Comparative evaluation of a drug website for incompatibility: Stabilis, Trissel's Handbook and the current available tool in Japan

Shinya Suzuki[1], Nobuo Mochizuki[1], Aya Iwamoto[2], Mikinori Yoshida[3], Akio Murakami[4], Kiwako Ikegawa[1], Shinichiro Saito[1] and Jean Vigneron[5]

1) Department of Pharmacy, National Cancer Center Hospital East, 2) Department of Pharmacy, Hyogo Cancer Center, 3) Department of Pharmacy, Kobe Minimally invasive Cancer Center, 4) Department of Pharmacy, National Center for Global Health and Medicine, 5) Department of Pharmacy, Nancy Teaching Hospital

All Activities for Cancer Patients

ECOP European Conference of Oncology Pharmacy 3

Introduction

- Injectable drug information is one of the most important information issues for a pharmacy service at a hospital.
- In Japan, pharmacists generally answer questions about drug stability and drug compatibility by consulting the pharmaceutical company or various textbooks, especially the "Injectable Drug Audit Manual" [Injectable drug audit manual. 4th edition. Tokyo: Elsevier Japan; 2012.] and the "Handbook on Injectable Drugs" by Lawrence Trissel [Handbook on injectable drugs. 17th edition. Bethesda: American Society of Health-System Pharmacists, 2012.], to check injectable drug compatibility.
- One of the free-access websites for drug compatibility is the Stabilis [Infostab: Stabilis. http://www.stabilis.org/.] website.
- Stabilis is organised by the French non-profit group Infostab and is officially recommended by the Society of French Oncology Pharmacists and the European Society of Oncology Pharmacists [Ann Pharm Fr. 2013;71:376-89.].
- The website provides a database of information on the stability of solutions, stability of mixtures and drug incompatibilities in 28 different languages. However, the website was not originally adapted to the Japanese language.
- Our study group recently translated the Stabilis website into Japanese and introduced the website to users in Japan [Yakujinippou Tokyo: Yakuji Nippo Limited, April 10th 2015.].
- The benefit of having such additional information is obvious, but how the Stabilis information compares to existing tools in Japan has been unclear.

Purpose

To evaluate the benefit of Stabilis through a survey of the listings of incompatibility data.

Methods

- Study design: Literature review.
- We used the data on incompatible drugs to compare each database.
- The review was performed in December 2014 to compare the number of incompatible drugs cited by
  - ✓ the Stabilis website,
  - ✓ "Injectable Drug Audit Manual, 4th ed." (AM) and
  - ✓ "Handbook on Injectable Drugs, 17th ed." (ID).
- We selected 10 frequently used anticancer medicines to compare the drugs cited in Stabilis, Am and ID.
- In addition, we compared Stabilis and AM in 23 frequently used antibiotics as an additional evaluation.

Main outcome measure

Endpoints were:
1) The number of incompatible drugs; and
2) Rates of duplicate data between Stabilis and AM or ID.

Results

Result① Indexed drugs and references

- According to each index page,
  - ✓ Stabilis had **456** injectable drugs,
  - ✓ AM had **496** injectable drugs and
  - ✓ ID had **332** injectable drugs as of December 2014.
- Most references in AM were unofficial data from manufacturers, while
  - ✓ Stabilis cited **1,722** other references and
  - ✓ ID cited **2,830** other references.

Result② Comparison of ten selected anticancer drugs between Stabilis and AM

Drugs	Stabilis	AM		
	n	n	Duplicate no.	Duplication rate
5-Fluorouracil	24	8	1	4%
Cisplatin	32	5	0	0%
Carboplatin	4	0	0	0%
Oxaliplatin	7	6	2	29%
Docetaxel	4	0	0	0%
Paclitaxel	8	0	0	0%
Irinotecan	3	0	0	0%
Doxorubicin	17	25	2	12%
Methotrexate	16	5	0	0%
Cyclophosphamide	3	2	0	0%
Total	118	51		
Mean	11.8	5.1	0.5	4.5%
Median	7.5	3.5	0	0.0%

Result③ Comparison of ten selected anticancer drugs between Stabilis and ID

Drugs	Stabilis	ID		
	n	n	Duplicate no.	Duplication rate (%)
5-Fluorouracil	24	21	15	62%
Cisplatin	32	12	9	28%
Carboplatin	4	4	3	100%
Oxaliplatin	7	1	1	14%
Docetaxel	4	4	4	100%
Paclitaxel	8	9	8	100%
Irinotecan	3	4	3	100%
Doxorubicin	17	14	8	47%
Methotrexate	16	11	9	56%
Cyclophosphamide	3	2	0	0%
Total	118	82		
Mean	11.8	8.2	6	60.7%
Median	7.5	6.5	6	59.0%

Result④ Comparison of 23 selected antibiotics between Stabilis and AM

Drugs	Stabilis	AM		
	n	n	Duplicate no.	Duplication rate (%)
Arbekacin	0	17	0	0%
Amikacin	48	30	30	100%
Biapenem	0	3	0	0%
Ceftazidime	33	10	2	20%
Cefazolin	26	15	2	13%
Cefepime	21	10	3	30%
Clindamycin	26	7	2	29%
Ciprofloxacin	36	32	13	41%
Cefpirome	5	7	0	0%
Cefozopran	0	11	0	0%
Daptomycin	1	0	0	0%
Doripenem	7	4	0	0%
Gentamicin	53	0	0	0%
Levofloxacin	14	15	5	33%
Linezolid	8	8	7	88%
Imipenem/Cilastatin	18	6	1	17%
Meropenem	10	15	1	7%
Metronidazole	16	0	0	0%
Sulbactam/Ampicillin	13	5	1	20%
Tazobactam/Piperacillin	40	5	2	40%
Teicoplanin	7	4	0	0%
Tobramycin	30	13	2	15%
Vancomycin	50	21	5	24%
Total	462	238		
Mean	20.1	10.3	3.3	20.7%
Median	16.0	8.0	1.0	15.0%

Summary

- For the 10 selected anticancer drugs, the total number of listed drugs was 118 in Stabilis, compared to 51 in AM and 82 in ID.
- Overall, mean and median duplication rates were 4.5% and 0% in AM and 60.7% and 59.0% in ID, respectively.
- For the 23 selected antibiotics, the total number of listed drugs was 462 in Stabilis, compared to 238 in AM.
- Overall, mean and median duplication rates were 20.1% and 16.0% in Stabilis and 10.3% and 8.0% in AM, respectively.

Conclusions

- The study found that AM, one of the most commonly used textbooks in Japan, is inadequate un terms if evaluating drug incompatibilities due to the small number of listed drugs.
- Stabilis offers a beneficial database for checking drug incompatibilities in a manner similar to ID, which is one of the most well-known textbooks for this purpose worldwide.

Declaration of conflicting interests: *The authors declare that there is no conflict of interest.*

Poster #028, European Conference of Oncology Pharmacy, 19-21 May 2016, Dubronik, Croatia