

Characterization & Evaluation of the Clinical Importance of Drug Interactions Identified by Hospital Pharmacists & Computer Systems



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Background

- Drug-drug interactions (DDI) cause adverse drug events that results in 2-3% of hospitalizations.¹
- Computer systems have the potential to eliminate DDI, improve clinician decision making and drug safety.
- Our previous research identified pharmacists were concerned about the discrepancy between computer system rated level of severity & recommended actions versus common clinical practice.²

Objectives

- To characterize the agreement between the severity classification & actions taken by a pharmacist and those recommended by the computer system for selected DDI.
- To determine if the computer system rated severity affects pharmacists' decision making.

Methods

- Design:** Online survey disseminated to participants via e-mail link.
- Survey:**
 - Consisted of 10 of the most frequently identified and 5 of the least frequently identified unique DDI from 2016 at Vancouver General Hospital.
 - Part 1:** Participants were asked to rank the severity of the DDI on a Likert scale from 1 to 5 and select an action to manage the 15 DDI.
 - Part 2:** Participants were given the computer system's severity ranking and asked to select an action to manage the same 15 DDI.
- Ethics:** Approval obtained from the UBC Behavioural Research Ethics Board.
- Study Population:** LMPS pharmacists and pharmacy practice residents.
- Analysis:** Descriptive statistics and inferential analysis.

Results

Table 1: Comparison of computer system versus pharmacists' severity ranking & action of selected DDI (N = 73)

DDI	Computer system ranking ¹	Pharmacist ranking ²					Pharmacist action ³			System's influence on pharmacist action ³	
		Severity 1	Severity 2	Severity 3	Severity 4	Severity 5	No action	Monitor	Contact prescriber	No change	Changed response
ASA & Prednisone	Moderate		43.8%				55.1%		84.1%		
Carbamazepine & Voriconazole	Contraindicated					60.3%		82.6%	89.9%		
Citalopram & Quetiapine	Severe		43.8%	43.8%			73.9%		87.0%		
Citalopram & Trazodone	Moderate		42.5%				63.8%		84.1%		
Clopidogrel & Pioglitazone	Contraindicated		34.2%				56.5%		75.4%		
Clopidogrel & Warfarin	Moderate			38.4%			73.9%		87.0%		
Clozapine & Lorazepam	Severe			35.6%			55.1%		82.6%		
Clozapine & Rifampin	Severe			45.2%			72.5%		88.4%		
Fluoxetine & Metoclopramide	Severe			45.2%			59.4%		76.8%		
Furosemide & Ramipril	Moderate		39.7%				75.4%		87.0%		
Glyburide & Propranolol	Moderate		49.3%				60.9%		84.1%		
Hydromorphone & Prochlorperazine	Moderate		41.1%				55.1%		84.1%		
Mebendazole & Metronidazole	Severe					64.4%		84.1%	94.2%		
Paroxetine & Pravastatin	Moderate		50.7%				47.8%		71.0%		
Ramipril & Potassium Chloride (PO)	Moderate		47.9%				91.3%		87.0%		

¹Action recommended by computer system: Moderate = assess the risk to the patient and take action as needed; Severe = action is required to reduce the risk of severe adverse interaction; Contraindicated = contraindicated drug combination
²Severity on a Likert scale from 1 (of no consequence) to 5 (contraindicated)
³Results from 4 dispensary only pharmacists were excluded

Additional Results

- N = 73 (response rate = 15%)
 - 51 ward/dispensary pharmacists
 - 4 dispensary only pharmacists
 - 18 pharmacy practice residents
- Fleiss' Kappa (κ): interrater agreement among pharmacists:
 - severity ranking = 34.6%
 - actions taken = 56.6%

Limitations

- The clinical context of each DDI was not provided.
- DDI of mild severity were excluded.
- Only four dispensary pharmacists participated.

Conclusions

- There is poor agreement between pharmacists on the severity of each DDI.
- For severe and contraindicated DDI, severity ranking and action varied depending on the specific DDI.
- For moderate DDI, most pharmacists chose to monitor.
- Seeing the computer system severity ranking did not change the action taken by most pharmacists.

References

- Tragni E. et al. Prevalence of the Prescription of Potentially Interacting Drugs. PLoS ONE 2013;8(10):1-9.
- Bagri H., Dahri K., Legal M. Hospital Pharmacist Perception and Decision Making Around Drug-Drug Interactions. CJHP. In Press.

