

How to deal with antimicrobial drug and vaccine shortages?

Pr Larissa May – Dr Guillaume Béraud

Transparency Declaration

- Received payment for speaking engagements from GILEAD.
- Travel grants from CUBIST and PFIZER.
- Besides:
 - I don't recall the last time I took an antibiotic myself
 - I can't remember which company makes the specific antibiotic I'm prescribing

Today's menu

- The US experience
- What about Europe (and the rest of the world)?
- What has been done so far?
- What is the next step?



ESGAP

European Society of Clinical Microbiology and Infectious Diseases

ESCMID STUDY GROUP
FOR ANTIMICROBIAL
STEWARDSHIP

The US experience



- Pr Larissa May:
 - **Antibacterial drug shortages from 2001 to 2013: implications for clinical practice.** Quadri F et al. Clin Infect Dis. 2015 Jun 15;60(12):1737-42.
 - **U.S. vaccine and immune globulin product shortages, 2001-15.** Ziesenitz VC et al. Am J Health Syst Pharm. 2017 Nov 15;74(22):1879-1886.

What about Europe (and the rest of the world)?

- No information centralized at the European level
- At the country level (for some countries):
 - Retrospective reports on shortages, usually on a voluntary basis
 - Not exhaustive
 - No report in advance
 - More exhaustive studies done by hospital pharmacists, but not specifically dedicated to antimicrobial or vaccines.



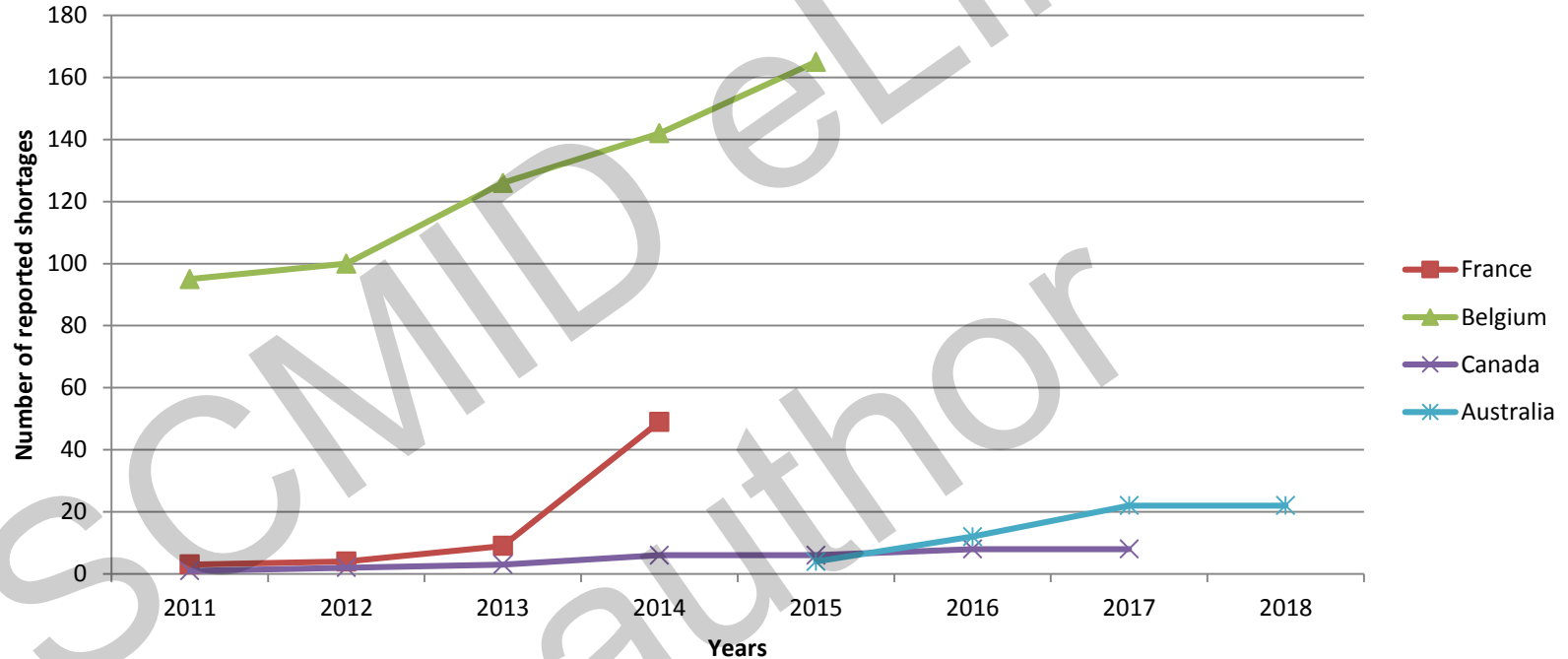
Data from hospital pharmacists

- The European Association of Hospital Pharmacists:
 - Survey on medicine supply shortages in the hospital sector.
 - Shortages concerned mainly antimicrobial (EAHP 2015).
- Data confirmed with a similar study from the Society of Hospital Pharmacists of Australia (SHPA 2017).
- But not focused specifically on antimicrobials or vaccines

Shortages ≠ Shortages

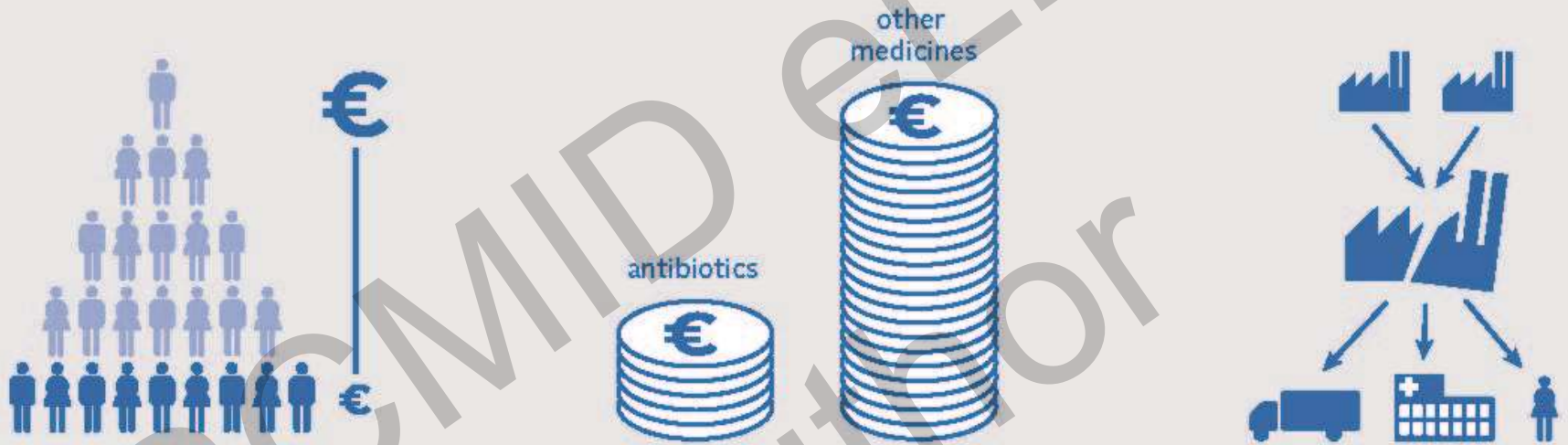
- All shortages are not equal...
- (Hospital) Pharmacists have to deal with many shortages.
 - Change in the distributor, stockists, etc.
 - A huge burden on the pharmacist workload.
- Usually, no impact on the prescriber activity.
- Only major shortages have an impact on prescribers.
- Today, we'll focus on major shortages with an impact on prescribers.

Current situation outside of the USA



Causes

- Quality issues & flawed manufacturing related issues
- Shift in demand (sometimes because of a shortage...)
- Concentration of manufacturing in emerging countries.
- Disruption of the manufacture of the drug
- Narrow profit margins
- Temporary supply issue & unavailability of raw material



Three of the main issues are: growth comes from the poor, there's low profitability and the supply chain has weak links.

Different causes for different shortages

	Global Shortage	National Shortage
Definition	A worldwide shortage of an antibiotic with few or no producers.	Specific antibiotics are globally available but specific regions are unable to access them.
Example causes	<ul style="list-style-type: none">• Global market failure due to low margins and low profit• Pharmaceutical companies exiting market• Reliance on a few manufacturers	<ul style="list-style-type: none">• Prioritisation by companies of profitable markets over smaller markets• Fragile supply chains• Inadequate healthcare financing• Products are unaffordable

Causes (*theoretical?*)

Pauwels et al. *BMC Health Services Research* 2014, **14**:438
<http://www.biomedcentral.com/1472-6963/14/438>



RESEARCH ARTICLE

Open Access

Drug shortages in European countries: a trade-off between market attractiveness and cost containment?

Kim Pauwels*, Isabelle Huys, Minne Casteels and Steven Simoens

Causes (*theoretical?*)



- *“The multiplication of cases of drug shortages observed in recent years coincides with provincial governments’ continued lowering of maximum prices. » Y. Labrie*

Causes (*theoretical?*)

- Price caps, for patented and generic drugs
- Single supplier procurement contracts
- Long approval delays for market access
 - *In France, > 1 year*
- Barriers to the importation of medications

And consequences

- Nuisance for everyday medical practice (time & cost),
- Deleterious on patient' outcomes
- Choice of alternatives with an inadequately large spectrum,
 - => Increase in antimicrobial resistance (AMR)
- Potential deleterious side effects and increased costs
- For vaccine shortages, impact on individual and population health through herd effect
 - Controversies exacerbated by the antivax community

What has been done so far?

- Implementation of registries in some countries
- But not mandatory hitherto.
- No prevention of shortages.
- Scientific societies or medical council may provide, a posteriori, guidelines to suggest an alternative to a specific product.
 - => Delay!!!

What has been done so far?

- Example of legal response:
 - USA: « In 2012, the US Food and Drug Administration (FDA) required drug manufacturers to give advance notice of impending drug shortages »
 - France: « Information note » from the senate...
 - The classic European problem → Lack of coordination between health agencies

What could be done?

- At the national/ extra-national level:
 - Guarantee the supply of essential medicine
 - Pan-European definition of what should trigger a response.
 - => to start:
 - List the essential medicines (Antimicrobials and vaccines!!!!!!!)
 - Set an agreement at the European level
 - Limit single supplier procurement contracts
 - Such contracts resulted in an increase in shortages in New Zealand.
 - Australia and Belgium opted to stop single supplier policies

What could be done?

- At the national/extra-national level:
 - Favour coordination and communication between health agencies:
 - For the evaluation in the process of market access
 - For the prevention and the management of shortages
 - Incentives to make the market attractive for pharmaceutical companies.

What could be done (Let's dream)

- License military pharmaceutical companies to manufacture out-of-stock drugs?
- Set an agreement on medicine price and market access process between European countries?
- Local production ? (eco-friendly, and if it works for tomatoes...)

What could be done?

- At the local level:
 - Publish an alternative strategy as soon as a shortage is known, in collaboration with scientific societies.
 - For the prescriber
 - For the pharmacist
 - And inform the patient!!!



Drug Shortages

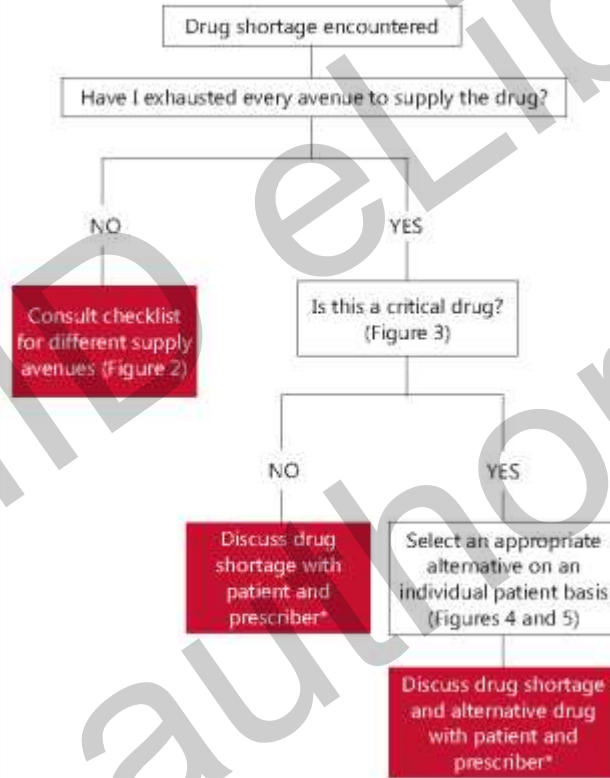
A Guide for Assessment and Patient Management



CANADIAN
PHARMACISTS
ASSOCIATION

ASSOCIATION DES
PHARMACIENS
DU CANADA

Figure 1. Suggested approach for pharmacists in the management of a drug shortage



* In many provinces, pharmacists are authorized to adapt a prescription or prescribe an alternative dosage form or medication.

What could be done?

- At the local level:
 - Publish an alternative strategy as soon as a shortage is known, in collaboration with scientific societies.
 - Take the occasion to build an AMS team.
 - Involve the AMS team with local guidelines.
 - Approach similar to management of penicillin allergy



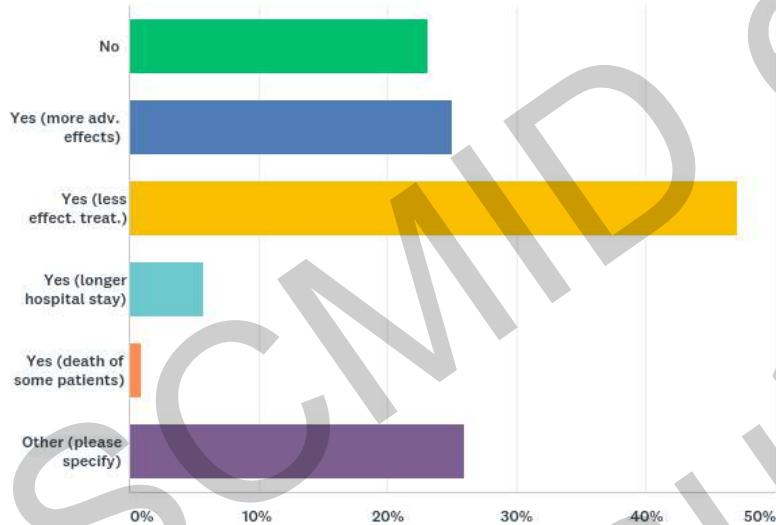
What could be done?

- At the local level:
 - Publish an alternative strategy as soon as a shortage is known, in collaboration with scientific societies.
 - Take the occasion to build an AMS team.
 - Involve the AMS team with local guidelines.
 - Disseminate information: Share, compare and assess
 - *No need to reinvent the wheel*

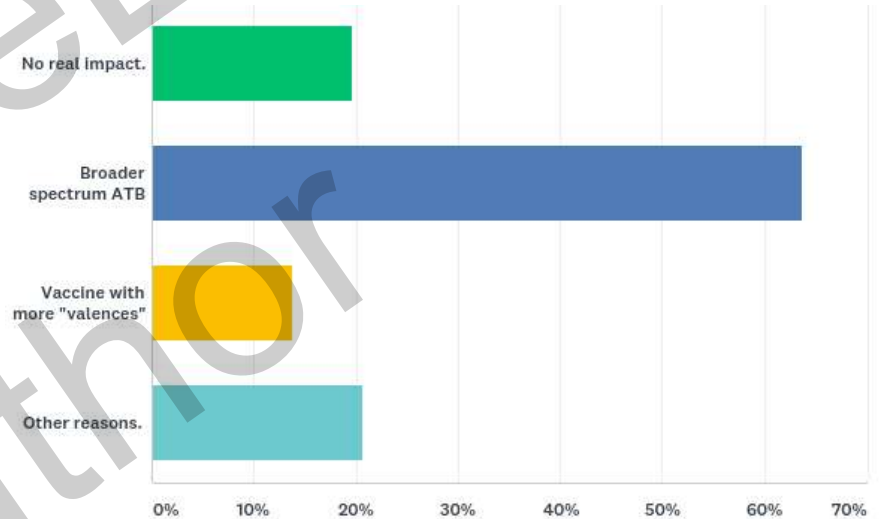
What are we doing

- The SHORTAGES study:
 - First part: To collect retrospectively basic information of shortages in your country
 - Interested in collecting data for your country?
 - Second part: To collect prospectively information on how prescribers deals with shortages.
 - <https://www.surveymonkey.com/r/TJKX8CT>

Mini oral e-poster 00232 (Preliminary results)



Feeling of a negative impact on patients



If you are interested in the topic, feel free to contact me: beraudguillaume@gmail.com

Could you imagine a shortage of cakes?

