



Dr. Torsten Hoppe-Tichy, Chief Pharmacist, Heidelberg University Hospital

Medicines shortages - A reality check?



UNIVERSITÄTS
KLINIKUM
HEIDELBERG

Nothing to disclose

Questions

1. Drug shortages are a European problem (**yes/no**)
2. Hospital Pharmacists have no possibility to influence drug shortages (**yes/no**)
3. The only reason for drug shortages is monopolization (**yes/no**)

Agenda

Reasons for drug shortages

Status Quo of drug shortages in hospitals (e.g. Germany)

Measures of hospital pharmacy to attenuate drug shortages

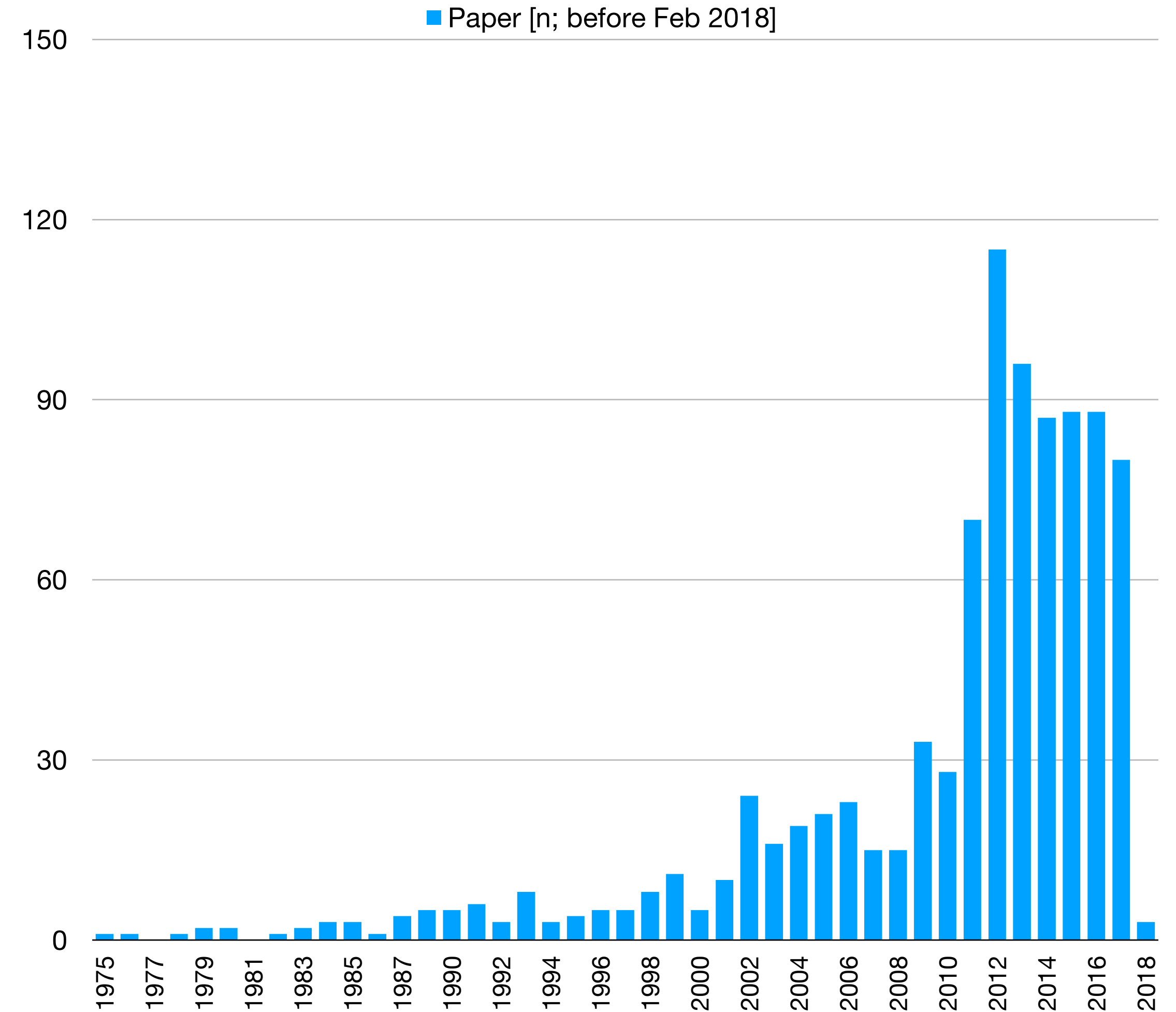
Altered outcomes through drug shortages

Are drug shortages a strategy for pharmaceutical industry?

Drug shortages in the literature

first bigger problems in 2002

huge problems since 2012



What is the definition of „drug shortage“?

GE (BfArM)

interruption of usual demand lasting for approx. > 2 weeks

or

increased demand which cannot be met

Survey

Does a special or even legal definition of the term “drug shortage” exist in your country?

(e.g. “only if longer than two weeks” or “only if drug is essential for therapy” or “only if no generic substitution is possible”)

Does your country legally define the “minimum stock per drug to be stored in hospital pharmacy”?

Does your country legally define the “minimum stock per drug to be stored at pharmaceutical industry/at the wholesaler”?

Is there an obligation to notify a drug shortage? If yes, where is this information published?

Is information on drug shortage publicly available and transparent?

(i.e. Does the public have access to this information or are only professionals in the health system informed about drug shortages?)

Tabelle 1

drug shortages	NO	FI	MT	SE	CR	DE	BG	RO	DK	ES	SI	NL	RS
legal definition	no	no	no	no	no	yes (>2w)	no	(no)	no (by „Amgros“: >3d)	no	(yes)	yes	no
minimum stock hospital pharmacy	no	„mandatory reserve supply“; essential drugs per ATC: 2w-6mon	no	no	no	2w	5d	(yes)	no	no	no	no	no
minimum stock wholesaler or pharmaceutical industry	essential drugs per ATC: min. 60d	„mandatory reserve supply“; essential drugs per ATC: 2w-6mon	no	no	no	pharmaceutical industry: 2w (on the basis of retail pharmacy consumption)	depends on contracts with hospital pharmacy	1 mon	no	no	no	no	depends on contracts with hospital pharmacy
obligation to notify	yes	obligation or recommendation	no	yes	yes	no	no	(yes)	yes (by „Amgros“)	yes	yes	yes	(yes)
transparent information	yes	yes	no	yes	yes	(yes)	yes	yes	no (only for hospital pharmacists)	yes	(yes)	yes	no (only for hospital pharmacists)
Remarks	since 2016: centre for drug shortages (information and advice!)												

How often does the problem „drug shortage“ influences us?

e.g. at Heidelberg University Hospital (UKHD) during 2017

195 drug shortages (including infusions and vaccines)

36 drug shortages still „in place“

(Jan 2018; e.g. Heparine, BCG-Vaccine, Tetanus-Vaccine)

44 written information from pharmacy department

6 cases with no generic substitution possible

It's an everyday business!

Reasons for drug shortages

1. Monopolization
2. Shifting production
(in „other“ countries)
3. Increasing demand (→ „global“)
4. Wrong incentives



Pharmaindustrie

„Essential drugs indefinitely out of stock“

Den Produzenten ist die Malaise bewusst. Bei einer Umfrage der Mannheimer Beratung Camelot unter Pharmaführungskräften gab mehr als ein Drittel der Generikahersteller an, dass sich die Versorgungssicherheit deutlich verschlechtert habe. Dafür sorgen vier Entwicklungen:

e.g. Heparin-Na (DE)

Monopolization

four suppliers (DE)

Ratiopharm (74% share in market)

→ „out-of-stock“

B.Braun (17%)



Pharmaindustrie

„Essential drugs indefinitely out of stock“

Den Produzenten ist die Malaise bewusst. Bei einer Umfrage der Mannheimer Beratung Camelot unter Pharmaführungskräften gab mehr als ein Drittel der Generikahersteller an, dass sich die Versorgungssicherheit deutlich verschlechtert habe. Dafür sorgen vier Entwicklungen:


Conclusion

Cancer drugs with a small number of suppliers had a higher risk of drug shortages than did those with ≥ 5 suppliers, but the relationship was nonlinear. Because the age of the drug is the strongest risk factor, future studies should explore underlying causes of shortages in older drugs.

1

Wrong incentives
ojqer qrn82'

„Security of supply worsened“

1. Monopolization
 2. Shifting production
 3. Increasing demand (→ „global“)
 4. Wrong incentives
- 

5. Cannibalization

- hard-sell, aggressive pricing policy
- downsizing of production capacities

Pharmaindustrie

„Essential drugs indefinitely out of stock“

Den Produzenten ist die Malaise bewusst. Bei einer Umfrage der Mannheimer Beratung Camelot unter Pharmaführungskräften gab mehr als ein Drittel der Generikahersteller an, dass sich die Versorgungssicherheit deutlich verschlechtert habe. Dafür sorgen vier Entwicklungen:

Why do drug shortages occur?

Manufacturing difficulties
Shortages of raw materials
Voluntary recalls
Natural disaster
Supply and demand issues
Business and economic issues
Regulatory issues
Supply chain issues and health care system practices

Perspective: Pharmaceutical industry and wholesalers (FI)

supply-related reasons

pharmaceutical market structure

logistics and distribution issues

manufacturing issues

demand-related reasons

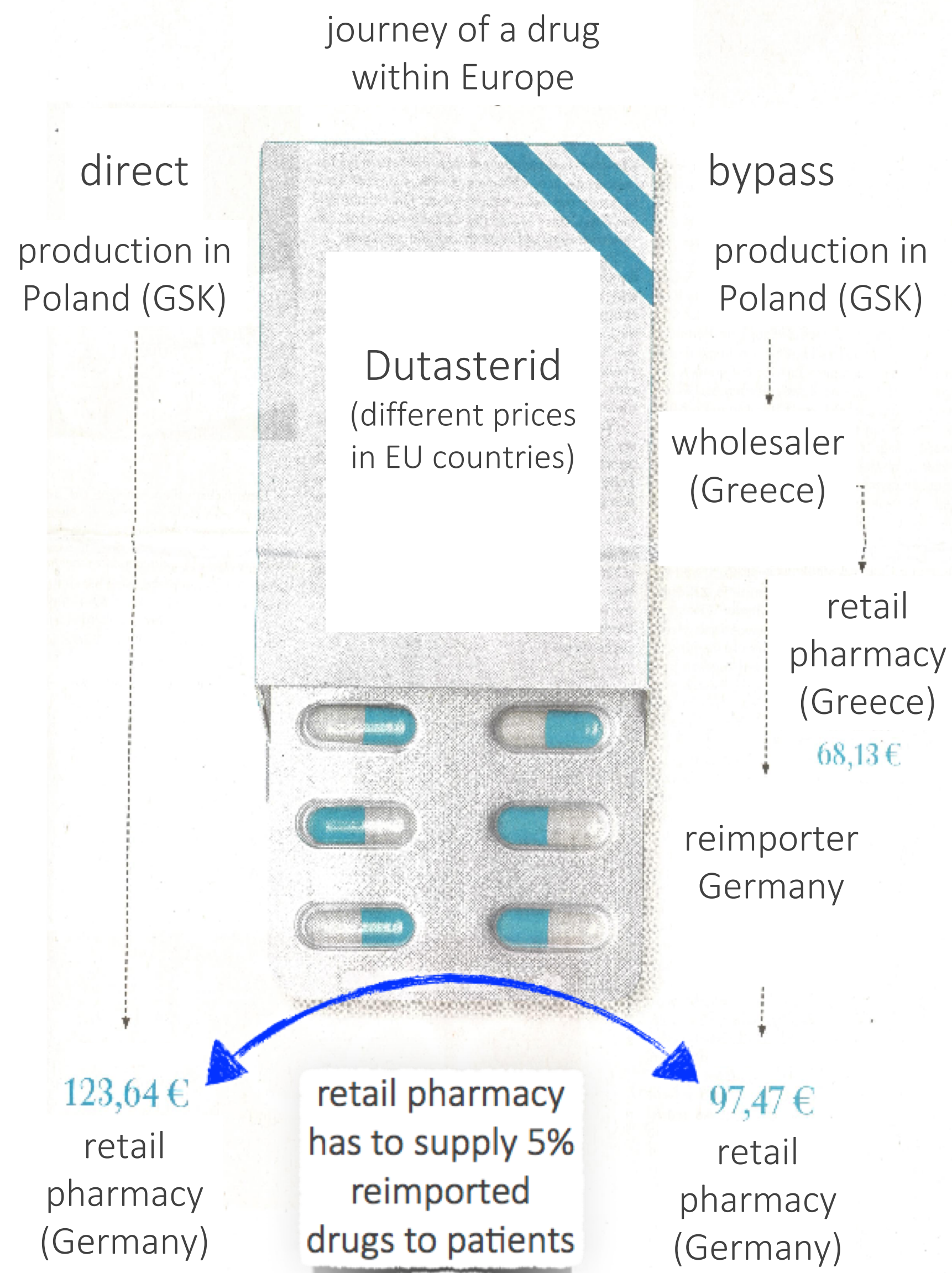
changes in demand

structure of demand

The art of generating drug shortages in other countries

... .. due to the „legal“ environment
in my country

***Possible drug shortage
in Greece because of
demand for cheaper
drugs in Germany!***



Self-made drug shortages

at risk

- tenders
- price negotiations

Do hospital pharmacists or
hospital pharmacy wholesalers
trigger drug shortages?

Do hospital pharmacists or
hospital pharmacy wholesalers
trigger drug shortages?



What should hospital pharmacists do to overcome the problem?

document the problem

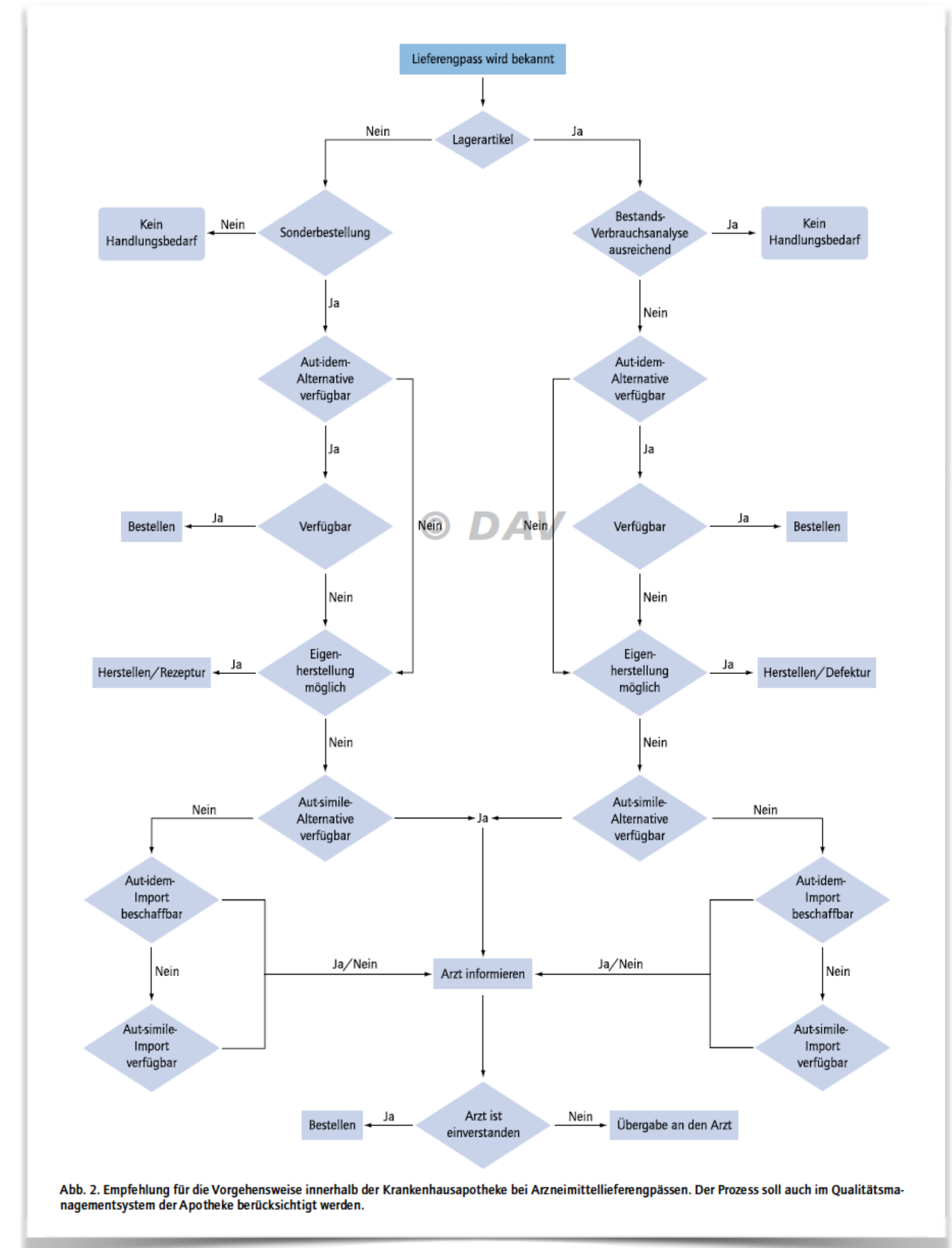
make the problem aware to politicians and the public

„go to TV“

create guidelines/guidances at local level

try to influence processes on the national level

do everything to keep the problem away from patients



What is the effect of drug shortages on the patient?

In many situations:

No change of outcome, because

we can switch to the same drug from another company

there are other drugs with the same outcome

But we should be clear that in some cases

... .. drug shortages affect patient outcome!

... .. drug shortages affect patient outcome!

The effect of a piperacillin/tazobactam shortage on antimicrobial prescribing and Clostridium difficile risk in 88 U.S. medical centers

Alan E. Gross; Richard S. Johannes; Vikas Gupta; Ying P. Tabak; Arjun Srinivasan; Susan C. Bleasdale

Clin Infect Dis 2017;65(4):613-8.

Summary: Patients at hospitals that experienced a piperacillin/tazobactam shortage and as a result shifted antibiotic usage toward antibiotics with a higher risk of C. difficile infection (CDI) had a significantly higher hospital-onset CDI risk.

... .. drug shortages affect patient outcome!

Norepinephrine Shortage Led to Increased Deaths from Septic Shock

Though drug shortages are common, their impact is rarely studied.

Drug Shortages in Perioperative Medicine: Past, Present, or Future?

How a Drug Shortage Contributed to a Medication Error Leading to Baclofen Toxicity in an Infant

Ethics of Disclosure Regarding Drug Shortages That Affect Patient Care

A longitudinal cohort study on the impact of the clobazam shortage on patients with epilepsy

The impact of drug shortages on patients with cardiovascular disease: causes, consequences, and a call to action

Drug Shortages and Implications for Pediatric Patients

What is the effect of drug shortages on the health system?

costs, security (supply, therapy, medication error, patient safety), confidence in health systems,

Key Points

Shortages usually affect medications of limited profitability, and lead to persistent price increases.

Shortage prevention may be achieved by a closer collaboration between regulators and industry.

Europe urged to take action on drug shortages

Health professionals say that a coordinated response is needed to protect patients in European countries from reoccurring drug supply problems. Barbara Casassus reports from Paris.

Drugs (2016) 76:1551–1558
DOI 10.1007/s40265-016-0651-7

ORIGINAL RESEARCH ARTICLE

The Impact of Shortages on Medication Prices: Implications for Shortage Prevention

Michail Alevizakos¹ · Marios Detsis¹ · Christos A. Grigoras¹ · Jason T. Machan² · Eleftherios Mylonakis¹

Lancet 2015;385:1279

BMJ 2017;359:j5883 doi: 10.1136/bmj.j5883 (Published 20 December 2017)

Page 1 of 1

NEWS



Drug shortages cost NHS £38m in November

Gareth Iacobucci

Can we see initiatives at pharmaceutical industry to overcome the problem?

local vs. national vs. global

Can we see initiatives at pharmaceutical industry to overcome the problem?

local vs. national vs. global

local → „those were the days my friend“

national

problem is in the news, ministry of health realized that there is a problem

BUT: The mills of God grind slowly!

the only idea for improvement: prices should not go down!

global

„more than one“

What about warning systems?

Lack of advanced warning systems is the main cause of problems¹

to avoid problems (medication errors, patient harm) the measures to deal with drug shortages have to be projected



NEWS

Lack of information threatens ability to plan for drug shortages

Erin Fox knows a lot about drug shortages, but she's not privy to an important piece of information: FDA's list of critical hospital medications in short supply because of hurricane damage to manufacturing facilities in Puerto Rico.

"Everyone is really interested in what that list is. And the reason people want to know is so that we can start making plans for our patients to try to minimize the impact," said Fox, director of drug information at University of Utah Health in Salt Lake City.

FDA Commissioner Scott Gottlieb on October 24 told the House Energy and Commerce Committee's subcommittee on oversight and investigations that the agency is monitoring "about 30 medically important drugs" and 10

Lack of an Advanced Warning System Is the Main Cause of Problems

Ideally, there would be an early warning system for impending drug product shortages that would provide ample opportunity to prepare for all implications of the shortage.²

¹Ventola CL. P&T 2011;36(11):740-57. Traynor K. Am J Health-Syst Pharm 2017;74(24):2025-7.

Drug shortages and drug prices

Martin Shkreli, the former pharmaceutical executive who gained notoriety for hiking up the price of a life-saving drug, will finally go on trial Monday on charges of ripping off investors.

Shkreli sparked outrage in 2015 for increasing the price of Daraprim, a drug used by AIDS patients, by more than 5,000% from \$13.50 to \$750 a pill while he was CEO of Turing Pharmaceuticals.

ABSTRACT: Turing Pharmaceuticals raised the price of Daraprim, a drug used by AIDS patients, by more than 5,000% from \$13.50 to \$750 a pill while he was CEO of Turing Pharmaceuticals. The sale of low-volume, low-price drugs can lead to price gouging. For society to incentivize innovation. However, Gilead's decision to sell sovaldi to the United States. The society must accept any price set by the patent holder. Unf

increasing transparency regarding pharmaceutical price negotiations and pooling market power to obtain fair prices in negotiations; and prohibiting excessive prices and exploiting licensing rights retained by federal funding agencies.

Conclusion

Drug shortages produce a lot of workload

Drug shortages affect patient safety

Drug shortages increase prices of drugs

Drug shortages affect therapy outcome

Drug shortages produce risks for health systems worldwide

Questions → Answers

1. Drug shortages are a European problem (yes/no)
2. Hospital Pharmacists have no possibility to influence drug shortages (yes/no)
3. The only reason for drug shortages is monopolization (yes/no)

Take home messages

Hospital Pharmacists have to organize drug shortages

→ create guidelines/guidances around drug shortages

Hospital Pharmacists already guard patients from the negative outcome of drug shortages (whenever possible)

National and international hospital pharmacy organizations must approach stakeholders to influence pharmaceutical industry to avoid drug shortages