

DrugStock : Smart Cockpit for real-time management of medicines shortages

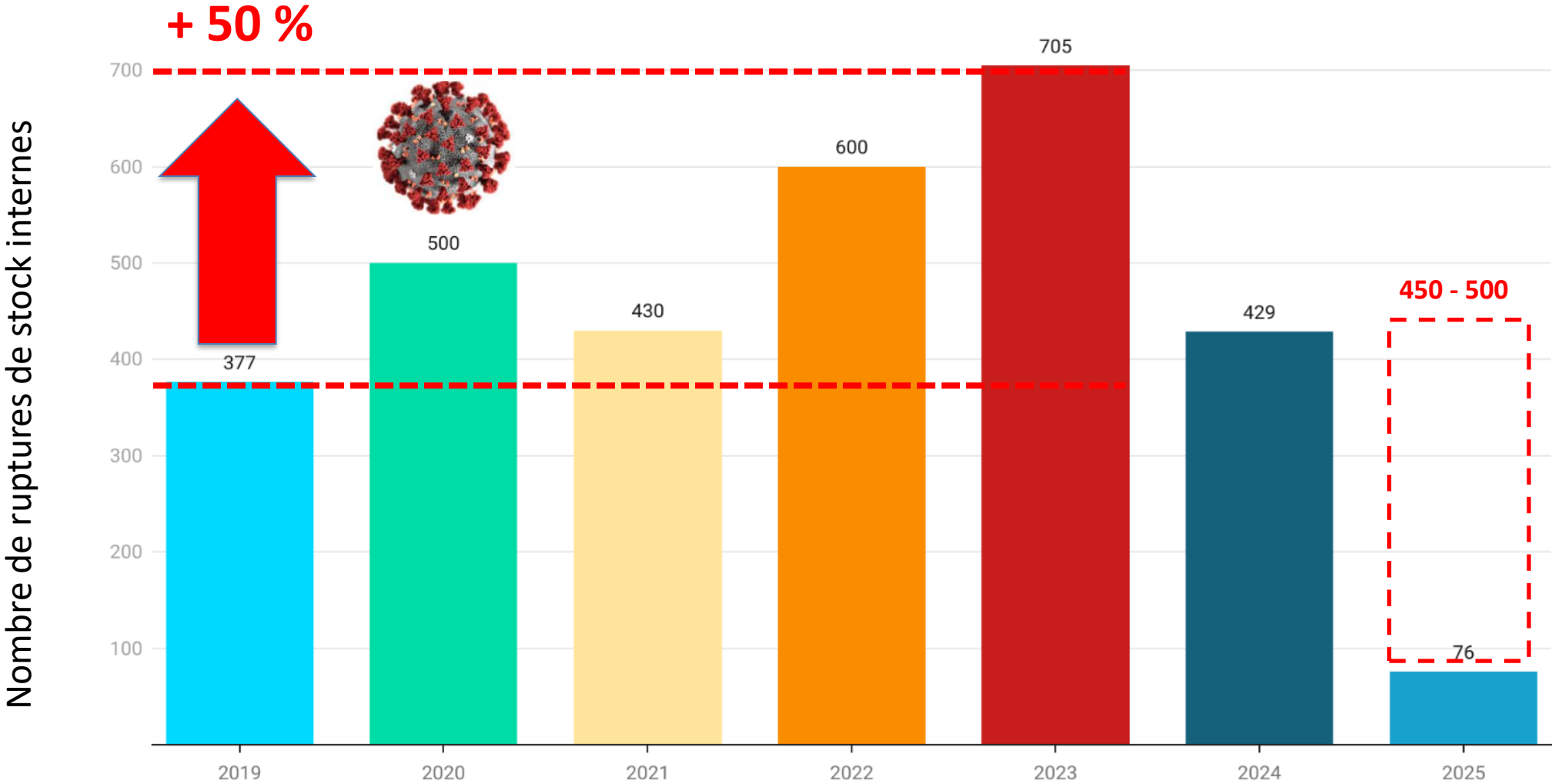
***Webinair «Strategic Investments: Leveraging EU
Funding for the Digital Transformation of Hospitals
and Hospital Care”
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Yassine Dhif

*Hospital Pharmacist, Pharmaceutical Logistics Unit, Central Pharmacy, Hospital University Geneva
PhD candidate Pharmaceutical Sciences, University of Geneva*



Drug shortages at Hospital University Geneva (2019-2025)



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Internal DATA



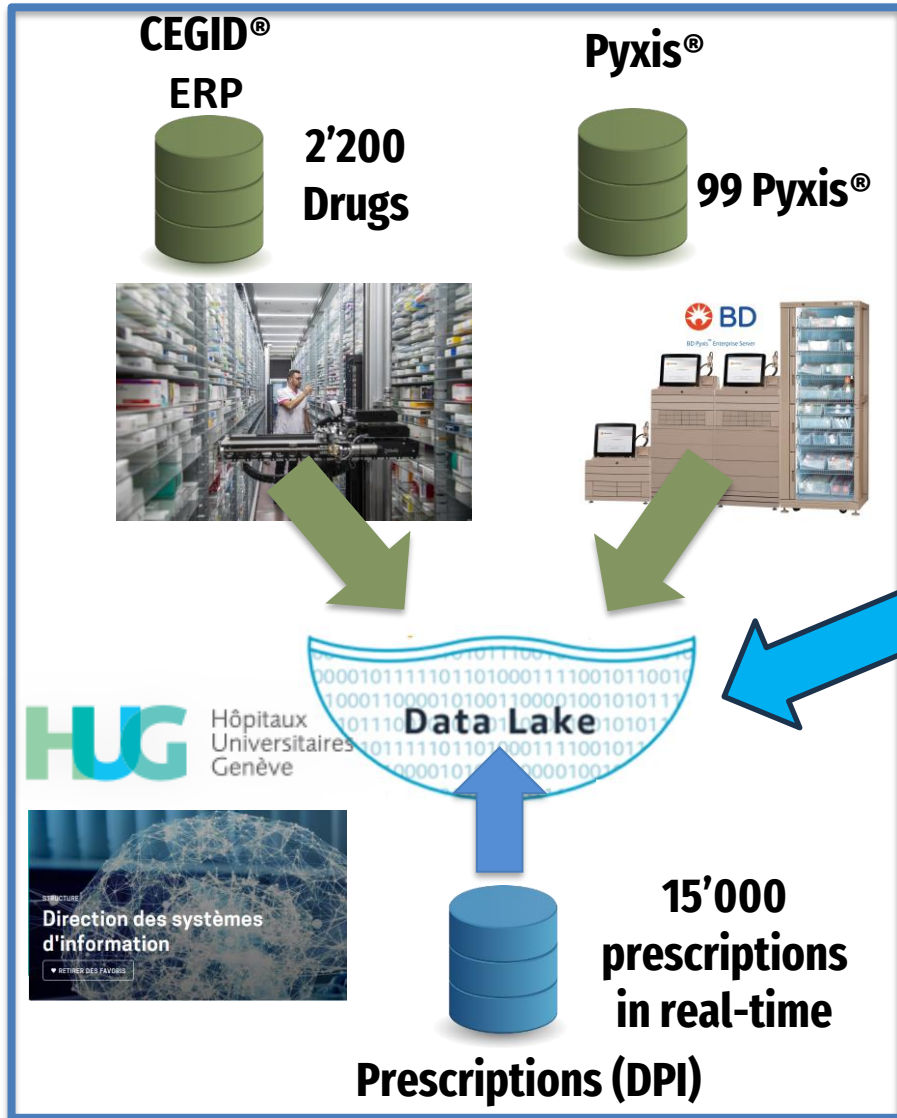
UNIVERSITÉ
DE GENÈVE
FACULTÉ DES SCIENCES
Section des sciences
pharmaceutiques

Solution developed at Hospital University of Geneva



Connecting **clinical data** to **logistical data** to predict drug shortages within the hospital

Concept

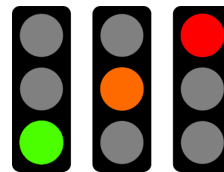


DrugStock Manager



Alerts for the pharmacist

Sufficient stock for **72h of prescription**
Drugs with **<2 weeks of stock**



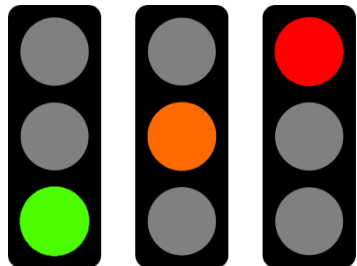
Libellé	Nombre de Prescriptions en cours	Qté Prescrite (EO=Equivalent emballages)	Stock suffisant pour 72h de prescription
Veklury fiol sec 100mg (pce)	4	1 100 mg (EO=11)	✓



Example

Libellé	Nombre de Prescriptio... en cours	Qté Prescrite (EO=Equivalent emballage)	Stock suffisant pour 72h de prescription	Alternative Stricte	Conso/... HUG (unité=...	Tendance consomm...	Stock Pharmacie (unité=emb...	Semaines de couverture Pharmacie ↑	Stock Pyxis (unité=emb...	Semaines de couverture Pyxis
Posaconazol cpr 100mg (1 x 24)	12	11 100 mg (EO=4,63)	!	495839	8,83	↘	0	0	0,8	0
Posaconazol cpr 100mg (1 x 24)	12	11 100 mg (EO=4,63)	✘		15,83	↗	4	1	8,8	2
Noxafil fiol 300mg=16,7ml (pce)	1	900 mg (EO=3)	✓		65,25	→	85	5	29	1

Drug shortage alerts



Alert 1: Sufficient stock for 72h of prescription ?

Alert 2 : Drugs with <2 weeks of stock at pharmacy

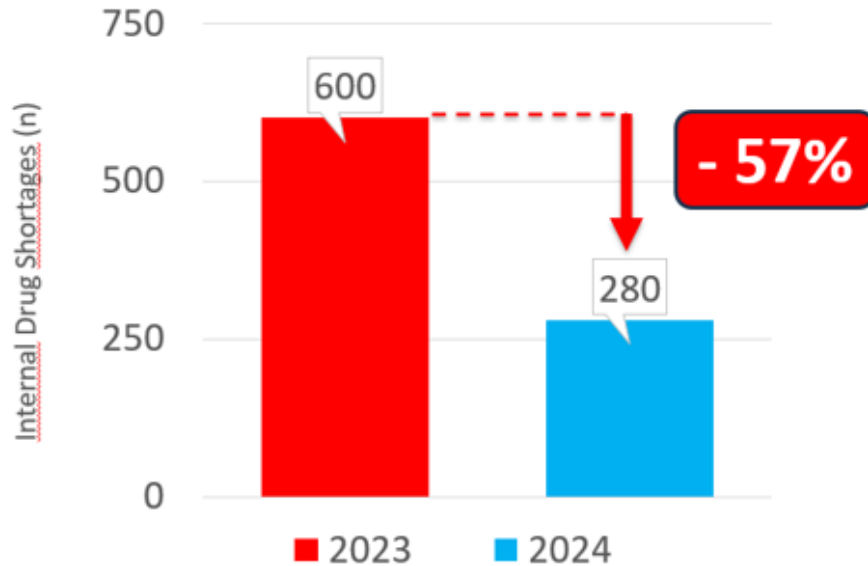
Alert 3 : Non-received orders from supplier >7 days

Alert 4 : Drugs that will expire in the next 14 days

Alert 5 : Overconsumption (>50%) in the last 14 days

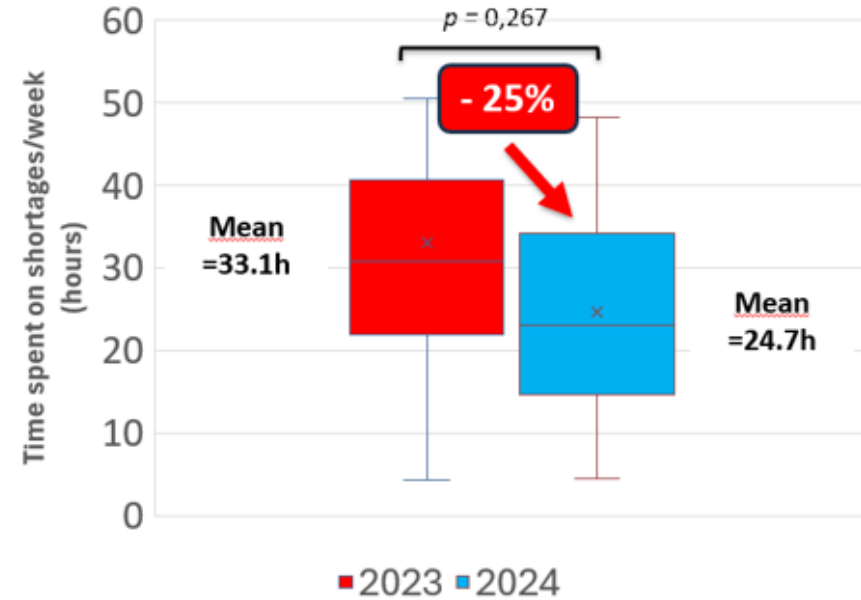
Results

#1 Number of drug shortages



- 57 % shortages within hospital

#2 Time spent on shortages/week



- 25 % time spent on shortages/week

Perspective

DrugStock Manager



Internal Drug Shortages

Hospistock



Supplier Drug Shortage

● 2025-2026

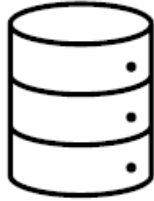
Reliability of suppliers

Drug Shortage Risk Index

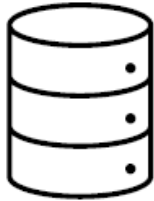
Architecture DATA

drugshortage.ch

70-80% drug shortages
on swiss market



DATA from industry
(Sandoz, Mepha, Bichsel,
Labatec, Vifor CSL)



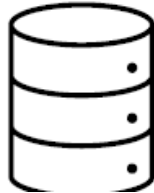
Add alternatives 1x/week:

- Alternatives hospital (HUG)
- Alternative town (pharma24)

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pharma24

+ Partners (hospitals)



Data update :
1x/week

Operating mode during
multicentric study



Till end
2025/beginn 26

	Type of alternative
A	1st choice (strict equivalent)
B	2nd choice
C	3rd choice
D	Non-strict
E	No available equivalent

ADVANTAGES

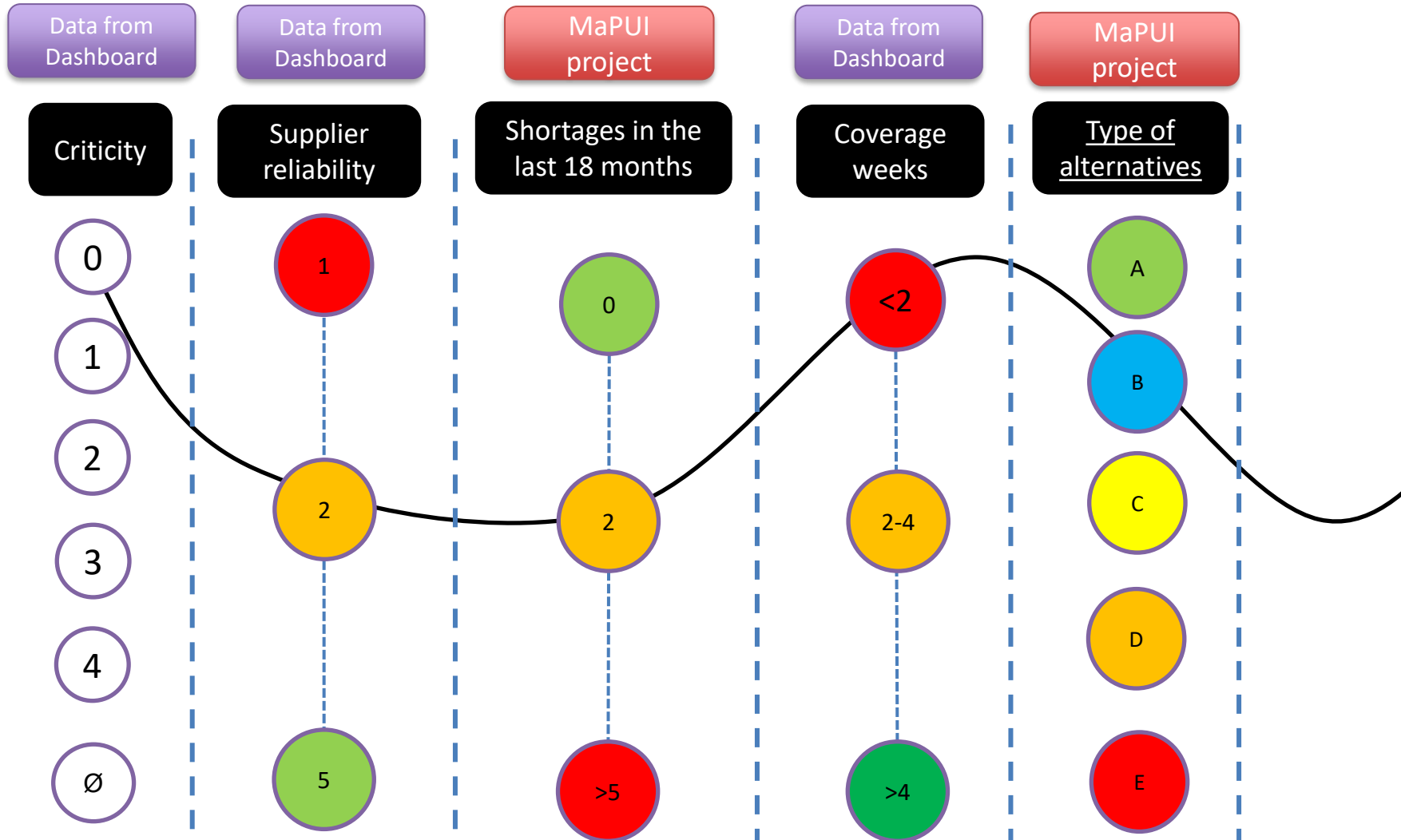
Hospital Pharmacies

- ✓ Shortage management tool
- ✓ Centralization and sharing informations on shortages (alternatives, expert opinions)
- ✓ Time saving for the teams
- ✓ Proactivity in managing drug shortages

Pharmaceutical industry

- ✓ Single point of contact with hospitals
- ✓ Smooth flow of informations about drug shortages
- ✓ Access to useful data
- ✓ Time savings in managing drug shortages

Shortage Risk Index – Ruptimeter



Ruptimeter Risk Matrix

Likelihood	4	Yellow	Orange	Red	Red
	3	Yellow	Orange	Orange	Red
	2	Green	Yellow	Orange	Orange
	1	Green	Green	Yellow	Yellow
		1	2	3	4
		Impact			

- High Risk
- Medium High Risk
- Medium Risk
- Low Risk

Perspectives – Drug Shortage Risk Index - Ruptimètre

Criticality	Type of alternative	Supplier reliability	Shortages in the last 18 months	Covered weeks	Shortage Risk Index - Priority
Cotation 1 to 5	Cotation 1 to 5	Cotation 1 to 5	Cotation 1 to 5	Cotation 1 to 5	Cotation 1-3
0=5	A=1	0-1=1	0=1	<1=5	1
1=4	B=2	2=2	1=2	1-2=4	2
2=3	C=3	3=3	2=3	2-4=3	3
3=2	D=4	4=4	3=4	4-6=2	
4 & more=1	E=5	5=5	5 & >5 =5	>6=1	



Severity Score (1-5)	Probability Score (1-5)	Mastering Score	Priority in shortage handling
>20 =5	>20 =5	<1=5	1 2 3
15-20=4	15-20=4	1-2=4	
10-15=3	10-15=3	2-4=3	
5-10=2	5-10=2	4-6=2	
1-5=1	1-5=1	>6=1	
Criticité (1-5) X Alternative (1-5)	Supplier reliability (1-5) X Shortages 18 months (1-5)	Covered weeks (1-5)	
Severity Score X Probability Score = Impact Score (1 – 25)			Master Score

Perspectives – Drug Shortage Risk Index

Score de sévérité (1-5)	Score de probabilité (1-5)
Criticité (1-5) X Alternative (1-5)	Fiabilité fournisseur (1-5) X Nbr ruptures 18 mois (1-5)
Score de sévérité X Score de probabilité = Impact Score (1 – 25)	

Score de maîtrise <1=Niveau 5 1-2=Niveau 4 2-4=Niveau 3 4-6=Niveau 2 >6=Niveau 1
Semaines de couverture (1-5)

= Impact Score (1 – 25)



Matrice d'évaluation des risques

Priorisation : impact ; niveau de maîtrise	Niveau 1	Niveau 2	Niveau 3	Niveau 4	Niveau 5
1	Green	Green	Yellow	Yellow	Yellow
2	Green	Green	Yellow	Yellow	Yellow
3	Green	Green	Yellow	Yellow	Yellow
4	Green	Green	Yellow	Yellow	Yellow
5	Green	Green	Yellow	Yellow	Yellow
6	Green	Yellow	Yellow	Yellow	Red
7	Green	Yellow	Yellow	Yellow	Red
8	Green	Yellow	Yellow	Yellow	Red
9	Green	Yellow	Yellow	Yellow	Red
10	Green	Yellow	Yellow	Yellow	Red
11	Yellow	Yellow	Yellow	Yellow	Red
12	Yellow	Yellow	Yellow	Yellow	Red
13	Yellow	Yellow	Yellow	Yellow	Red
14	Yellow	Yellow	Yellow	Yellow	Red
15	Yellow	Yellow	Yellow	Yellow	Red
16	Yellow	Yellow	Yellow	Yellow	Red
17	Yellow	Yellow	Yellow	Yellow	Red
18	Yellow	Yellow	Yellow	Yellow	Red
19	Yellow	Yellow	Yellow	Yellow	Red
20	Yellow	Yellow	Yellow	Yellow	Red
21	Yellow	Yellow	Yellow	Yellow	Red
22	Yellow	Yellow	Yellow	Yellow	Red
23	Yellow	Yellow	Yellow	Yellow	Red
24	Yellow	Yellow	Yellow	Yellow	Red
25	Yellow	Yellow	Yellow	Yellow	Red



Priorité de gestion du risque
1 2 3

Figure 9: Matrice d'évaluation des risques

Take-home messages

- **Context of difficult shortages:**

- Longer duration (37 → 49 days)
- critical shortages (1 out of 2)
- No alternatives (1 out of 5)

- **Profile of the drug in shortage:**

Low-cost (<100 CHF), under hospital contract (4 out of 10).

- **Innovative solution:**

Combine logistical and clinical data to anticipate shortages.

- **Promising results with a dashboard:**

-57% stockouts, -25% HR time, -62% additional costs.

- **Impact on shortage management:**

Improved management of shortages with the cockpit (anticipation and proactivity).

Thank you for you attention !



Contact : yassine.dhif@hug.ch



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Section des sciences
pharmaceutiques