

The Value of Cognitive Service Provided by Community Pharmacists in Taiwan

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Backgrounds

Drug therapy problem (DTP) may worsen patients' health conditions, and could lead to unnecessary harm and medical care, causing great concerns both clinically and economically. Cognitive service aiming to identify, resolve and prevent DTPs related to physician prescribing during pharmacist dispensing process was encouraged.

In Taiwan, pharmacists are not paid for routinely by providing cognitive service; as a result, pharmacists are not used to provide such a service. In 2014, Taiwan FDA provided research funding to encourage pharmacists to provide cognitive service while dispensing.

Purpose

To evaluate the clinical and economic value of providing Cognitive Service by community pharmacists in Taiwan.

Methods

- Community pharmacists need to take an 8-hour training program in order to be recruited into the study.
- A web-based computerized documentation system was developed by the Taiwan Pharmacist Association to record every Cognitive Service provided.
- Cognitive Service is documented using AABCC coding system to record DTPs identified (AA code), giving recommendation (BB) and follow up the drug therapy changes by physician (CC) (**Figure 1**).
- Pharmacist was paid NT\$200 for every DTP identified and resolved.

Assessment	Care plan
Drug therapy problems(AA)	Recommendations (BB)
1.Requires additional drug therapy code 11~14	Pharmacist recommendations code 11~23
2.Unnecessary drug therapy code 21~26	
3.Wrong drug code 31~39	
4.Dosage too low code 41~47	
5.Dosage too high code 51~55	
6.Adverse effect code 61~68	
	Follow up
	Responses (CC)
	Physician responses
	Accepted: code 11~20, 22~24
	Not accepted: code 21, 25, 26

Figure 1. AABCC coding system for documentation of pharmacist intervention

Results

Clinical indicator: 263 pharmacists identified 1,487 DTPs while dispensing in nine months, most of the problems were "adverse drug reaction" (25.9%) (**Figure 2**). Around 80% of the suggestions given to physicians were replied and 45.4% of them were accepted(**Table 1**).

Economic indicator: In average, NT\$ 63.9 (\$1USD=\$31NTD) drug expenditure was saved by providing one DTP identified and resolved (**Table 2**).

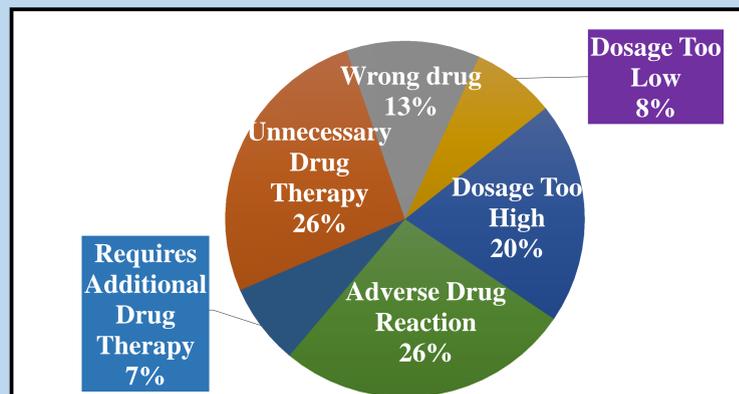


Figure 2. Categories of drug therapy problems (DTPs) identified by pharmacists

Categories of DTPs	Amount of BB code	Response rates ^a	Acceptance rates ^b
Requires Additional Drug Therapy	115	78.3%	49.6%
Unnecessary Drug Therapy	371	80.1%	53.9%
Wrong drug	198	78.3%	44.4%
Dosage too low	117	92.3%	43.6%
Dosage too high	301	82.4%	47.8%
Adverse effect	385	75.1%	35.1%
Total	1,487	79.8%	45.4%

^a Response rates=(Amount of CC code ÷ Amount of BB code)*100%

^b Acceptance rates=(Amount of CC code which represents physicians accept pharmacists recommendations ÷ Amount of BB code)*100%

Table 1. Physician Response rates and Acceptance rates

		Drug expenditure ^a			
		Decrease	No change	Increase	Total
Amount of services		399	951	137	1487
Drug expenditure changed by services	Mean±S.D.	-335.6 ±621.4	-	283.7 ±601.4	-63.9 ±412.4
	MAX/min	-1/-7,008	-	1/4,032	4,032/ -7,008
	Sum	-133,911	-	38,864	-95,047
Remuneration for services		-	-	-	297,400
Remuneration : Drug expenditure saved		-	-	-	1 : 0.32

^a \$1USD= \$31NTD

Table 2. Cost-benefit ratio (in NT\$) of providing Cognitive service

Conclusion

- The cost benefit ratio of providing Cognitive Service is 1:0.32 (remuneration: drug expenditure saved), this may not be attractive. However, to avoid DTP and prevent potential adverse drug reaction may save more health care expenditure such as outpatient visit, ER or inpatient care which did not capture in this study.
- Pharmacist conducts Cognitive Service while dispensing is worthwhile and valuable. The contribution to patient care should be recognized by the society.