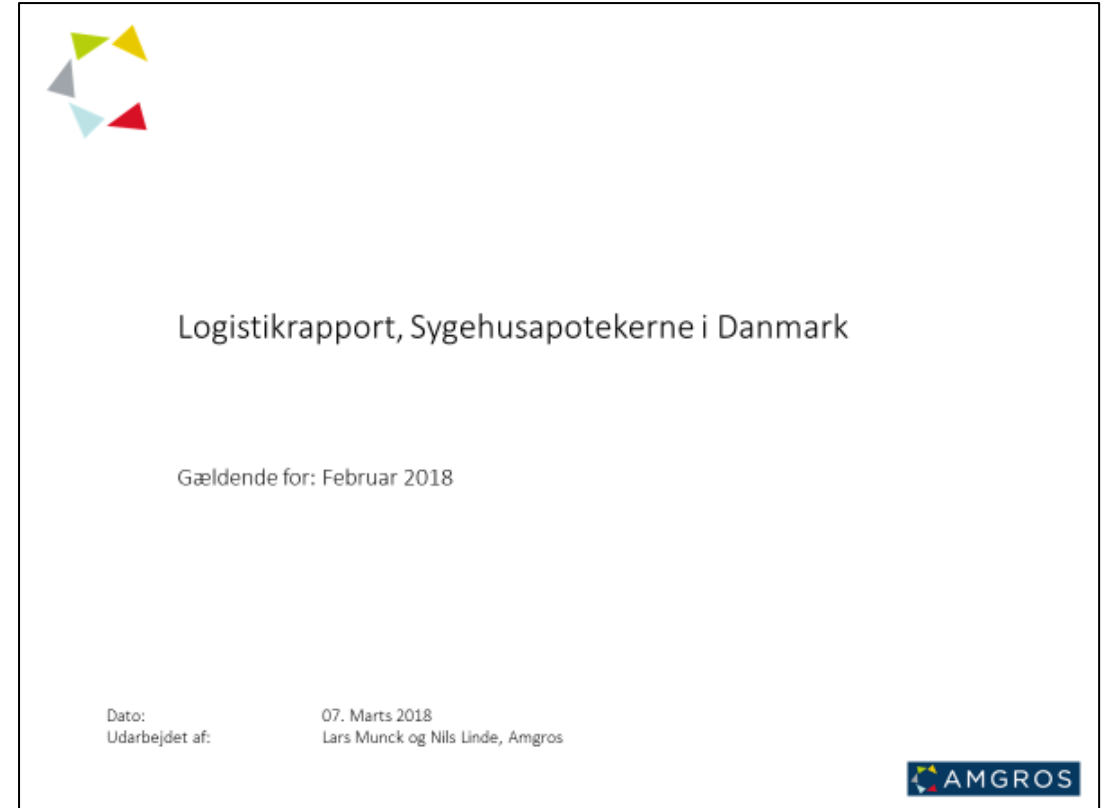
Strategien er udarbejdet af: Fagligt Forum for Indkøb, Logistik og Udbud (FLU)

August 2014

REPORTING

MONTHLY REPORT TO THE HOSPITAL PHARMACIES

- Monthly reporting on:
 - Delivery performance nationally and locally
 - Number of items in backorder
 - Ranking of suppliers with most backorders
 - Development in forecast accuracy
- Quarterly reporting on:
 - Delivery service for the 20 suppliers with most order lines
 - 20 best og worst performing suppliers with at least 100 order lines per month in the quarter



EXAMPLE OF DATA COLLECTION: INTERNAL REPORT ON DELIVERY PERFORMANCE

- Report is based on all suppliers delivering more than 1,000 order lines per year
- Suppliers are informed on their delivery service annually from 2016
- B and C suppliers are asked for improvements
- In 2016 received feedback from 26 out of 50 suppliers
- Monthly follow-up with one supplier

Leveringsservice for leverandører med mere end 1.000 ordrelinjer i 2017 *)						
Måling: Opfølgning på opfyldelse af kontraktkrav om 3 dages leveringstid.						
		2017	Q4-2017	Q3-2017	Q2-2017	Q1-2017
Total	Nr	96,7%	96,4%	96,8%	96,7%	97,0%
	1	99,9%	99,9%	100,0%	99,9%	100,0%
	2	99,9%	100,0%	99,6%	100,0%	100,0%
	3	99,7%	99,1%	100,0%	99,8%	100,0%
	4	99,6%	100,0%	99,1%	100,0%	99,4%
	5	99,6%	99,7%	99,8%	99,2%	99,6%
	6	99,5%	99,7%	98,8%	99,8%	99,6%
	7	99,4%	99,3%	99,4%	99,2%	99,9%
	8	99,4%	98,9%	99,8%	99,1%	100,0%
	9	99,4%	99,8%	99,5%	99,5%	98,7%
	10	99,4%	100,0%	99,7%	99,6%	98,1%
	11	99,4%	100,0%	98,0%	99,4%	100,0%
	12	99,3%	99,8%	98,3%	99,6%	99,7%
	13	99,1%	98,7%	99,9%	98,7%	99,1%
	14	99,1%	99,9%	99,1%	98,5%	99,0%
	15	99,1%	98,4%	99,3%	98,9%	100,0%
	16	99,1%	98,6%	98,3%	99,1%	99,3%
	17	99,0%	99,0%	100,0%	98,1%	99,0%
	18	99,0%	98,5%	98,2%	99,5%	99,7%
	19	98,9%	96,3%	100,0%	99,7%	100,0%
	20	98,9%	97,6%	99,5%	99,0%	100,0%
	21	98,8%	98,6%	100,0%	100,0%	99,4%
	22	98,6%	97,6%	99,8%	97,5%	99,6%
	23	98,4%	98,5%	99,8%	97,0%	99,4%
	24	98,2%	97,6%	98,4%	99,4%	99,6%
	25	98,1%	97,1%	98,0%	98,4%	99,2%
	26	97,7%	95,2%	100,0%	99,8%	95,9%
	27	97,5%	97,5%	95,1%	97,8%	99,6%
	28	97,3%	99,7%	99,6%	94,2%	96,2%
	29	97,3%	96,3%	99,1%	97,1%	96,9%
	30	97,3%	97,8%	97,1%	98,0%	96,0%
	31	97,1%	96,6%	97,5%	96,6%	97,6%
	32	97,0%	96,2%	96,9%	98,8%	96,2%
	33	96,9%	96,8%	98,9%	97,5%	94,4%
	34	96,8%	99,5%	96,3%	98,7%	90,9%
	35	95,9%	95,4%	99,3%	96,0%	93,5%
	36	95,6%	97,8%	96,3%	91,4%	98,0%
	37	95,2%	96,6%	93,0%	94,6%	97,0%
	38	95,2%	92,4%	95,3%	92,6%	99,7%
	39	95,1%	96,0%	97,1%	95,5%	91,9%
	40	94,9%	92,0%	98,6%	99,1%	90,3%
	41	94,5%	95,5%	94,4%	94,8%	93,3%
	42	94,2%	97,1%	89,8%	94,9%	94,1%
	43	93,6%	96,1%	90,1%	91,7%	96,9%
	44	92,8%	86,1%	96,6%	95,1%	94,1%
	45	92,5%	92,8%	96,2%	97,2%	83,9%
	46	92,0%	88,4%	91,5%	93,1%	100,0%
	47	91,8%	94,2%	95,4%	87,8%	89,8%
	48	91,3%	88,9%	88,9%	91,8%	95,3%
	49	90,9%	88,4%	95,6%	92,5%	92,3%
	50	88,7%	93,2%	88,4%	85,8%	100,0%
A-leverandører		>=98%				
B-leverandører		>=95%, <98%				
C-leverandører		<95%				

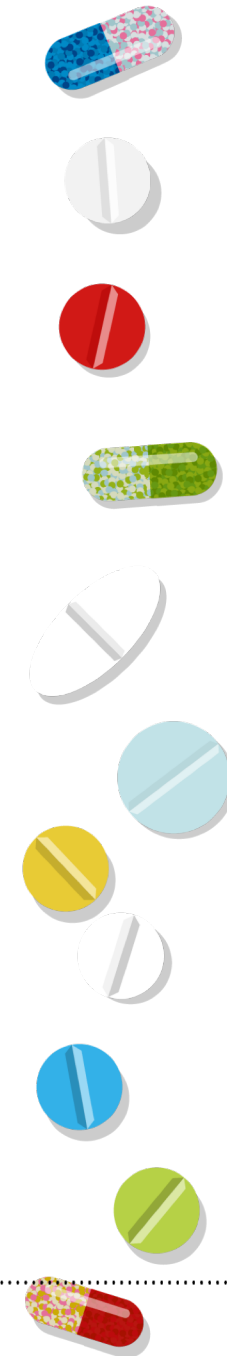
QUESTIONS

1. Are the pharmacy able to influence the number of back orders reaching the hospital?
Yes
2. Is it good practice to manage all drugs at the pharmacy in the same way?
No
3. Is it worth to share information with the suppliers regarding forecast, back orders, delivery performance a.m.?
Yes



TAKE HOME MESSAGES

- Share information in the supply chain and give transparency to stakeholders
- Get insight into changes in the supply chain, react on changes
- Dedicated staff with a holistic approach to medicine shortage and education in supply chain management



FURTHER QUESTIONS?



DIALOGUE WITH SUPPLIERS

Daily on line supplier portal:

- Daily follow up on backorder situation. Possibility to report supply changes
- Amgros inform about forecast for all drugs, including forecast changes
- Supplier confirmation of forecast changes and reporting any kind of supply issues

Weekly selection of “TOP6-backorder suppliers” in order to focus on response from suppliers with most issues and collecting satisfying information from them

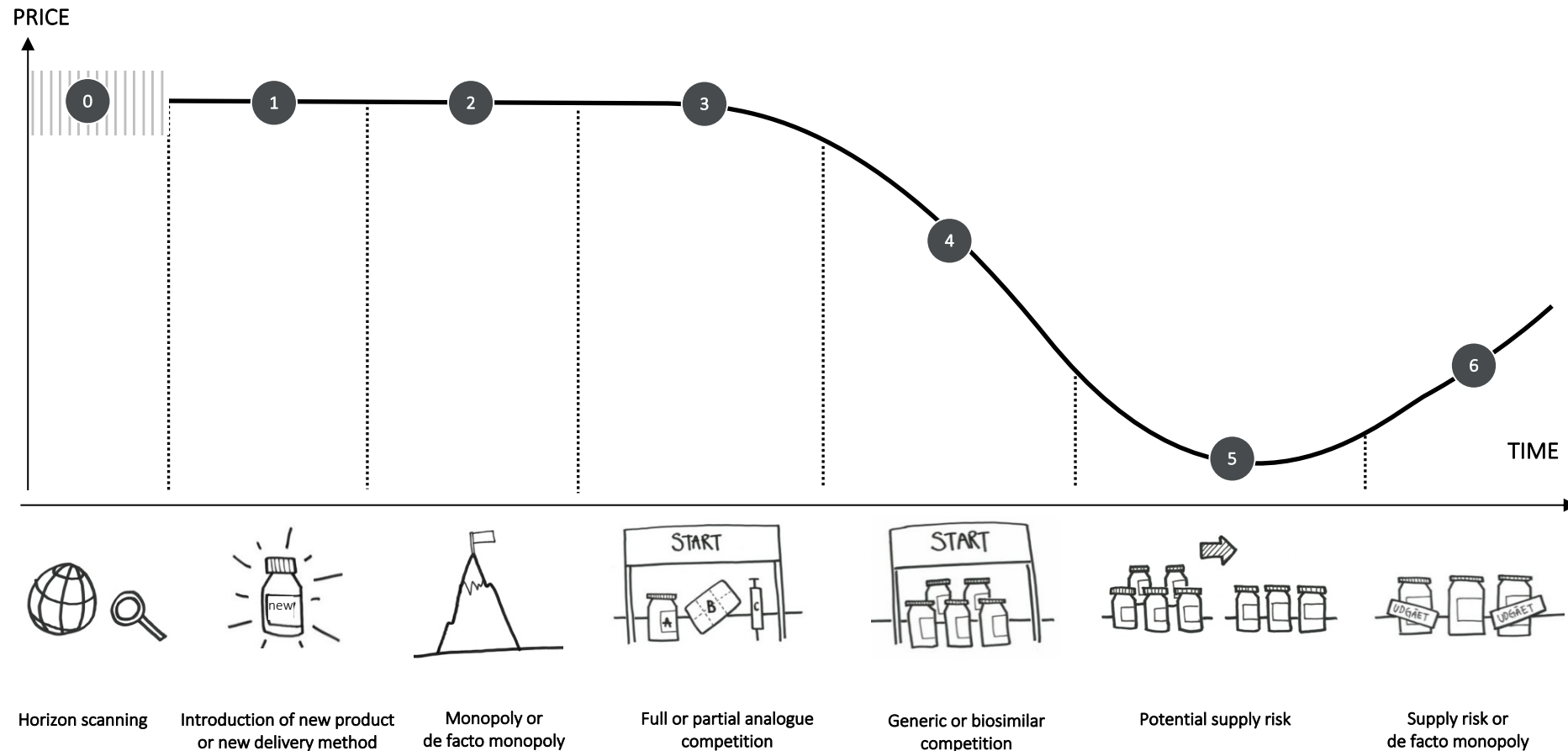
Weekly e-mail with the message: *“You are among the suppliers with most critical backorders. Please, explain supply situation, within 24 hours”.*

Face-to-face meetings each quarter with suppliers with poorest level of improvement.

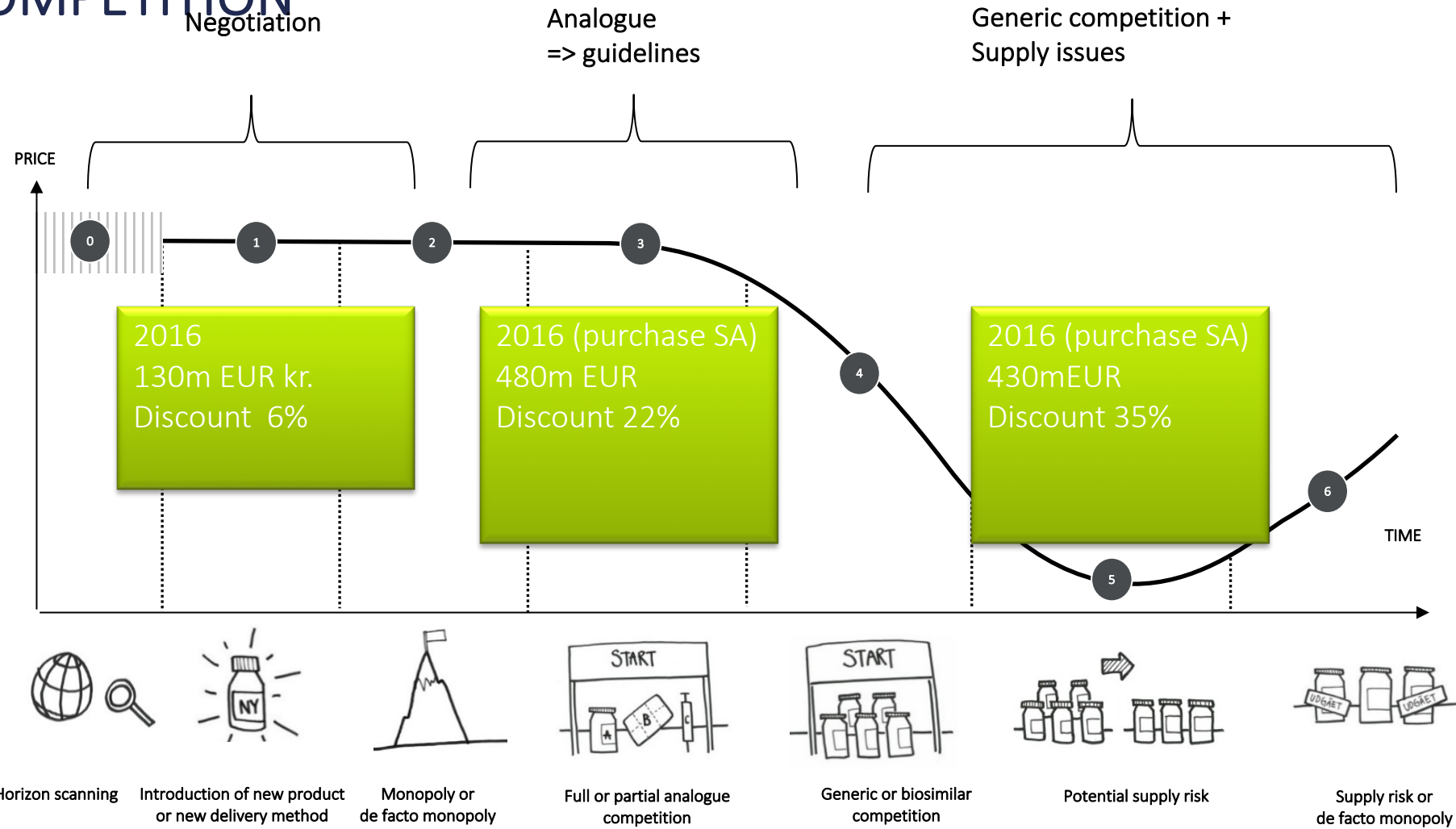
DIFFERENCES BETWEEN HOSPITAL PHARMACIES AND PRIVATE PHARMACIES

	Private pharmacies/private market	Hospital pharmacies/hosp. market
Number	Approx 210	8
Owners	Privately owned	Five Regions
PPP turnover in 2015	Approx. EURO 1 billion	Approx. EURO 1.3 billion
Growth rate	> 1%	Around 5%
Type of procurement	Private purchase	Public procurement
Discount on drugs	Few possibilities	More possibilities
Substitution	Generic subst. every 2 wks.	Changes with annual EU tenders
Patients	Regular	Unusual/Special diseases
Can special requirements be made?	No	Yes, e.g. for patient safety

AMGROS' APPROACH TO PHARMACEUTICAL LIFECYCLE STAGES AND GENERALIZED PRICE DEVELOPMENT



PHARMACEUTICAL LIFE CYCLE AND THE POSSIBILITY OF COMPETITION



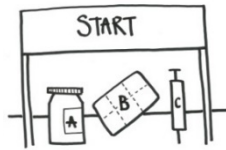
IDENTIFIED PRESENT AND FUTURE LIFECYCLE OPPORTUNITIES



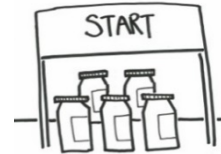
Introduction of new product or new delivery method



Monopoly or de facto monopoly



Full or partial analogue competition



Generic or biosimilar competition



Potential supply risk



Supply risk or de facto monopoly

OPPORTUNITIES

1	2	3	4	5	6
<ul style="list-style-type: none"> • A strong negotiator • Volume discounts • Agreement on innovative drugs • Confidential pricing • Nordic tenders ? • Parallel suppliers 	<ul style="list-style-type: none"> • Analogue competition? • Time span of lifecycle stage not completely dependent on patent alone • Volume discounts • Parallel suppliers (app. after 1 year) • Agreement on unique drugs • Confidential pricing 	<ul style="list-style-type: none"> • Analogue competition with national guidelines • Therapeutic guidelines including analogue possibility • The following tenders results in competitive pricing • Parallel suppliers • Volume discounts • Confidential pricing 	<ul style="list-style-type: none"> • The first patent expiration is used to drive prices in the analogue/generic market • Biosimilars may be able to affect the prices in the market 	<ul style="list-style-type: none"> • Maintain a naturally balanced competitive situation • Improved terms for suppliers in delivery agreements • Analogue alternatives 	<ul style="list-style-type: none"> • Tailored agreements to ensure supply guarantee • Extended contract periods • Optimized agreement terms • Analogue alternatives

TOP6-BACKORDER PROGRAM

How:

What:

KPI's:

Ownership and framework



Overview



Leading KPI's

replies / week

Reporting and celebrating



Meetings/mth

Patience