

INTRODUCTION

- The year 2012 was marked by an unprecedented number of drug shortages in Canada.
- This crisis was due in particular to the publication of warning letters issued by the US Food and Drug Administration (FDA)
- In response to this crisis, many stakeholders came together in 2012 and made recommendations in order to reduce the risks of drug shortage.
 - only 10/30 recommendations were implemented a year after they were made
- The drug shortage crisis represented a total opportunity cost of more than **half a million dollars** for five Quebec University Hospital Centers and contributed to the postponement of pharmaceutical activities.



OBJECTIVES

- To describe drug shortages for the period of 2006-2013.

METHODS

Retrospective study



Drug shortages data have been collected from the Fridaypm.com Website

From January 1st, 2006 to August 30th, 2013

- Provides a progress report on all drug shortages in healthcare institutions
 - ⇒ <http://vendredipm.ca>
 - ⇒ <http://fridaypm.ca>

- Data collected:**
- Number** of drug shortages
 - Average duration** of drug shortages
 - Number of manufacturers** involved in drug shortages
 - Proportion of manufacturers** involved in drug shortages
 - Therapeutic classes** involved in drug shortages

RESULTS

- The number of drug shortages was reduced in 2012-2013

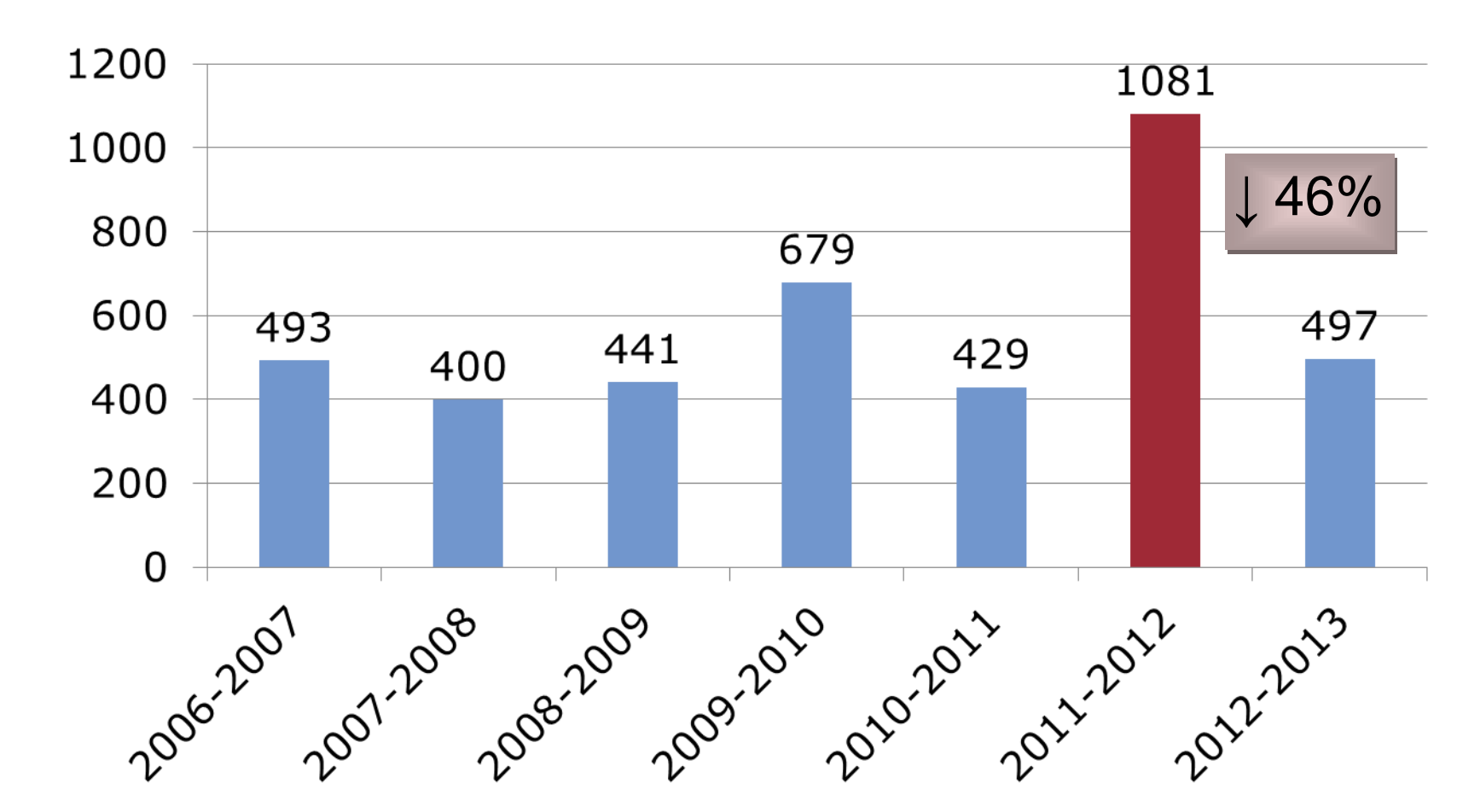


Figure 1. Number of drug shortages per year

- The average duration of drug shortages increased in 2012-2013

Table 1. Average duration of drug shortages

	2006-2010	2010-2011	2011-2012	2012-2013
Duration (days)				
Mean±SD	108 ± 130	103 ± 85	141±116	168 ± 153
[min-max]	[5-1623]	[8-363]	[1-775]	[15-710]

- Most of the drug shortages in 2012–2013 involved generic drug manufacturers, which represented:
 - 85% of the total number of drug shortages
 - 87% of the total number of drug-shortage days

Table 2. Number of manufacturers involved in drug shortages

	2006-2010	2010-2011	2011-2012	2011-2013
Manufacturers (N)	70	41	58	38

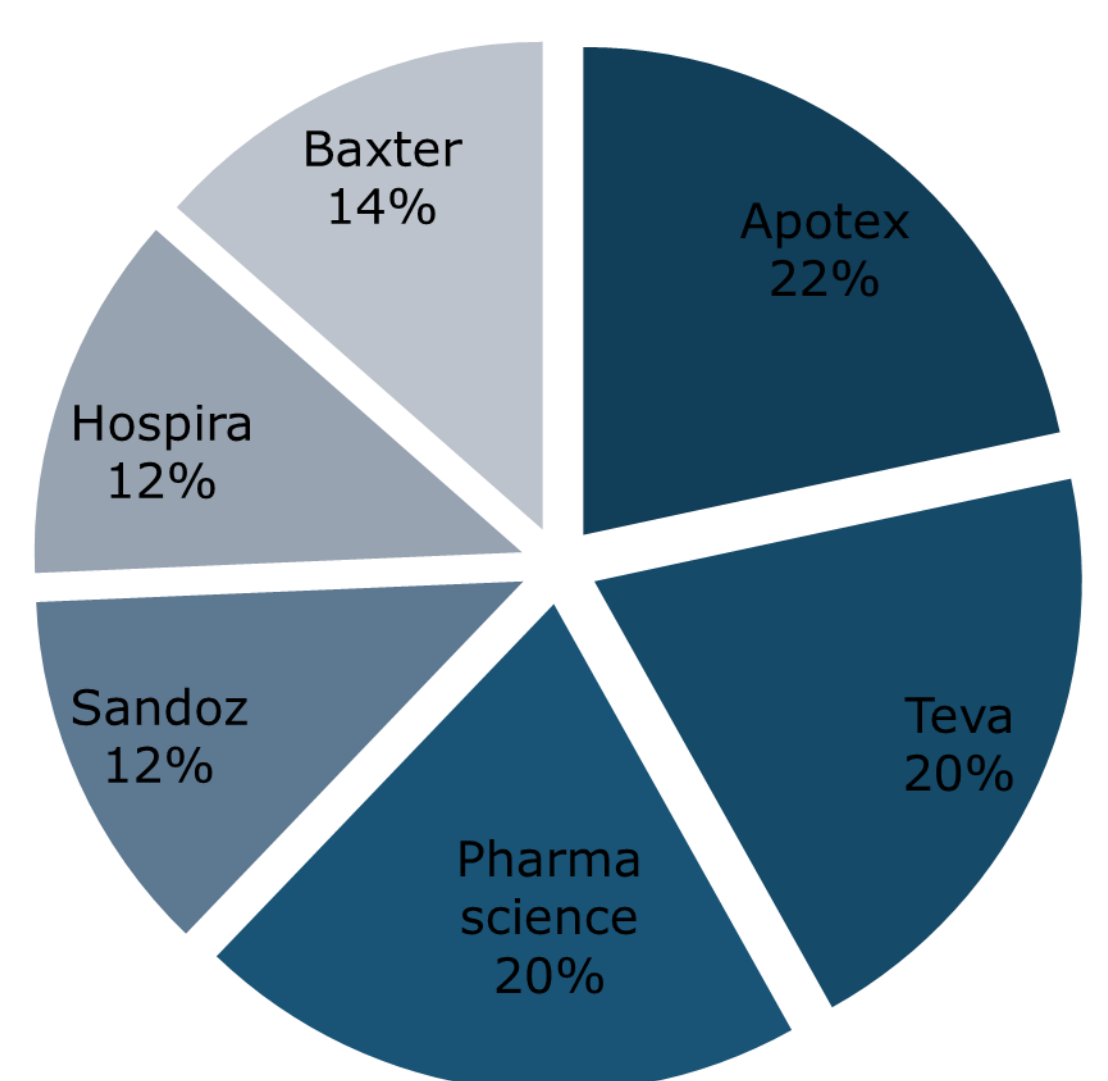


Figure 2. Manufacturers involved in drug shortages

RESULTS

- Most therapeutic classes were affected by shortages in 2012–2013.
- The percentage of parenteral formulations increased:
 - from 33% in 2011-2012 to 36% in 2012-2013 of the total of drug shortages
 - from 37% in 2011-2012 to 47% in 2012-2013 of the total number of days of drug shortages.

Table 4. Therapeutic classes involved in drug shortages

Therapeutic classes	% of products in drug shortage
28:00 Central Nervous System Agents	23
24:00 Cardiovascular Drugs	13
08:00 Anti-infective Agents	11
84:00 Skin and mucous membrane agents	6
68:00 hormones and synthetic substitutes	5
56:00 gastrointestinal drugs	4
10:00 antineoplastic drugs	3
All other classes	35

DISCUSSION / CONCLUSIONS

- There are many causes to drug shortages.
- A decrease in the number of drug shortages was observed for 2012-2013, but there was an increase in the percentage of parenteral formulations drug shortages and duration.
- There was also an increase in the number of drug shortages involving generic manufacturers.
- The decrease in the number of drug shortages is reassuring, but the safety of drug manufacturing abroad is questioned by some experts.
- Hospital pharmacists should revise their inventory level and make sure they keep a safe buffer of 30-60 days of critical drugs.