

HAZARD VULNERABILITY ANALYSIS APPLIED TO EVALUATE THE RISK OF DRUG SHORTAGE IN ACCORDING TO THERAPEUTIC CLASS

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BACKGROUND

Drug shortages are a critical challenge for the public health system as highlighted by EAHP's position paper. They have a negative impact on quality and efficiency of patient care.

PURPOSE

The aim of our study was the application of a revised Hazard Vulnerability Analysis (HVA) to assess which therapeutic class, the drugs at greatest risk of shortage belonged to.

MATERIAL AND METHOD

On September 2019 we analyzed the drugs present in our hospital therapeutic formulary and checked which were included in the Italian Medicines Agency list on the shortages: 43 drugs were found.

For each drug was assigned a score using a revised HVA which consists of three macro-areas:

- probability that the shortages will occur (a score from 0 to 2 was assigned, based on previous shortage);
- magnitude factors which increase the risk of shortage
- mitigation factors which reduce it.

Magnitude factors were: relevance of active substance; budget impact; percentage of patients treated.

Mitigation factors were: therapeutic alternative; stock available; import of drug.

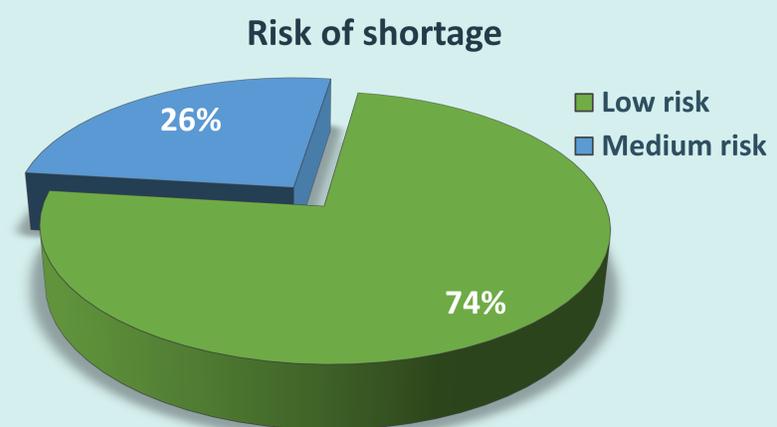
For each of these items a score from 0 to 3 was assigned. For magnitude factors an increasing score was assigned as the severity grew. On the contrary, for mitigation factors an increasing score was assigned in relation to mitigation reduction.

The value of the risk was calculated multiplying the percentage of probability (P) and the percentage of severity (S).

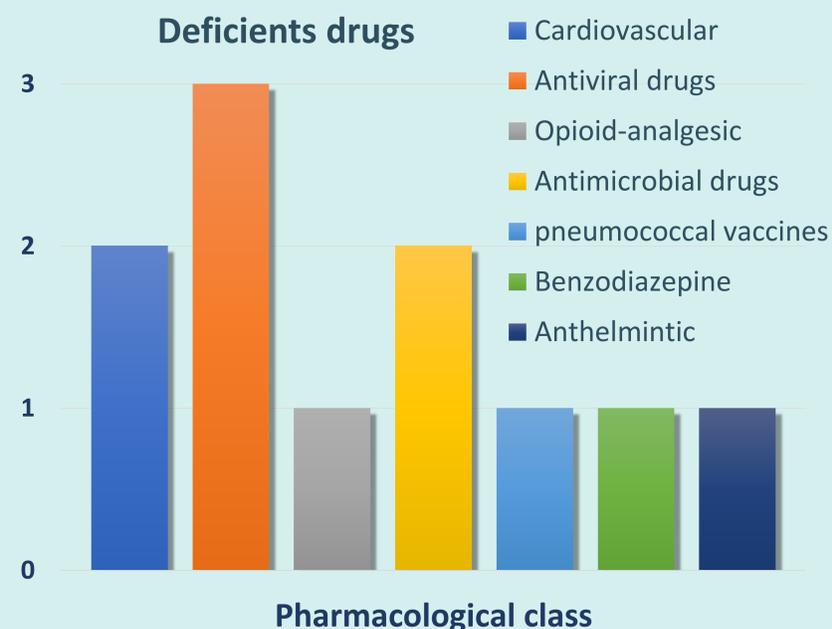
According to the score obtained, three classes of risk of shortage were assigned: low (<30%); medium (30-60%) and high (> 60%).

RESULTS

On **43 deficient drugs**, 32/43 (**74.4%**) were at **low risk of shortage**, while 11/43 (**25.6%**) were at **medium risk of shortage**. **No drug was found to be at high risk of shortage (>60%).**



Pharmacological class	Active substance	N° of drugs deficient
Cardiovascular myocardiotropics	Fructose sodium diphosphate	2/11
Antiviral drugs	Foscarnet, didanosine	3/11
Opioid analgesic	Morphine	1/11
Antimicrobial drugs	Oxacillin sodium salt and piperacillin/tazobactam	2/11
Vaccine	Pneumococcal vaccine	1/11
Benzodiazepine anxiolytic	Lorazepam	1/11
Anthelmintic	Albendazole	1/11



CONCLUSIONS

Shortages analysis is essential to prevent the discontinuation of important therapies such as those involving antiviral and antimicrobial use and implement appropriate mitigation actions.