



# 2016 OUTCOME EVALUATION ON PROVIDING MEDICATION INTEGRATION SERVICE BY COMMUNITY PHARMACISTS



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## Backgrounds/Purpose

- In 2016, Taiwan FDA provided a research project to develop and implement a new service in community pharmacies, called “Medication Integration Service.” With patient’s approval after dispensing, pharmacist could organize the patient’s “current medication profile” via “PharmaCloud”. Then, according to the drug therapy problems (DTPs) identified, either physician- or patient-related, pharmacist will contact physician and tried to change drug therapy (cognitive service), or educate patient on proper use of medications (adherence counseling).
- To evaluate the value of providing medication integration service by pharmacists in Taiwan.

## Methods

A computerized documentation system was developed by the Taiwan Pharmacist Association to record every services provided. Pharmacist would use AABCC coding to record DTPs identified (AA code), giving recommendation (BB) and follow up the drug therapy changes by physician (CC). For adherence counseling service, pharmacist would use five open-ended questions to ask about medication taking knowledge and behavior at home for each and every medications the patient is taking, proper use will be educated. Taiwan FDA provides research funding to pay pharmacists NT\$300 per service provided.

## Results

Total of 109 pharmacists participated in the project, and total of 1,659 patients received medication integration service. Among them, pharmacists found 148 DTPs from physician. In average, NT\$ 61 drug expenditure was saved by resolving one DTP identified. Total of 1,659 patients received adherence counseling service, and 8,201 medications were consulted. Around 24.0% of the drugs, patients do not know what the drug is for, 33.0% took the drug with wrong time, wrong dosage or use the wrong way of taking the drug, 37.0% do not know what should they do if they miss a dose, 40.0% do not know the side effects, and 39.8% need more necessary drug information.

Table 1. Demographic characteristics of the patients

Variable	Medication Integration Service	cognitive service	adherence counseling
<b>Gender N(%)</b>			
Male	777(46.8)	69(46.6)	777(46.8)
Female	882(53.2)	79(53.4)	882(53.2)
total	1,659	148	1,659
<b>Age (Mean±SD)</b>	68.0±13.1	73.7±14.2	68.0±13.1
<b>Age (years&gt; 65 ) N(%)</b>	1,022(61.7)	112(75.6)	1,022(61.7)
<b>Consultation time</b>			
<10 mins	-	-	38(2.3)
11~60 mins	-	-	1,560(94.0)
>60 mins	-	-	61(3.7)

## Conclusion

The “medication integration service” provided by pharmacists can indeed protect medication safety of the patients, and can also provide personalized educational contents to satisfy patients’ needs.

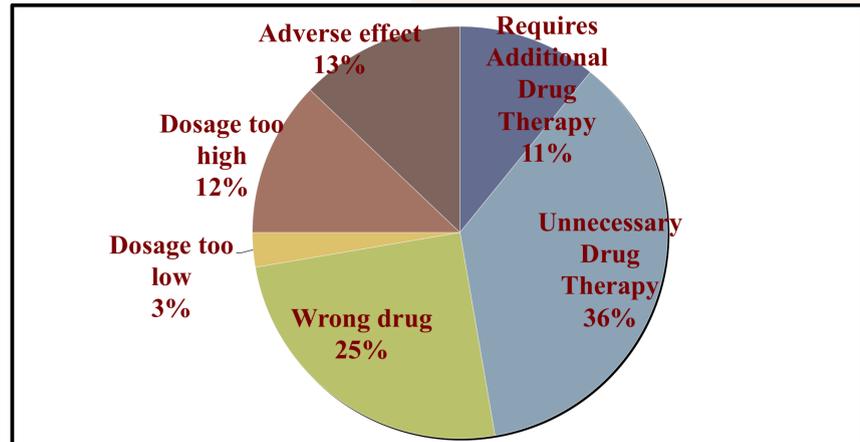


Figure 1. Categories of drug therapy problems (DTPs) identified by pharmacists

Table 2. Physician Response rates and Acceptance rates

Categories of DTPs	Amount of AA code	Response rates <sup>a</sup>	Acceptance rates <sup>b</sup>
Requires Additional Drug Therapy	16	100.0%	81.3%
Unnecessary Drug Therapy	54	72.2%	59.3%
Wrong drug	37	64.9%	29.7%
Dosage too low	4	75.0%	50.0%
Dosage too high	18	88.9%	61.1%
Adverse effect	19	78.9%	52.6%
<b>Total</b>	<b>148</b>	<b>80.0%</b>	<b>55.7%</b>

<sup>a</sup> Response rates=(Amount of CC code ÷ Amount of AA code)\*100%

<sup>b</sup> Acceptance rates=(Amount of CC code which represents physicians accept pharmacists recommendations ÷ Amount of AA code)\*100%

Table 3. Cost-benefit ratio (in NT\$) of providing Cognitive service

	Drug expenditure <sup>a</sup>			
	Decrease	No change	Increase	Total
Amount of services	53	71	24	148
Drug expenditure changed by services	Mean±S.D.	-309.1 ±297.9	-	305.8 ±602.6
	MAX/min	-11/-1,392	-	2/2,750
	Sum	-16,381	-	7,339
Remuneration for services	-	-	-	44,400
Remuneration : Drug expenditure saved	-	-	-	1 : 0.2

<sup>a</sup> \$1USD= \$30NTD

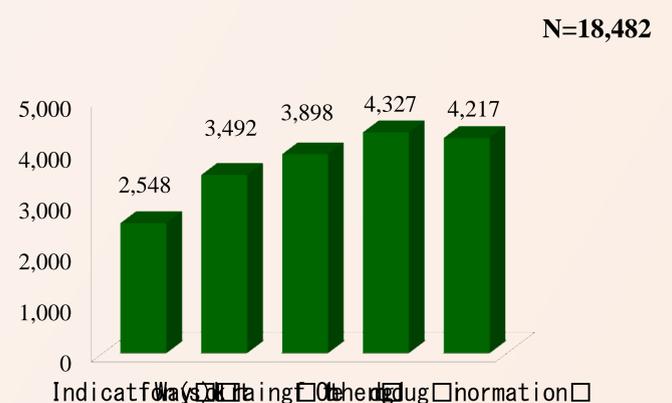


Figure 2. The number of educations conducted by pharmacist on 5 open-ended questions for each and every drugs patient is taking. Whatever patient’s response is wrong or do not know, pharmacist should educate the correct information to the patient.

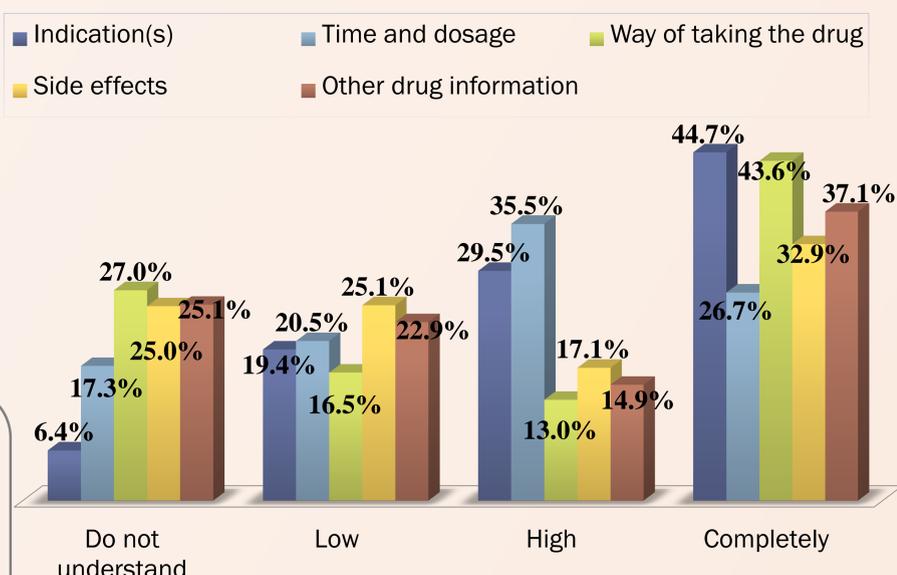


Figure 3. Distribution of patients on five classifications of drug adherence