

คู่มือการวิเคราะห์ข้อมูลการสั่งใช้ยา จากฐานข้อมูล OP 18 เพิ่มมาตรฐาน ด้วยโปรแกรม STATA



โครงการพัฒนาศาสตร์ด้านยาของผู้ป่วยนอกรายบุคคล
ในระบบประกันสุขภาพถ้วนหน้า



คำนำ

ในทศวรรษที่ผ่านมา เทคโนโลยีสารสนเทศช่วยให้โรงพยาบาลเก็บข้อมูลต่างๆ อยู่ในรูปแบบอิเล็กทรอนิกส์ ข้อมูลเหล่านี้เป็นสารสนเทศที่มีความสำคัญ สามารถนำมาใช้ในการวิเคราะห์อย่างเป็นระบบเพื่อสนับสนุนการตัดสินใจ สำนักงานหลักประกันสุขภาพแห่งชาติเล็งเห็นถึงความสำคัญของการใช้ประโยชน์จากข้อมูลอิเล็กทรอนิกส์ จึงกำหนดให้หน่วยบริการต่างๆ นำส่งข้อมูลอิเล็กทรอนิกส์เหล่านี้ ซึ่งเป็นที่รู้จักกันดีในนามของข้อมูลมาตรฐานผู้ป่วยนอก 18 แฟ้ม อย่างไรก็ตาม ประเทศไทยของเรา ยังต้องพัฒนากระบวนการในการประมวลผลข้อมูลเหล่านี้ เพื่อนำมาใช้ในการประเมินผลนโยบาย และพัฒนาการให้บริการ

คู่มือฉบับนี้จัดทำขึ้นเพื่อเป็นแนวทางในการนำข้อมูลอิเล็กทรอนิกส์มาวิเคราะห์ โดยมุ่งเน้นในเรื่องการส่งเข้ายาในภาพรวม หรือจำแนกตามกลุ่มฤทธิ์ทางเภสัชวิทยา จำแนกตามระดับหน่วยบริการ ทั้งนี้ชุดคำสั่งที่จัดเตรียมเขียนด้วยคำสั่ง STATA เหมาะสำหรับการวิเคราะห์ฐานข้อมูลขนาดใหญ่ ดังนั้นคู่มือฉบับนี้จัดเตรียมสำหรับหน่วยงานกลางของสำนักงานหลักประกันสุขภาพแห่งชาติ ที่ต้องประมวลผลการใช้ยาในภาพรวมของหน่วยบริการระดับต่างๆ

คณะผู้จัดทำโครงการนี้ คาดหวังว่าเจ้าหน้าที่ด้านสารสนเทศของหน่วยงานกลาง จะได้นำแนวคิดตัวชี้วัดเหล่านี้ ปรับประยุกต์ใช้ในการวิเคราะห์ตัวชี้วัดด้านยาที่สำคัญต่อการประเมินนโยบายระดับประเทศ การบริหารการเงินการคลัง และพัฒนาคุณภาพการส่งเข้ายาของประเทศต่อไป

โครงการพัฒนาสารสนเทศด้านยาของผู้ป่วยนอกรายบุคคล

ในระบบประกันสุขภาพถ้วนหน้า

ธันวาคม 2554

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กรอบแนวคิดการวิเคราะห์ข้อมูล

กล่องข้อความข้างล่างแสดงตัวอย่างของการใช้ฐานข้อมูลอิเล็กทรอนิกส์ยาผู้ป่วยนอกที่สถานพยาบาลต่างๆ โดยเฉพาะอย่างยิ่งใน 8 จังหวัดนำร่อง ส่งให้แก่สำนักงานหลักประกันสุขภาพแห่งชาติ (สปสช.) เพื่อประโยชน์ในการวิเคราะห์ตัวชี้วัดที่มีความสำคัญต่อการกำหนดนโยบายของประเทศและและการติดตามประเมินผลการให้บริการสุขภาพ โดยสามารถแบ่งได้เป็น 3 กลุ่ม คือ (1) แบบแผนการใช้ยา (utilization pattern) ซึ่งจำแนกตามคุณสมบัติของยาต่างๆ เช่น ความเป็นยาที่อยู่ในบัญชียาหลักแห่งชาติ (essential drug, ED) สถานะทางการตลาดโดยเฉพาะอย่างยิ่งยาที่มีผู้จำหน่ายรายเดียว (single source) และยาที่มีลักษณะน่าสนใจเป็นพิเศษ (special drugs) เช่น ยาในบัญชียาหลักฯ ประเภท จ. 2; (2) การใช้ยาในกลุ่มประชากรเฉพาะ (special population) ได้แก่ ผู้สูงอายุ ผู้ป่วยโรคเรื้อรัง และ (3) ประเด็นที่น่าสนใจ เบ็ดเตล็ดอื่นๆ

Utilization		
ED		by therapeutic class/ settings
Single Source	Price	by drug items/ settings
Special drugs	Quantity	by drug items/regions (map)

Special Population		
	Drug used in elderly	Quantity by drug items/ settings
Special Population		Quantity by drug items/regions (map)
	Chronic disease	Price per visit/ settings

Interesting Issues	
Interesting Issues	Asthma (Easy Asthma Clinic)
	% inhaled steroid/ setting / province
	Psychotherapeutic agents
	% hypnotosedatives / anxiolytics, > 2-4 weeks, > 6 times per year
	NSAIDs / muscle relaxant (Thai Traditional Medicine)
	การดูแลผู้ป่วยโรคเรื้อรัง
	ค่าใช้จ่ายด้านยาต่อ visit (capitation)

การจัดการแฟ้มข้อมูล

1. โครงสร้างข้อมูล

ในกรณีที่ดีที่สุด (best case) การใช้ประโยชน์จากแฟ้มข้อมูลมาตรฐานผู้ป่วยนอก ('18 แฟ้ม') เพื่อการวิเคราะห์ ควรประกอบด้วยฟิลด์ข้อมูลดังตารางที่ 1 ต่อไปนี้

ตารางที่ 1 โครงสร้างข้อมูลที่ใช้ในการวิเคราะห์

NAME	WIDTH	DESCRIPTION
1. File: <u>PERSON</u>		
1.1 HCODE/PCUCODE	5	BPS-MOPH's standard code
1.2 CID/PID	13	DOPA-MOI's assigned ID/computer-generated
1.3 SEX	1	1=Male, 2=Female
1.4 BIRTH	8	YYYYMMDD
2. File: <u>CARD</u>		
2.1 HCODE/PCUCODE	5	BPS-MOPH's standard code
2.2 CID/PID	13	DOPA-MOI's assigned ID/computer-generated
2.3 INSTYPE	2	NHSO's standard code
2.4 MAIN	5	BPS-MOPH's standard code
2.5 SUB	5	BPS-MOPH's standard code
3. File: <u>SERVICE</u>		
3.1 HCODE/PCUCODE	5	BPS-MOPH's standard code
3.2 CID/PID	13	DOPA-MOI's assigned ID/computer-generated
3.3 SEQ	8	Computer-generated
3.4 DATE_SERV	8	YYYYMMDD
3.5 LOCATE	1	1=Inside, 2=Outside catchment's
3.6 REFERIN	1	0=No, 1=Yes
3.7 REFINHOS	5	BPS-MOPH's standard code
3.8 REFEROUT	1	0=No, 1=Yes
3.9 REOUHOS	5	BPS-MOPH's standard code
4. File: <u>DIAG</u>		
4.1 HCODE/PCUCODE	5	BPS-MOPH's standard code
4.2 CID/PID	13	DOPA-MOI's assigned ID/computer-generated
4.3 SEQ	8	Computer-generated
4.4 DATE_SERV	8	YYYYMMDD
4.5 DIAGTYPE	1	1=Principle, 2=Comorbidity, 3=Complication, 4=Other, 5=Procedure
4.6 DIAGCODE	5	ICD 10
5. File: <u>DRUG</u>		
5.1 HCODE/PCUCODE	5	BPS-MOPH's standard code
5.2 CID/PID	13	DOPA-MOI's assigned ID/computer-generated
5.3 SEQ	8	Computer-generated
5.4 DATE_SERV	8	YYYYMMDD
5.5 DIDSTD	24	MOPH's standard 24-digit code
5.6 DNAME	255	
5.7 AMOUNT	12	
5.8 DRUGPRIC	14	
5.9 DRUGCOST	14	
6. File: <u>PROCED</u>		
6.1 HCODE/PCUCODE	5	BPS-MOPH's standard code
6.2 CID/PID	13	DOPA-MOI's assigned ID/computer-generated

6.3 SEQ	8	Computer-generated
6.4 DATE_SERV	8	YYYYMMDD
6.5 PROCED	6	ICD 9 CM

2. การเตรียมข้อมูลยา

การวิเคราะห์ข้อมูลซึ่งได้รับจากสำนักงานหลักประกันสุขภาพแห่งชาติ (สปสช.) ในรายงานฉบับนี้ อาศัยแฟ้มข้อมูลหลัก คือ การใช้ยา (แฟ้มที่ 5 ในตารางที่ 1) จาก 8 จังหวัดนำร่อง ได้แก่ นครนายก อุบลราชธานี ยโสธร เพชรบูรณ์ ราชบุรี นครศรีธรรมราช และพังงา โดยได้มีการจัดการแฟ้มข้อมูลด้วยวิธีการต่างๆ เช่น ทำความสะอาด แก้ไขความผิดพลาด ให้พร้อมสำหรับการวิเคราะห์ ดังต่อไปนี้

2.1 รายการยาตามรหัสมาตรฐานที่มีการใช้แต่ละใบสั่ง: drugWk_didstd

```
clear
set more off
set memory 600m

***** (1) CODES 1-4 FOR didstd
use drugWk, clear
display _N
keep didstd
contract didstd
display _N
drop _freq
quietly generate code1=substr(didstd,1,1)
quietly generate code2=substr(didstd,2,10)
quietly generate code2A=substr(didstd,2,5) if code1=="1"
quietly replace code2A=substr(didstd,2,7) if code1=="2"
quietly generate code3=substr(didstd,12,5)
quietly generate code4=substr(didstd,17,3)
quietly generate code5=substr(didstd,20,5)
label variable code1 "Formula code"
label variable code2 "Ingredient code"
label variable code2A "Generic code"
label variable code3 "Strength code"
label variable code4 "Dosage form code"
label variable code5 "Manufacturer code"
*(1.1) FORMULATION CODE (CODE 1)
destring code1, replace force
label define code1 1 "Single" 2 "Combined" 3 "HospFormulary" 4 "Herbal"
label value code1 code1
keep didstd code*
display _N

***MERGE WITH CODE DICTIONARY
*(1.2) GENERIC CODE (CODE 2A)
merge code2A using code2aGenericUnique, sort uniquing
tabulate _merge
quietly drop if _merge==2
quietly compress
drop _merge
display _N
*(1.3) STRENGTH CODE (CODE 3)
merge code3 using code3Strength, sort uniquing
tabulate _merge
```

```

quietly drop if _merge==2
drop _merge
display _N
*(1.4) DOSAGE FORM CODE (CODE 4)
merge code4 using code4Dosageform, sort uniqusing
tabulate _merge
quietly drop if _merge==2
drop _merge
display _N
tempfile x
quietly save `x', replace
clear

```

```

***** (2) MERGE FOR GENERIC NAME WITH NOT-UNIQUE GENERIC CODE
use code2aGenericDuplicated, clear
display _N
quietly generate nameL=length(drugname)
gsort code2A -Nstdcode nameL
quietly bysort code2A: generate n=_n
quietly keep if n==1
drop n
display _N
keep code2A drugname
merge code2A using `x', sort uniqmaster
tabulate _merge
quietly drop if _merge==1
drop _merge
display _N
replace generic=drugname if generic==""
label variable generic "Drug generic name"

```

```

***** (3) MERGE FOR ESSENTIAL DRUG CLASS AND STATUS
merge code2A code3 code4 generic dsfSHT using DrugStdCodeEDLwk, sort
uniqusing
tabulate _merge
quietly drop if _merge==2
drop _merge
display _N

```

```

*(3.1) EDIT MISSING EDL CLASS AND STATUS
replace class="3.6" if class==""&inlist(code2A,"1805042")
replace edl="N" if edl==""&inlist(code2A,"1805042")
replace class="3.4" if class==""&inlist(code2A,"1805030","1805010")
replace edl="N" if edl==""&inlist(code2A,"1805030","1805010")
replace class="1.1" if class==""&inlist(code2A,"0102014","0102011","01206")
replace edl="E" if edl==""&inlist(code2A,"0102014","0102011","01206")
replace class="13.X" if class==""&inlist(code2A,"1302010")
replace edl="N" if edl==""&inlist(code2A,"1302010")
replace class="6.4.1" if class==""&inlist(code2A,"0703011")
replace edl="N" if edl==""&inlist(code2A,"0703011")
replace class="13.3" if class==""&inlist(code2A,"0404010")
replace edl="E" if edl==""&inlist(code2A,"0404010")
replace class="5.3.2" if class==""&inlist(code2A,"1005011")
replace edl="E" if edl==""&inlist(code2A,"1005011")
replace class="2.5.5" if class==""&inlist(code2A,"0309025")
replace edl="N" if edl==""&inlist(code2A,"0309025")
replace class="6.1.2" if class==""&inlist(code2A,"0110020")
replace edl="N" if edl==""&inlist(code2A,"0110020")

```

```

*(3.2) OTHER STILL MISSING EDL CLASS AND STATUS

```

```
merge code2A code3 code4 generic dsfSHT using EDLclassMissingWk, sort
uniquising
tabulate _merge
quietly drop if _merge==2
drop _merge
display _N
```

```
***** (4) MERGE FOR DRUG CATEGORY
```

```
*(4.1) CATEGORY CODE
```

```
merge code2A code4 using DrugStdCodeCategoryWk, sort uniquising
```

```
tabulate _merge
```

```
quietly drop if _merge==2
```

```
drop _merge
```

```
display _N
```

```
*(4.2) CATEGORY NAME
```

```
merge categoryCode using dictionaryCategoryCode, sort uniquising
```

```
tabulate _merge
```

```
quietly drop if _merge==2
```

```
drop _merge
```

```
display _N
```

```
*(4.3) OTHER STILL MISSING CATEGORY
```

```
merge code2A code4 using CategoryMissingWk, sort uniquising
```

```
tabulate _merge
```

```
quietly drop if _merge==2
```

```
drop _merge
```

```
display _N
```

```
*UNCLASSIFIED CATEGORY
```

```
replace categoryCode=99 if categoryCode==.
```

```
replace category="Yet not classified" if categoryCode==99
```

```
quietly compress
```

```
keep didstd generic dsfSHT sthAMT sthUNT class edl category* code*
```

```
order didstd generic dsfSHT sthAMT sthUNT class edl category* code1 code2A
```

```
code2 code3 code4 code5
```

```
sort didstd
```

```
save drugWk_didstd, replace
```

2.2 จำนวน ต้นทุน และราคาขายตามรหัสมาตรฐานที่มีการใช้แต่ละใบสั่ง: drugWkAmountPricCost

```
clear
```

```
set more off
```

```
set memory 600m
```

```
***** (1) CODES 1-4 FOR didstd
```

```
use drugWk, clear
```

```
display _N
```

```
keep didstd
```

```
contract didstd
```

```
display _N
```

```
drop _freq
```

```
quietly generate code1=substr(didstd,1,1)
```

```
quietly generate code2=substr(didstd,2,10)
```

```
quietly generate code2A=substr(didstd,2,5) if code1=="1"
```

```
quietly replace code2A=substr(didstd,2,7) if code1=="2"
```

```
quietly generate code3=substr(didstd,12,5)
```

```
quietly generate code4=substr(didstd,17,3)
```

```
quietly generate code5=substr(didstd,20,5)
```

```
label variable code1 "Formula code"
```

```
label variable code2 "Ingredient code"
```



```

label variable code2A "Generic code"
label variable code3 "Strength code"
label variable code4 "Dosage form code"
label variable code5 "Manufacturer code"
*(1.1) FORMULATION CODE (CODE 1)
destring code1, replace force
label define code1 1 "Single" 2 "Combined" 3 "HospFormulary" 4 "Herbal"
label value code1 code1
keep didstd code*
display _N

```

```

***MERGE WITH CODE DICTIONARY
*(1.2) GENERIC CODE (CODE 2A)
merge code2A using code2aGenericUnique, sort uniquing
tabulate _merge
quietly drop if _merge==2
quietly compress
drop _merge
display _N
*(1.3) STRENGTH CODE (CODE 3)
merge code3 using code3Strength, sort uniquing
tabulate _merge
quietly drop if _merge==2
drop _merge
display _N
*(1.4) DOSAGE FORM CODE (CODE 4)
merge code4 using code4Dosageform, sort uniquing
tabulate _merge
quietly drop if _merge==2
drop _merge
display _N
tempfile x
quietly save `x', replace
clear

```

```

***** (2) MERGE FOR GENERIC NAME WITH NOT-UNIQUE GENERIC CODE
use code2aGenericDuplicated, clear
display _N
quietly generate nameL=length(drugname)
gsort code2A -Nstdcode nameL
quietly bysort code2A: generate n=_n
quietly keep if n==1
drop n
display _N
keep code2A drugname
merge code2A using `x', sort uniqmaster
tabulate _merge
quietly drop if _merge==1
drop _merge
display _N
replace generic=drugname if generic==""
label variable generic "Drug generic name"

```

```

***** (3) MERGE FOR ESSENTIAL DRUG CLASS AND STATUS
merge code2A code3 code4 generic dsfSHT using DrugStdCodeEDLwk, sort
uniquing
tabulate _merge
quietly drop if _merge==2
drop _merge
display _N

```

```

*(3.1) EDIT MISSING EDL CLASS AND STATUS
replace class="3.6" if class=""&inlist(code2A,"1805042")
replace edl="N" if edl=""&inlist(code2A,"1805042")
replace class="3.4" if class=""&inlist(code2A,"1805030","1805010")
replace edl="N" if edl=""&inlist(code2A,"1805030","1805010")
replace class="1.1" if class=""&inlist(code2A,"0102014","0102011","01206")
replace edl="E" if edl=""&inlist(code2A,"0102014","0102011","01206")
replace class="13.X" if class=""&inlist(code2A,"1302010")
replace edl="N" if edl=""&inlist(code2A,"1302010")
replace class="6.4.1" if class=""&inlist(code2A,"0703011")
replace edl="N" if edl=""&inlist(code2A,"0703011")
replace class="13.3" if class=""&inlist(code2A,"0404010")
replace edl="E" if edl=""&inlist(code2A,"0404010")
replace class="5.3.2" if class=""&inlist(code2A,"1005011")
replace edl="E" if edl=""&inlist(code2A,"1005011")
replace class="2.5.5" if class=""&inlist(code2A,"0309025")
replace edl="N" if edl=""&inlist(code2A,"0309025")
replace class="6.1.2" if class=""&inlist(code2A,"0110020")
replace edl="N" if edl=""&inlist(code2A,"0110020")

```

```

*(3.2) OTHER STILL MISSING EDL CLASS AND STATUS
merge code2A code3 code4 generic dsfSHT using EDLclassMissingWk, sort
uniquising
tabulate _merge
quietly drop if _merge==2
drop _merge
display _N

```

***** (4) MERGE FOR DRUG CATEGORY

```

*(4.1) CATEGORY CODE
merge code2A code4 using DrugStdCodeCategoryWk, sort uniquising
tabulate _merge
quietly drop if _merge==2
drop _merge
display _N

```

```

*(4.2) CATEGORY NAME
merge categoryCode using dictionaryCategoryCode, sort uniquising
tabulate _merge
quietly drop if _merge==2
drop _merge
display _N

```

```

*(4.3) OTHER STILL MISSING CATEGORY
merge code2A code4 using CategoryMissingWk, sort uniquising
tabulate _merge
quietly drop if _merge==2
drop _merge
display _N

```

*UNCLASSIFIED CATEGORY

```

replace categoryCode=99 if categoryCode==.
replace category="Yet not classified" if categoryCode==99

```

```

quietly compress
keep didstd generic dsfSHT sthAMT sthUNT class edl category* code*
order didstd generic dsfSHT sthAMT sthUNT class edl category* code1 code2A
code2 code3 code4 code5
sort didstd
save drugWk_didstd, replace

```

```

***GENERIC SHORT NAME (4-CHARACTER)
drop code* class category

```

```

recast float sthAMT, force
quietly replace generic=substr(generic,1,4)
quietly replace sthUNT=substr(sthUNT,1,3)
quietly compress
tempfile didstd
quietly save `didstd', replace
clear

*****AMOUNT AND PRICE/COST
use drugWk, clear
display _N
keep pcucode pid date didstd amount drugpric drugcost
merge didstd using `didstd', sort uniquising
tabulate _merge
drop _merge
save drugWkAmountPricCost, replace

```

2.3 ประเภทและจังหวัดที่ตั้งของสถานพยาบาลที่มีการใช้ยาแต่ละใบสั่ง: drugWkAmountPricCostHosptypeIns

```

clear
set more off
set memory 700m

*(1) HOSPTYPE AND CHANGWAT
use hcodeNHS0wk, clear
display _N
keep hcode hosptype changwat
rename hcode pcucode
destring changwat, replace force
display _N
quietly compress
tempfile hosptype
quietly save `hosptype', replace
clear

*(2) MERGE
use drugWkAmountPricCost, clear
display _N
quietly generate code1=substr(didstd,1,1)
quietly generate code2A=substr(didstd,2,5) if code1=="1"
quietly replace code2A=substr(didstd,2,7) if code1=="2"
label variable code2A "Generic code"
drop didstd code1

*MERGE FOR INSTYPE
merge pcucode pid date using InsWk2, sort uniquising
tabulate _merge
quietly drop if _merge==2
display _N
drop _merge
quietly compress

*MERGE FOR HOSPTYPE
merge pcucode using `hosptype', sort uniquising
tabulate _merge
quietly drop if _merge==2
display _N
drop _merge
quietly compress

```

```
order changwat hosptype pcucode pid date ins* code2A generic dsfSHT sthAMT  
sthUNT edl categoryCode amount drugpric drugcost  
save drugWkAmountPricCostHosptypeIns, replace
```

การวิเคราะห์ข้อมูล

1. กลุ่มยาที่มีการใช้บ่อย

การวิเคราะห์เพื่อแสดงให้เห็นกลุ่มยาหรือรายการยาซึ่งมีการใช้บ่อยในผู้ป่วยนอกของสถานพยาบาล ควรใช้หน่วยวัดเชิงปริมาณที่เป็นมาตรฐานเดียวกันโดยไม่ขึ้นกับขนาดความแรง (unit strength) หรือรูปแบบ (dosage form) ของยา เช่น จำนวนวัน (days supplied), defined daily doses (DDD) แต่ด้วยข้อจำกัดของฐานข้อมูลยาดังกล่าวยังไม่สามารถระบุปริมาณยาที่ใช้ในหน่วยมาตรฐานได้ การวิเคราะห์นี้จึงใช้จำนวนใบสั่งยา (scripts) หรือจำนวนขนาน เป็นมาตรวัดปริมาณการใช้ยา ยาที่มีการใช้บ่อยแสดงด้วยสัดส่วนตามจำนวนใบสั่งยาของยาแต่ละกลุ่มหรือแต่ละรายการ (ตามชื่อสามัญ, generic name) ได้ดังนี้

```
clear
set more off
set memory 700m

use drugWk_didstd, clear
display _N
keep code2A dsfSHT generic
replace generic=substr(generic,1,25)
quietly compress
contract code2A dsfSHT generic
drop _freq
display _N
quietly bysort code2A dsfSHT: generate N=_N
tabulate N
drop N
tempfile x
quietly save `x', replace
clear

use drugWkAmountPricCostHosptypeIns, clear
display _N
keep changwat hosptype pcucode date insNUM code2A dsfSHT edl categoryCode
*DROP OUT-OF-RANGE MONTHS
generate byte month=month(date)
keep if inrange(month,1,3)
display _N
drop date
merge code2A dsfSHT using `x', sort uniquising
tabulate _merge
drop _merge

recode hosptype (0 11=0) (1=1) (2/9 12=2), generate(htype)
label define htype 0 "Health Ctr" 1 "District Hosp" 2 "Other Hosp"
label value htype htype
label variable htype "Hospital type (combined)"

order changwat hosptype htype pcucode month insNUM code2A dsfSHT generic edl
categoryCode

save drugWkPrevalenceRx, replace
```

1.1 จำแนกตามประเภทสถานพยาบาล

```
clear
set more off
set memory 700m
```

```
use drugWkPrevalenceRx, clear
display _N
keep htype category
contract htype category
drop if htype==.
display _N
reshape i category
reshape j htype
reshape xij _freq
reshape wide
display _N
merge category using dictionaryCategoryCode, sort uniqueness
tabulate _merge
drop _merge
sort categoryCode
order categoryCode category
xmlsave prevalenceRxCategoryHtype, doctype(excel) legible replace
```

ตารางที่ 2ก จำนวนและสัดส่วนใบสั่งยาของกลุ่มยาที่ใช้บ่อย จำแนกตามประเภทสถานพยาบาล มกราคม-มีนาคม 2553

กลุ่มยา	สอ.	รพ.ช.	รพท./รพ.ศ.	รวม
Infection, low	297062	123545	62602	483209
	8.5%	5.0%	5.1%	6.7%
Allergies	284054	93727	51593	429374
	8.1%	3.8%	4.2%	6.0%
Diabetes	88491	122940	54913	266344
	2.5%	5.0%	4.4%	3.7%
Pain/Inflammatory	109904	91947	54290	256141
	3.1%	3.7%	4.4%	3.6%
IHD/hypertension	67162	115077	51234	233473
	1.9%	4.7%	4.1%	3.2%
Hypertension	100280	82271	27462	210013
	2.9%	3.3%	2.2%	2.9%
Vitamin	121313	53382	35298	209993
	3.5%	2.2%	2.9%	2.9%
CHF/hypertension	51382	85092	43547	180021
	1.5%	3.5%	3.5%	2.5%
Hyperlipidemia	45413	81526	47876	174815
	1.3%	3.3%	3.9%	2.4%
Gastric acid disorder	57800	75644	39152	172596
	1.6%	3.1%	3.2%	2.4%
Anxiety and tension	60027	53838	30044	143909
	1.7%	2.2%	2.4%	2.0%

กลุ่มยา	สอ.	รพ.ช.	รพพ./รพ.ศ.	รวม
Antiplatelet	39649	58085	27252	124986
	1.1%	2.4%	2.2%	1.7%
Muscle relaxant (combine)	46366	51931	7291	105588
	1.3%	2.1%	0.6%	1.5%
Eczema	47950	19576	11584	79110
	1.4%	0.8%	0.9%	1.1%
Depression	14262	25050	15884	55196
	0.4%	1.0%	1.3%	0.8%
Infection, medium	18691	19018	15402	53111
	0.5%	0.8%	1.2%	0.7%
EENT	35241	8919	8693	52853
	1.0%	0.4%	0.7%	0.7%
Iron deficiency	28745	12532	11323	52600
	0.8%	0.5%	0.9%	0.7%
Folate deficiency	13966	22646	15318	51930
	0.4%	0.9%	1.2%	0.7%
Reactive airway disease	2609	27315	11479	41403
	0.1%	1.1%	0.9%	0.6%
Ungrouped	1945885	1096645	506378	3548908
	55.5%	44.5%	40.9%	49.2%

1.2 จำแนกตามจังหวัดที่ตั้งของสถานพยาบาล

```

clear
set more off
set memory 700m

use drugWkPrevalenceRx, clear
display _N
keep changwat category
contract changwat category
drop if changwat==.
display _N
reshape i category
reshape j changwat
reshape xij _freq
reshape wide
display _N
merge category using dictionaryCategoryCode, sort uniquing
tabulate _merge
drop _merge
sort categoryCode
order categoryCode category
xmlsave prevalenceRxCategoryChangwat, doctype(excel) legible replace

```

ตารางที่ 2 ข จำนวนและสัดส่วนใบสั่งยาของกลุ่มยาที่ใช้บ่อย จำแนกตามจังหวัด มกราคม-มีนาคม 2553

กลุ่มยา	นครนายก	อุบลฯ	ยโสธร	แพร่	พิษณุโลก	ราชบุรี	นครศรีฯ	พังงา
จำนวนใบสั่งยารวม	286,353	1,038,638	907,937	782,150	872,009	1,051,124	2,119,907	206,130
Infection, low	7.8%	7.5%	7.1%	4.7%	6.4%	7.8%	6.4%	6.1%
Allergies	6.1%	8.2%	6.0%	5.4%	4.9%	4.9%	6.0%	5.5%
Diabetes	3.8%	2.5%	4.8%	4.8%	3.6%	3.6%	3.4%	5.1%
Pain/Inflammatory	3.0%	2.6%	2.6%	6.3%	4.1%	3.0%	3.6%	2.3%
IHD/hypertension	3.1%	1.2%	2.2%	4.3%	3.5%	4.5%	3.5%	5.2%
Hypertension	2.1%	1.1%	1.7%	4.2%	4.5%	3.1%	3.2%	4.4%
Vitamin	3.0%	3.8%	3.1%	2.3%	2.5%	3.0%	2.8%	1.8%
CHF/hypertension	2.7%	1.1%	2.1%	3.3%	2.9%	2.5%	2.9%	3.2%
Hyperlipidemia	2.2%	1.3%	1.2%	2.1%	3.6%	3.0%	2.8%	3.9%
Gastric acid disorder	0.7%	2.2%	2.5%	2.1%	2.4%	1.9%	3.0%	2.7%
Anxiety and tension	1.7%	2.7%	2.9%	1.4%	1.7%	2.2%	1.6%	0.9%
Antiplatelet	1.7%	1.6%	1.5%	2.9%	2.4%	1.6%	1.3%	1.8%
Muscle	0.1%	2.0%	0.4%	2.5%	2.7%	0.6%	1.4%	1.2%
Eczema	1.2%	1.5%	1.0%	1.3%	0.9%	1.0%	1.1%	1.1%
Depression	0.4%	0.2%	1.0%	1.0%	0.6%	0.7%	1.0%	0.6%
Infection, medium	1.1%	0.6%	0.7%	0.5%	0.7%	1.0%	0.8%	0.7%
EENT	0.6%	1.1%	0.8%	0.9%	0.5%	0.9%	0.5%	0.3%
Iron deficiency	0.4%	1.0%	0.8%	0.7%	0.5%	0.9%	0.6%	1.0%
Folate deficiency	0.7%	0.7%	0.6%	1.2%	0.4%	0.6%	0.8%	0.4%
Reactive airway disease	1.0%	0.1%	0.5%	0.4%	0.4%	0.6%	0.8%	1.2%
Ungrouped	52.5%	55.8%	52.3%	42.6%	47.7%	47.9%	47.9%	47.0%

2. รายการยาที่สนใจเป็นพิเศษ

```
clear
set more off
set memory 700m
```

```
use drugWkPrevalenceRx, clear
display _N
keep htype generic dsfSHT
contract htype generic dsfSHT
drop if htype==.
display _N
reshape i generic dsfSHT
reshape j htype
reshape xij _freq
reshape wide
display _N
sort dsfSHT generic
order dsfSHT generic
xmlsave prevalenceRxGenericHtype, doctype(excel) legible replace
```


2.1 รายการยาในกลุ่มที่มีการใช้บ่อย

2.1.1 จำแนกตามประเภทสถานพยาบาล

ตารางที่ 3ก จำนวนและสัดส่วนใบสั่งยาลายกัลมเนื้อ-ปวดข้อ-ข้ออักเสบ แยกตามประเภทสถานพยาบาล มกราคม - มีนาคม 2553

รายการยา	สอ. (N=3,504,161)		รพช. (N=2,465,659)		รพ.ท./รพ.ศ. (N=1,237,306)	
	n	%	n	%	n	%
CELECOXIB	19	0.00	1045	0.04	4462	0.36
DICLOFENAC	93729	2.67	74447	3.02	27571	2.23
ETORICOXIB	0	0.00	0	0.00	1238	0.10
FLOCTAFENINE	0	0.00	0	0.00	1550	0.13
IBUPROFEN	86690	2.47	28008	1.14	12175	0.98
IBUPROFEN+PARACETAMOL	54	0.00	0	0.00	0	0.00
INDOMETHACIN	12203	0.35	2279	0.09	1087	0.09
KETOPROFEN	0	0.00	73	0.00	0	0.00
LOXOPROFEN	0	0.00	97	0.00	246	0.02
MEFENAMIC ACID	2187	0.06	4867	0.20	2881	0.23
MELOXICAM	285	0.01	4100	0.17	7838	0.63
ORPHENADRINE	134	0.00	140	0.01	1680	0.14
ORPHENADRINE+PARACETAMOL	46330	1.32	51931	2.11	7291	0.59
NABUMETONE	56	0.00	0	0.00	35	0.00
NAPROXEN	258	0.01	1018	0.04	3524	0.28
NIMESULIDE	0	0.00	199	0.01	438	0.04
PARECOXIB	0	0.00	2	0.00	262	0.02
PIROXICAM	1149	0.03	3793	0.15	2519	0.20
SERRATIOPEPTIDASE	864	0.02	3475	0.14	2536	0.20
SULINDAC	0	0.00	0	0.00	307	0.02
TENOXICAM	0	0.00	58	0.00	39	0.00
TOLPERISONE HYDROCHLORIDE	12154	0.35	32502	1.32	20628	1.67

ตารางที่ 3ข จำนวนและสัดส่วนใบสั่งยาปฏิชีวนะ แยกตามประเภทสถานพยาบาล มกราคม - มีนาคม 2553

รายการยา	สอ. (N=3,504,161)	รพช. (N=2,465,659)	รพ.ท./รพ.ศ. (N=1,237,306)
AMOXICILLIN	180886 (5.16%)	70337 (2.85%)	31544 (2.55%)
AMOXICILLIN+CLAVULANIC AC	366	4065	6826
AMPHOTERICIN B	0	18	29
AMPICILLIN	54	127	181
AMPICILLIN+CLOXACILLIN	7	0	0
AMPICILLIN+SULBACTAM	2	0	2
AZITHROMYCIN	0	141	775

รายการยา	สถ. (N=3,504,161)	รพช. (N=2,465,659)	รพ.ท./รพ.ศ. (N=1,237,306)
CEFACLOR	0	147	83
CEFAZOLIN	8	58	67
CEFDINIR	0	46	480
CEFEPIME	11	0	1
CEFIXIME	0	0	23
CEFOTAXIME	1	19	4
CEFPIROME SULFATE	0	0	14
CEFPROZIL	0	143	0
CEFTAZIDIME	2	19	27
CEFTRIAZONE	44	3337	846
CEFUROXIME	0	10	22
CHLORAMPHENICOL	519	145	664
CIPROFLOXACIN	114	757	2638
CLARITHROMYCIN	33	192	911
CLINDAMYCIN	9	614	446
CLOXACILLIN	10857 (0.31%)	3768 (0.15%)	475 (0.04%)
COLISTIN	0	0	4
CO-TRIMOXAZOLE (SULFAMETH	25483 (0.73%)	6566 (0.27%)	3127 (0.25%)
DICLOXACILLIN	33163 (0.95%)	23458 (0.95%)	12861 (1.04%)
ERYTHROMYCIN	7141	2752	721
FOSFOMYCIN	14	0	0
GATIFLOXACIN	0	0	10
GENTAMICIN	31	81	67
IMIPENEM+CILASTATIN	0	0	1
LEVOFLOXACIN	1	1	478
MIDECAMYCIN	0	0	84
MINOCYCLINE	6	0	0
MOXIFLOXACIN	0	47	247
NATAMYCIN	0	0	5
NEOMYCIN	4	0	0
NORFLOXACIN	17482 (0.50%)	11275 (0.46%)	6034 (0.49%)
OFLOXACIN	104	5435	3277
PENICILLIN V	56374 (1.61%)	2831 (0.11%)	566 (0.05%)
SULFADIAZINE	2	3	16
SULFADIAZINE+SULFADIMIDIN	18	0	0
SULFASALAZINE	0	84	364
TETRACYCLINE	2586 (0.07%)	18	5
VANCOMYCIN	0	0	21

ตารางที่ 3ค จำนวนและสัดส่วนใบสั่งยาเบาหวาน แยกตามประเภทสถานพยาบาล มกราคม - มีนาคม 2553

รายการยา	สอ. (N=3,504,161)	รพช. (N=2,465,659)	รพ.ท./รพ.ศ. (N=1,237,306)
ACARBOSE	141 (0.0)	0	95 (0.01)
GLIBENCLAMIDE	40,069 (1.14)	39,507 (1.60)	13,864 (1.12)
GLICLAZIDE	386 (0.01)	240 (0.01)	1,734 (0.14)
GLIMEPIRIDE	0	0	466 (0.04)
GLIPIZIDE	6,034 (0.17)	12,145 (0.49)	6,167 (0.50)
INSULIN	1,977 (0.06)	14,065 (0.57)	3,265 (0.26)
METFORMIN	38,636 (1.10)	53,221 (2.16)	23,944 (1.94)
PIOGLITAZONE HYDROCHLORID	357 (0.01)	1,169 (0.05)	2,493 (0.20)
REPAGLINIDE	0	0	89 (0.01)
ROSIGLITAZONE MALEATE	0	143 (0.01)	336 (0.03)
ROSIGLITAZONE+METFORMIN	0	0	143 (0.01)
SITAGLIPTIN PHOSPHATE	0	16 (0.0)	224 (0.02)
VOGLIBOSE	341 (0.01)	0	1,028 (0.08)

2.1.2 จำแนกตามจังหวัดที่ตั้งของสถานพยาบาล

ตารางที่ 4ก จำนวนใบสั่งยา COX II inhibitors แยกตามจังหวัด มกราคม - มีนาคม 2553

รายการยา	รูปแบบ	นครนายก	อุบลฯ	ยโสธร	แพร่	พิษณุโลก	ราชบุรี	นครศรีฯ	พังงา
CELECOXIB	CAP	558	199	222	273		2052	2428	1
ETORICOXIB	TAB		4	73	144	247		774	
PARECOXIB	INJ	26		8		7	48	175	
		584	203	303	417	254	2100	3377	1

ตารางที่ 4ข จำนวนใบสั่งยาหอบหืด แยกตามจังหวัด มกราคม - มีนาคม 2553

รายการยา	รูปแบบ	นครนายก	อุบลฯ	ยโสธร	แพร่	พิษณุโลก	ราชบุรี	นครศรีฯ	พังงา
BECLOMETHASONE	INH		95	777	45	82	186	11	50
BECLOMETHASONE	SPR		3		93				
BUDESONIDE	INH	564	169	307	628	1102	577	4033	275
BUDESONIDE	SOL			41		4	7	3	
BUDESONIDE	SPR	254	4		66	31	274	296	
BUDESONIDE+FORMOTEROL	INH		20		1	8	190	684	9
FLUTICASONE PROPIONATE	INH						40		
FLUTICASONE PROPIONATE	SPR						1	11	
SALMETEROL+FLUTICASONE	INH	16	31	14	1	106	800	405	7
SALMETEROL+FLUTICASONE	POW	129	50	175	271	33	36	919	12
SALMETEROL+FLUTICASONE	SPR		30	9					
		963	402	1323	1105	1366	2111	6362	353
SALBUTAMOL	INH	952	205	1513	1247	1281	1644	6841	650
TERBUTALINE SULFATE	INH						19	8	1
		952	205	1513	1247	1281	1663	6849	651

ตารางที่ 4ค จำนวนใบสั่งยาต้านกระดูกพรุน แยกตามจังหวัด มกราคม - มีนาคม 2553

รายการยา	รูปแบบ	นครนายก	อุบลฯ	ยโสธร	แพร่	พิษณุโลก	ราชบุรี	นครศรีฯ	พังงา
ALENDRONATE SODIUM	TAB							104	
ALENDRONATE SODIUM+VITAMI	TAB	31	1					115	
ALFACALCIDOL	CAP	26	23			18	623		
ALFACALCIDOL	SOL							134	
ALFACALCIDOL	TAB					8		856	
IBANDRONIC ACID	TAB					12	131	193	
INCADRONATE DISODIUM	INJ							1	
MENATETRENONE	CAP			27	122		43	44	
OSSEIN-HYDROXYAPATITE COM	TAB						105	38	
PAMIDRONATE DISODIUM	INJ						18		
RISEDRONATE SODIUM	TAB			34	215	8	169	202	
SALCATONIN	INJ				15	1			
SALCATONIN	SPR	9		9	29	7	13	151	
STRONTIUM RANELATE	POW					6	31	130	
TERIPARATIDE	INJ	11					8		
TIBOLONE	TAB				27		13	100	
ZOLEDRONIC ACID	INJ					2	1	25	
		77	24	70	408	62	1155	2093	0

ตารางที่ 4ง จำนวนใบสั่งยา Angiotensin-II receptor blockers (ARB) แยกตามจังหวัด มกราคม - มีนาคม 2553

รายการยา	รูปแบบ	นครนายก	อุบลฯ	ยโสธร	แพร่	พิษณุโลก	ราชบุรี	นครศรีฯ	พังงา
AMLODIPINE+VALSARTAN	TAB				16	25	3	142	
CANDESARTAN CILEXETIL	TAB		80				76	95	
IRBESARTAN	TAB	74				14	236	484	
LOSARTAN	TAB	287	612		770	226	1382	3849	157
OLMESARTAN	TAB					191	10	324	
TELMISARTAN	TAB				1		14	324	
VALSARTAN	TAB	196	116	159	1064	165	1103	1981	
VALSARTAN+HCTZ	TAB	222	62			9	345	810	
		779	870	159	1851	630	3169	8009	157

2.2 รายการยาในกลุ่มยาโครงการพิเศษ

2.2.1 จำแนกตามจังหวัดที่ตั้งของสถานพยาบาล

ตารางที่ 5ก จำนวนใบสั่งยาบัญชี จ (2) แยกตามจังหวัด มกราคม - มีนาคม 2553

รายการยา	นครนายก	อุบลฯ	ยโสธร	แพร่	พิษณุโลก	ราชบุรี	นครศรีฯ	พังงา
CLOSTRIDIUM BOTULINUM							1	
LEUPRORELIN ACETATE				5		40	53	
DOCETAXEL							1	
IMATINIB MESYLATE						1	13	
ANTI-HUMAN THYMOCYTE EQUINE IMMUNOGLOBULIN					14			
LETROZOLE				13		18	75	
EPOETIN ALPHA (RECOMBINAN)	227	48	976	649	153	110	1944	
EPOETIN BETA	38	17		2	101	21	236	
รวม	265	65	976	669	268	190	2323	0

ตารางที่ 5ข จำนวนใบสั่งยาบัญชี จ (1) แยกตามจังหวัด มกราคม - มีนาคม 2553

รายการยา	รูปแบบ	นครนายก	อุบลฯ	ยโสธร	แพร่	พิษณุโลก	ราชบุรี	นครศรีฯ	พังงา
FACTOR IX	INJ						6	6	
INDINAVIR SULFATE	CAP	1	3	8	10	17	14	89	3
OSELTAMIVIR	CAP	222	85	292	96	376	102	322	60
ATAZANAVIR	CAP					3		3	
DIDANOSINE	CAP					3	10		
DIDANOSINE	TAB	26	3	44	83	15	78	373	
EFAVIRENZ	CAP			2	73		48	29	
EFAVIRENZ	TAB	141	20	304	290	116	277	1089	36
LAMIVUDINE	SYR	1		2		6	2	52	
LAMIVUDINE	TAB	120	31	296	533	150	604	1353	70
LAMI+NEVIR+STAVU	CAP	6			4				
LAMI+NEVIR+STAVU	SOL				2			4	
LAMI+NEVIR+STAVU	TAB	600	268	1689	1254	448	1209	3979	148
NEVIRAPINE	SYR			4		1	2	3	
NEVIRAPINE	TAB	9	11	27	266	36	258	112	
RITONAVIR	CAP	2		3	6	12	22	51	3
RITONAVIR	SOL			2			1		
SAQUINAVIR	TAB				1				
STAVUDINE	CAP	61	16	220	143	290	303	942	40
STAVUDINE	SYR			3				1	
TENOFOVIR	TAB	35	9	57	97	39	81	303	3
ZIDOVUDINE	CAP	36	22	119	253	90	316	571	15
ZIDOVUDINE	SYR	1		17		1	4	14	3
DEFERIPRONE	CAP							17	

รายการยา	รูปแบบ	นครนายก	อุบลฯ	ยโสธร	แพร่	พิษณุโลก	ราชบุรี	นครศรีฯ	พังงา
DEFERIPRONE	TAB			4	53		30	33	
		1261	468	3093	3164	1603	3367	9346	381

ตารางที่ 5ค จำนวนใบสั่งยา Antiplatelet drugs แยกตามจังหวัด มกราคม - มีนาคม 2553

รายการยา	รูปแบบ	นครนายก	อุบลฯ	ยโสธร	แพร่	พิษณุโลก	ราชบุรี	นครศรีฯ	พังงา
ABCIXIMAB	INJ				2				
CLOPIDOGREL	TAB	89	27		252	90	1056	1229	6
DIPYRIDAMOLE	CAP							12	
DIPYRIDAMOLE	TAB				88				
DIPYRIDAMOLE+ASPIRIN	CAP				33			6	
TICLOPIDINE	TAB					9	13	132	
TRIFLUSAL	CAP							6	
		89	27	0	375	99	1069	1385	6

3. ราคาขายที่ใช้ในโรคเรื้อรัง จำแนกตามประเภทของยาในและนอกบัญชียาหลักแห่งชาติ

ขั้นตอนที่ 1

```
clear
set more off
set memory 700m
```

```
***DIAGNOSIS
use DiagWk2, clear
display _N
keep pcucode pid date *SHT1 diagPriSHT2
tempfile diag
quietly save `diag', replace
```

```
***DRUG
use drugWkAmountPricCostHosptypeIns, clear
display _N
drop dsf* sth* code2A
tempfile drug
quietly save `drug', replace
```

```
*PERSONS WITH SELECTED CHRONIC DISEASES
keep categoryCode pid
keep if inlist(categoryCode,13,17,21,27,32,33,34,35,53) //CHF-HT, DIABETES,
EPILEPSY, HIV, HYPERLIPID, HT, IHD-ANGINA, IHD-HT, REACTIVE AIRWAY DS.
display _N
contract pid
drop _freq
display _N
```

```
*MERGE BACK FOR ALL RX OF THOSE SELECTED PERSONS
merge pid using `drug', sort uniqmaster
tabulate _merge
quietly keep if _merge==3
drop _merge
display _N
```

```

*DROP OUT-OF-RANGE MONTHS
generate byte month=month(date)
keep if inrange(month,1,3)
display _N

*MERGE WITH DIAGNOSIS
merge pcucode pid date using `diag', sort uniquising
tabulate _merge
quietly drop if _merge==2
drop _merge
*MERGE WITH LOCATE AND AREA
merge pcucode pid date using LocateReferWk2, sort uniquising
tabulate _merge
quietly drop if _merge==2
drop _merge
*MERGE WITH CHARGE AND PAY
merge pcucode pid date using ChargeWk2, sort uniquising
tabulate _merge
quietly drop if _merge==2
drop _merge

order changwat hosptype locate refer* pcucode pid date month ins* generic
edl categoryCode diag* Proc* amount drugpric drugcost price pay
save drugWkChronicDisease, replace

clear
set more off
set memory 700m

*OTHER VARIABLES PER VISIT
use drugWkChronicDisease, clear
display _N
keep pcucode pid date changwat hosptype locate referin referout insNUM diag*
Proc* price pay
*TREAT NEGATIVE/ZERO PRICE AS MISSING
replace price=. if price<=0
contract pcucode pid date changwat hosptype locate referin referout insNUM
diag* Proc* price pay
drop _freq
display _N
tempfile visit
quietly save `visit', replace
clear

*DRUG FOR SELECTED CHRONIC DISEASES
use drugWkChronicDisease, clear
display _N
keep pcucode pid date edl categoryCode amount drugpric drugcost

*TREAT NEGATIVE/ZERO PRICE/COST AS MISSING
for varlist drugpric drugcost: replace X=. if X<=0

*NON-TARGET CATEGORIES
generate byte categoryTARGET=1 if
inlist(categoryCode,13,17,21,27,32,33,34,35,53)
replace categoryCode=88 if categoryTARGET~=1
drop categoryTARGET

*EDIT MISSING EDL STATUS

```

```

replace edl="X" if edl=="

*TOTAL PRICE/COST OF DRUGS PER SCRIPT (RX)
generate priceRx=amount*drugpric
generate costRx=amount*drugcost
drop amount drugpric drugcost

*TOTAL PRICE/COST OF DRUGS PER DRUG CATEGORY AND VISIT
collapse (sum)priceRx (sum)costRx, by(pcucode pid date edl categoryCode)
display _N
tempfile x
quietly save `x', replace

*FOR EACH SELECTED CATEGORY
local category 13 17 21 27 32 33 34 35 53
foreach c of local category {
use `x', clear
display "Category: all selected N=" _N

*KEEP ONLY PID WITH THE SELECTED CATEGORY
quietly generate byte ds=1 if categoryCode==`c'
quietly egen dsMAX=max(ds), by(pid)
keep if dsMAX==1
display "Category `c' (initial category) N=" _N

*COMBINED OTHER CATEGORY (77)
replace categoryCode=77 if categoryCode~=`c'

*PER VISIT-EDL STATUS-CATEGORY
collapse (sum)priceRx (sum)costRx, by(pcucode pid date edl categoryCode)
display "Category `c' (refined category) N=" _N

*PER VISIT-EDL STATUS
reshape i pcucode pid date edl
reshape j categoryCode
reshape xij priceRx costRx
reshape wide
display "Category `c' (wide) N=" _N

*MERGE BACK FOR OTHER VARIABLES
merge pcucode pid date using `visit', sort uniquing
tabulate _merge
quietly drop if _merge==2
drop _merge
display "Category `c' (wide) N=" _N

save drugPriceChargeCategory`c', replace

```

ขั้นตอนที่ 2

```

clear
set more off
set memory 700m

*FOR EACH SELECTED CATEGORY
local category 13 17 21 27 32 33 34 35 53
foreach c of local category {
use drugPriceChargeCategory`c', clear
display "Category `c': (All PID) N=" _N

```



```

keep pcucode pid date hosptype edl price*
quietly drop if pid==0|pid==.
display "Category `c': (Valid PID) N=" _N
tempfile x`c'
quietly save `x`c'', replace

**TOTAL NUMBER OF VISITS PER HOSPTYPE
use `x`c'', clear
display "Category `c': Scripts N=" _N
contract hosptype pid date pcucode
drop _freq
display "Category `c': Visits N=" _N
contract hosptype
rename _freq visitTOTAL
display "Category `c': Hosptype N=" _N
tempfile y`c'
quietly save `y`c'', replace

***(1) PER CATEGORY-EDL STATUS: DRUG PRICE AND PRICE RATIO TO CHARGE
use `x`c'', clear
display "Category `c': (Valid PID) N=" _N
*(1.1) ALL OTHER CATEGORIES
quietly egen pRx77Tot=sum(priceRx77), by(pcucode pid date)
quietly replace pRx77Tot=. if priceRx77==.
drop priceRx77
quietly generate PCTpC77Tot=pRx77Tot/price
quietly replace PCTpC77Tot=. if pRx77Tot>price
label variable pRx77Tot "Baht (all other categories)"
label variable PCTpC77Tot "Ratio-to-charge (all other categories)"
*(1.2.1) SELECTED CATEGORY
quietly egen pRx`c'Tot=sum(priceRx`c'), by(pcucode pid date)
quietly replace pRx`c'Tot=. if priceRx`c'==.
quietly generate PCTpC`c'Tot=pRx`c'Tot/price
quietly replace PCTpC`c'Tot=. if pRx`c'Tot>price
label variable pRx`c'Tot "Baht (selected category `c'))"
label variable PCTpC`c'Tot "Ratio-to-charge (selected category `c'))"
*(1.2.2) SELECTED CATEGORY AND EDL STATUS
quietly egen pRx`c'ED=sum(priceRx`c'), by(pcucode pid date edl)
quietly replace pRx`c'ED=. if priceRx`c'==.
drop price priceRx`c'
rename pRx`c'ED pRx`c'
label variable pRx`c' "Baht (by EDL status of selected category `c'))"
quietly for varlist pRx77Tot pRx`c'Tot pRx`c': format X %7.0fc
quietly for varlist PCTpC77Tot PCTpC`c'Tot: format X %5.3f

***(2) PER VISIT
reshape i pcucode pid date hosptype pRx77Tot PCTpC77Tot pRx`c'Tot
PCTpC`c'Tot
reshape j edl, string
reshape xij pRx`c'
reshape wide
label variable pRx`c'E "Baht (ED selected category)"
label variable pRx`c'N "Baht (NE selected category)"

***PER HOSPTYPE
collapse ///
(p50)MEDpRx77Tot=pRx77Tot (mean)MEANpRx77Tot=pRx77Tot
(sd)SDpRx77Tot=pRx77Tot ///
(p50)medPCTpC77Tot=PCTpC77Tot (mean)meanPCTpC77Tot=PCTpC77Tot
(sd)sdPCTpC77Tot=PCTpC77Tot ///

```

```
(p50)MEDpRx`c'Tot=pRx`c'Tot (mean)MEANpRx`c'Tot=pRx`c'Tot
(sd)SDpRx`c'Tot=pRx`c'Tot ///
(p50)medPCTpC`c'Tot=PCTpC`c'Tot (mean)meanPCTpC`c'Tot=PCTpC`c'Tot
(sd)sdPCTpC`c'Tot=PCTpC`c'Tot ///
(p50)MEDpRx`c'E=pRx`c'E (mean)MEANpRx`c'E=pRx`c'E (sd)SDpRx`c'E=pRx`c'E ///
(p50)MEDpRx`c'N=pRx`c'N (mean)MEANpRx`c'N=pRx`c'N (sd)SDpRx`c'N=pRx`c'N ///
, by(hosptype)
```

```
merge hosptype, using `y`c'', sort
tabulate _merge
drop _merge
order hosptype visitTOTAL
sort hosptype
```

*SAVE OUTPUT TO EXCEL (XML)

```
xmlsave drugPriceChargeCategory`c'Hosptype, doctype(excel) legible replace
}
```

ตารางที่ 6 ราคาขาย (บาท) ต่อใบสั่ง ของยาในและนอกบัญชียาหลักๆ สำหรับโรคเรื้อรัง จำแนกตามประเภทสถานพยาบาล

	ยาในบัญชียาหลักๆ			ยาในและนอกบัญชียาหลักๆ		
	มัธยฐาน	ค่าเฉลี่ย	ส่วนเบี่ยงเบน มาตรฐาน	มัธยฐาน	ค่าเฉลี่ย	ส่วนเบี่ยงเบน มาตรฐาน
Epilepsy						
สอ. N=4543	30	310	5346	30	309	5331
รพ.ช. N=6846	180	466	3618	180	455	3561
รพ.ท. N=2377	120	328	919	120	328	919
รพ.ศ. N=2498	98	369	1210	100	418	1306
HIV						
รพ.ช. N=10332	1470	2442	22304	1470	2442	22304
รพ.ท. N=3052	2993	3391	3624	2993	3391	3624
รพ.ศ. N=1236	3853	4386	5072	3853	4386	5072
RAD						
สอ. N=12166	144	195	391	150	204	392
รพ.ช. N=31116	150	264	386	163	276	383
รพ.ท. N=7283	297	572	714	312	574	701
รพ.ศ. N=3256	553	1407	1796	553	1407	1795

	ยาในบัญชียาหลักฯ			ยาในและนอกบัญชียาหลักฯ		
	มัธยฐาน	ค่าเฉลี่ย	ส่วนเบี่ยงเบน มาตรฐาน	มัธยฐาน	ค่าเฉลี่ย	ส่วนเบี่ยงเบน มาตรฐาน
Diabetes						
สอ. N=93821	69	149	318	70	152	319
รพ.ช. N=95673	180	668	6532	180	678	6531
รพ.ท. N=28134	300	461	565	318	607	980
รพ.ศ. N=7263	360	749	1156	360	995	1736

4. การแจกแจง ต้นทุน และราคาต่อใบสั่งยาตามรายการยา

```

clear
set more off
set memory 700m

use drugWk_didstd, clear
display _N
keep code2A dsfSHT generic
replace generic=substr(generic,1,25)
quietly compress
contract code2A dsfSHT generic
drop _freq
display _N
quietly bysort code2A dsfSHT: generate N=_N
tabulate N
drop N
tempfile x
quietly save `x', replace
clear

use drugWkAmountPricCostHosptypeIns, clear
display _N
keep changwat hosptype pcucode date code2A dsfSHT sthAMT sthUNT edl
categoryCode drugpric drugcost

*DROP OUT-OF-RANGE MONTHS
generate byte month=month(date)
keep if inrange(month,1,3)
display _N
drop date
merge code2A dsfSHT using `x', sort uniquising
tabulate _merge
drop _merge

*TREAT NEGATIVE/ZERO PRICE/COST AS MISSING
for varlist drugpric drugcost: replace X=. if X<=0

*recode hosptype (0 11=0) (1=1) (2/9 12=2), generate(htype)
*label define htype 0 "Health Ctr" 1 "District Hosp" 2 "Other Hosp"
*label value htype htype
*label variable htype "Hospital type (combined)"

order changwat hosptype pcucode month code2A dsfSHT generic sthAMT sthUNT
edl categoryCode drugpric drugcost
save drugWkPriceCost, replace

*PRICE-COST MARGIN
keep pcucode hosptype month dsfSHT generic sthAMT drugpric drugcost
quietly generate int margin=drugpric-drugcost
quietly replace margin=. if drugcost<=0|margin<0
quietly replace margin=. if
margin>1000&margin~=.&inlist(generic,"AMOXICILLIN+CLAVULANIC AC","ANALGESIC
CREAM","BUDESONIDE+FORMOTEROL","ETHINYL
ESTRADIOL+LEVONOR","GEMFIBROZIL","LEVODOPA","VITAMIN B COMPLEX")
quietly generate int PCTmargin=margin/drugcost
label variable margin "Price-cost margin (Baht)"
label variable PCTmargin "Margin relative to cost (ratio)"
quietly compress

```

```

bysort dsfSHT: table generic, content(mean margin mean drugpric mean
drugcost) format(%6.0fc) missing concise
bysort dsfSHT: table generic, content(sd margin sd drugpric sd drugcost)
format(%6.0fc) missing concise
bysort dsfSHT: table generic, content(mean PCTmargin sd PCTmargin)
format(%5.3fc) missing concise

drop margin
replace generic=substr(generic,1,15)
quietly compress
tempfile y
quietly save `y', replace

***PCU CODE LEVEL
use `y', clear
display _N
keep pcucode hosptype month dsfSHT generic sthAMT drugpric
collapse (mean)priceMEAN=drugpric (p50)priceMED=drugpric
(sd)priceSD=drugpric, by(pcucode hosptype month dsfSHT generic sthAMT)
tempfile y1
quietly save `y1', replace

use `y', clear
display _N
keep pcucode hosptype month dsfSHT generic sthAMT drugcost
collapse (mean)costMEAN=drugcost (p50)costMED=drugcost (sd)costSD=drugcost,
by(pcucode hosptype month dsfSHT generic sthAMT)
tempfile y2
quietly save `y2', replace

use `y', clear
display _N
keep pcucode hosptype month dsfSHT generic sthAMT PCTmargin
collapse (mean)PCTmarginMEAN=PCTmargin (p50)PCTmarginMED=PCTmargin
(sd)PCTmarginSD=PCTmargin, by(pcucode hosptype month dsfSHT generic sthAMT)
tempfile y3
quietly save `y3', replace

use `y', clear
display _N
keep pcucode hosptype month dsfSHT generic sthAMT
generate byte obs=1
collapse (sum)numRx=obs, by(pcucode hosptype month dsfSHT generic sthAMT)
label variable numRx "Number of scripts"

merge pcucode hosptype month dsfSHT generic sthAMT using `y1', sort
tabulate _merge
drop _merge
merge pcucode hosptype month dsfSHT generic sthAMT using `y2', sort
tabulate _merge
drop _merge
merge pcucode hosptype month dsfSHT generic sthAMT using `y3', sort
tabulate _merge
drop _merge
quietly compress
save drugWkPriceCostMargin, replace
display _N

```

```

collapse (sum)numRx (mean)priceMEAN (p50)priceMED (sd)priceSD (mean)costMEAN
(p50)costMED (sd)costSD (mean)PCTmarginMEAN (p50)PCTmarginMED
(sd)PCTmarginSD , by(month dsfsHT generic sthAMT)
label variable numRx "Number of scripts"
*SAVE TO EXCEL (XML)
reshape i dsfsHT generic sthAMT
reshape j month
reshape xij numRx priceMEAN priceMED priceSD costMEAN costMED costSD
PCTmarginMEAN PCTmarginMED PCTmarginSD
reshape wide
order generic dsfsHT sthAMT
sort generic dsfsHT sthAMT
xmlsave PriceCostMarginGeneric, doctype(excel) legible replace

```

ตารางที่ 7 รายการยาราคาแพง เรียงลำดับตามมาตรฐานของต้นทุน ณ เดือน มค.: ค่าเฉลี่ยต้นทุนและราคาต่อใบสั่ง มกราคม-มีนาคม 2553

มาตรฐาน ต้นทุน	รายการยา	รูปแบบ	ความแรง	ประเภท รพ.	ต้นทุนเฉลี่ย			ราคาเฉลี่ย	
					มค.	กพ.	มีค.	มค.	กพ.
18,076.0	LEUPRORELIN ACE	INJ	11.25	3	18,076.0	18,076.0	18,076.0	19,944.6	19944.6
14,445.0	CLOSTRIDIUM BOT	INJ	500	3	14,445.0			15,950.5	
14,338.0	CETUXIMAB	INJ	2	3	14,338.0		14,338.0	15,832.8	
10,000.0	PACLITAXEL	INJ	30	3	11,046.3	15,600.0	19,075.9	12,181.4	17221.0
6,955.0	EPOETIN ALPHA (	INJ	20000	2	6,955.0	6,955.0		7,712.0	7712.0
6,396.5	LEUPRORELIN ACE	INJ	3.75	2	6,396.5	6,396.0	6,396.2	7,097.0	7097.0
6,396.5	LEUPRORELIN ACE	INJ	3.75	8	6,396.5	6,396.5		7,042.0	7042.0
5,564.0	PACLITAXEL	INJ	30	2	5,564.0	5,564.0	5,564.0	6,181.0	6181.0
5,000.0	HYALURONIC ACID	INJ	8	3	5,000.0	5,000.0	5,000.0	5,561.0	5561.0
5,000.0	HYALURONIC ACID	INJ	20	2	5,000.0	5,000.0	5,000.0	5,560.0	5560.0
4,815.0	HYALURONIC ACID	INJ	25	8	4,815.0		2,407.5	5,330.0	
4,280.0	ANTI-D(RHO) IMM	INJ	625	3	4,280.0	4,280.0	4,280.0	4,769.0	4769.0
3,581.8	LEUPRORELIN ACE	INJ	3.75	3	3,581.8	-	6,780.1	7,491.5	7042.0
3,277.4	BACILLUS CALMET	INJ	81	3	3,277.4	-		3,666.0	3639.0
3,250.0	GEMCITABINE	INJ	1	3	3,250.0	-	-	3,605.5	0.0
3,200.0	SALCATONIN	SPR	100	2	3,200.0	3,200.0	3,200.0	3,581.0	3581.0
2,996.0	SALCATONIN	SPR	200	8	2,996.0	2,996.0	1,498.0	3,343.5	3330.0
2,985.0	ANTI-HAEMOPHILI	INJ	1000	3	2,985.0	2,985.0		3,344.5	3344.5
2,592.6	METHYLPREDNISOL	INJ	1	3	2,592.6	1,555.6	1,728.4	2,913.0	1747.8
2,568.0	NATAMYCIN	SOL		8	2,568.0	2,568.0	2,568.0	2,859.0	2859.0
2,354.0	HYALURONIC ACID	INJ	25	2	2,505.6	2,659.3	1,952.2	2,817.0	2986.1
2,300.0	HYALURONIC ACID	INJ	10	8	2,300.0	2,300.0	2,300.0	2,564.0	2564.0
2,140.0	EPOETIN ALPHA (	INJ	10000	3	2,140.0	2,140.0	1,070.0	2,415.0	2415.0
2,055.5	EPOETIN ALPHA (	INJ	10000	1	2,055.5	2,055.5	2,055.5	2,322.0	2322.0
1,926.0	ETONOGESTREL	IMP	68	9	1,926.0	1,926.0	1,926.0	2,326.0	2326.0
1,900.0	LEVONORGESTREL	IMP	36		1,900.0			1,900.0	
1,751.0	HYALURONIC ACID	SOL	15	2				1,987.0	

มัลติฐาน ต้นทุน	รายการยา	รูปแบบ	ความแรง	ประเภท รพ.	ต้นทุนเฉลี่ย			ราคาเฉลี่ย	
					มค.	กพ.	มีค.	มค.	กพ.
					1,751.0				
1,683.6	TIOTROPIUM BROM	CAP	18	2	1,687.6	1,685.8	1,696.7	1,931.5	1915.4
1,615.7	IBANDRONIC ACID	TAB	150	8	1,615.7	1,615.7	1,077.1	1,824.5	1824.5
1,605.0	SALCATONIN	SPR	200	2	1,605.0	1,605.0	1,605.0	3,474.5	3474.5
1,601.8	RALOXIFENE HYDR	TAB	60	8	1,601.8	1,601.8	1,601.8	1,796.0	1796.0
1,540.0	BUDESONIDE+FORM	INH			1,557.8	1,484.2	769.0	1,871.3	1807.0
1,429.5	EPOETIN BETA	INJ	5000	1	1,429.5	1,429.5	1,429.5	1,633.0	1633.0
1,429.5	EPOETIN BETA	INJ	5000	2	1,429.5	1,429.5	1,429.5	1,633.5	1633.5
1,429.5	EPOETIN BETA	INJ	5000	8	1,429.5	1,429.5	714.8	1,606.0	1606.0
1,400.7	BUDESONIDE+FORM	INH		12	1,400.7	1,400.7	1,400.7	1,602.0	1602.0
1,386.0	MITOMYCIN	INJ	20	3	1,386.0	1,386.0	1,386.0	1,586.0	1586.0
1,347.9	BUDESONIDE+FORM	INH		1	1,327.9	1,321.3	1,347.9	1,455.5	1455.5
1,337.5	ALBUMIN, HUMAN	INJ		3	1,337.5	1,337.5		1,532.3	1532.3
1,203.1	BUDESONIDE+FORM	INH		8	1,203.1	1,203.1	1,540.8	1,369.0	1369.0
1,103.7	RABIES	INJ	150	2	1,103.7	1,103.7	1,103.7	1,330.0	1330.0
1,100.0	EPOETIN ALPHA (	INJ	4000	8	1,100.0	1,100.0	550.0	1,244.0	1244.0
995.0	BUDESONIDE+FORM	INH		2	1,146.8	1,146.8	1,210.1	1,362.3	1362.3
990.0	SALCATONIN	SPR	200	1	990.0	660.0	990.0	3,034.5	3220.3
963.0	ESTRADIOL+DYDRO	TAB		8	963.0	963.0	963.0	1,093.0	1093.0
963.0	SALMETEROL+FLUT	POW		0	1,042.0	1,081.5	963.0	1,066.7	1059.0
963.0	SALMETEROL+FLUT	POW		1	689.8	689.8	736.0	1,136.1	1136.1
963.0	SALMETEROL+FLUT	POW		3	963.0	963.0	963.0	1,118.0	1118.0
963.0	SALMETEROL+FLUT	POW		8	963.0	963.0	722.3	1,110.0	1110.0
963.0	SALMETEROL+FLUT	POW		12	963.0	963.0	963.0	1,118.0	1118.0
950.0	LEVONORGESTREL	IMP	36	1	887.7	862.8	-	1,017.9	1276.7
918.5	SALMETEROL+FLUT	POW		2	700.0	700.0	700.0	1,095.9	1094.5
910.5	SALMETEROL+FLUT	INH			910.5	948.0	963.0	1,040.0	1083.0

มัลติฐาน ต้นทุน	รายการยา	รูปแบบ	ความแรง	ประเภท รพ.	ต้นทุนเฉลี่ย			ราคาเฉลี่ย	
					มค.	กพ.	มีค.	มค.	กพ.
898.8	TINZAPARIN SODI	INJ	10000	8	898.8	898.8	898.8	1,021.0	1021.0
822.3	TIOTROPIUM BROM	CAP	18	3	829.3	826.6	851.0	1,043.5	1040.3
807.5	IBANDRONIC ACID	TAB	150	2	807.5	807.5	807.5	1,838.8	1838.8
802.5	ESTRADIOL+DYDRO	TAB		12	802.5	802.5	802.5	933.9	933.9
760.8	TIBOLONE	TAB	2.5	8	760.8	760.8	760.8	866.0	866.0
760.8	TIBOLONE	TAB	2.5	12	760.8	760.8	760.8	34.0	952.0
750.0	ETONOGESTREL	IMP	68	1	856.5	750.0	-	2,110.0	1840.0
749.0	ALBUMIN, HUMAN	INJ		2	749.0		993.5	1,355.0	
745.0	CYCLOSPORIN	SOL		2	745.0	745.0	745.0	1,535.0	1535.0
720.0	RABIES ANTISERU	INJ	1000	8	720.0	720.0	720.0	820.0	820.0
711.8	TIBOLONE	TAB	2.5	2	711.8	711.8	712.0	829.5	829.5
702.5	SALMETEROL+FLUT	INH		2	758.1	759.0	761.0	883.0	884.0
700.8	BUDESONIDE+FORM	INH		3	689.3	683.5	1,274.3	1,575.8	1569.1
700.0	BUDESONIDE	INH	100	9	700.0	700.0	700.0	800.0	800.0
700.0	DOXORUBICIN	INJ	50	3	700.0	123.0	1,069.2	1,218.0	835.0
668.8	ESTRADIOL+DYDRO	TAB		2	638.0	643.1	638.0	929.0	904.2
667.3	BICALUTAMIDE	TAB	150	3	667.3	667.3	667.3	778.4	778.4
664.0	CRUDE	INJ		2	664.0			775.0	
652.7	FLUTICASONE PRO	SPR	50	3	652.7	652.7	652.7	762.0	762.0
642.0	SODIUM CITICOLI	SOL	100	8	642.0	642.0	642.0	736.0	736.0
620.6	BUDESONIDE	INH	100	6	620.6	620.6	620.6	340.0	340.0
600.0	EPOETIN ALPHA (	INJ	2000	8	600.0	600.0	300.0	686.0	686.0
588.5	EPOETIN BETA	INJ	2000	3	588.5	588.5	588.5	687.8	687.8
565.7	RISPERIDONE	SOL	1	3	565.7	565.7	1,081.5	1,195.5	1195.5
535.0	CANDESARTAN CIL	OIN	50	2	535.0	535.0	535.0	633.8	626.0
535.0	CANDESARTAN CIL	OIN	50	3	535.0	535.0	535.0	626.3	626.3
	TIMOLOL+TRAVOPR	SOL		2				626.0	626.0

มัลติฐาน ต้นทุน	รายการยา	รูปแบบ	ความแรง	ประเภท รพ.	ต้นทุนเฉลี่ย			ราคาเฉลี่ย	
					มค.	กพ.	มีค.	มค.	กพ.
535.0					535.0	535.0	535.0		
525.0	TIMOLOL+TRAVOPR	SOL		8	553.2	590.5	558.5	640.6	695.2
520.0	RABIES ANTISERU	INJ	1000	2	364.3	325.4	325.4	638.3	645.6
519.0	ACYCLOVIR	OIN	3	2	519.0	524.3	519.0	608.0	614.0
519.0	ACYCLOVIR	OIN	3	3	519.0	519.0		608.0	608.0
518.0	BILE STONE THER	POW		2	518.0	518.0	518.0	607.0	607.0
506.1	RIFAMPICIN	SYR	100	3	506.1		506.1	593.0	
481.5	LATANOPROST	SOL	50	12	481.5	481.5	481.5	565.0	565.0
480.0	BIMATOPROST	SOL	0.3	2	480.0	480.0	480.0	563.5	563.5
470.8	AZITHROMYCIN	SYR	2	2	470.8	470.8	470.8	559.2	562.6
470.8	AZITHROMYCIN	SYR	2	12	470.8	470.8	470.8	552.0	552.0
470.0	TRAVOPROST	INJ	0.04	2	470.0	470.0	470.0	552.0	552.0
450.0	BRINZOLAMIDE	OIN	10	8	450.0	450.0	450.0	517.0	517.0
443.0	TETANUS IMMUNOG	INJ	250	1	443.0	443.0	295.3	471.9	471.9
440.0	TETANUS IMMUNOG	INJ	125	2	440.0			517.0	
425.0	IOPROMIDE	INJ	300	2	469.4	469.9	449.4	550.8	551.5
422.6	CYCLOPHOSPHAMID	INJ	1	3	422.6		422.6	497.0	
417.3	SODIUM CHLORIDE	INJ		3	417.3	417.3		491.0	491.0
407.5	MOMETASONE FURO	SPR	50	2	407.5	407.5	407.5	1,087.0	1087.0

การวิเคราะห์การใช้ยาในผู้สูงอายุ

1. กลุ่มยาและรายการยาที่ใช้บ่อย จำแนกตามประเภทสถานพยาบาล

ขั้นตอนที่ 1

```
clear
set more off
set memory 700m

local province 26 34 35 54 65 70 80 82
foreach prov of local province {

*AGE-SEX
use demowk`prov', clear
display "demowk`prov' N=" _N
keep pid datebirth sex
tempfile x`prov'
quietly save `x`prov'', replace
clear

*GENERIC FULL NAME BY CODE2A-DOSAGE FORM
use drugwk_didstd`prov', clear
display "drugwk_didstd`prov' (initial) N=" _N
keep code2A dsfSHT generic
quietly replace generic=substr(generic,1,25)
quietly compress
contract code2A dsfSHT generic
drop _freq
display "drugwk_didstd`prov' (unique generic-form) N=" _N
quietly bysort code2A dsfSHT: generate N=_N
tabulate N
drop N
tempfile y`prov'
quietly save `y`prov'', replace
clear

use drugWkAmountPricCostHosptypeIns`prov', clear
display "drugWkAmountPricCostHosptypeIns`prov' (all periods) N=" _N
keep hosptype pcucode pid date insNUM code2A dsfSHT sthAMT amount
*KEEP YEAR 2010/MONTHS 1-7
quietly generate month=month(date)
quietly generate year=year(date)
quietly keep if inlist(year,2010)&inrange(month,1,7)
display "drugWkAmountPricCostHosptypeIns`prov' (Jan-Jul 2010) N=" _N
drop month year

quietly merge pid using `x`prov'', sort uniqusing
tabulate _merge
quietly drop if _merge==2
drop _merge
display "drugWkAmountPricCostHosptypeIns`prov' (all ages) N=" _N
quietly generate ageyr=round((date-datebirth)/365)
quietly egen ageMIN=min(ageyr), by(pid)
quietly keep if ageMIN>=60&ageMIN~=.
drop ageyr ageMIN
display "drugWkAmountPricCostHosptypeIns`prov' (age>=60) N=" _N

quietly merge code2A dsfSHT using `y`prov'', sort uniqusing
```

```

tabulate _merge
quietly drop if _merge==2
drop _merge
display "drugWkAmountPricCostHosptypeIns`prov' (age>=60) N=" _N
order hosptype pcucode pid sex datebirth insNUM date code2A dsf* sth* amount
generic
save drugWkElderly`prov', replace
}

```

ขั้นตอนที่ 2

```

clear
set more off
set memory 700m

local province 26 34 35 54 65 70 80 82
foreach prov of local province {

use drugWkElderly`prov', clear
display "drugWkElderly`prov' N=" _N

keep hosptype pcucode insNUM date code2A dsfSHT generic
quietly generate month=month(date)
drop date
*NUMBER OF RX PER GENERIC-FORM-PCU-MONTH
contract hosptype pcucode insNUM code2A dsfSHT generic month
display "drugWkElderly`prov' (generic-form-pcucode-month) N=" _N
tempfile x`prov'
quietly save `x`prov'', replace

*NUMBER OF PCU PER HOSPTYPE-MONTH
drop _freq
contract hosptype insNUM code2A dsfSHT generic month pcucode
drop _freq
contract hosptype insNUM code2A dsfSHT generic month
rename _freq sumPCUsMo
tempfile y`prov'
quietly save `y`prov'', replace

*NUMBER OF RX PER GENERIC-FORM-HOSPTYPE-MONTH
use `x`prov'', clear
collapse (sum)sumRxMo=_freq (median)medianRxMo=_freq (mean)meanRxMo=_freq
(sd)sdRxMo=_freq, by(hosptype insNUM code2A dsfSHT generic month)
display "drugWkElderly`prov' (generic-form-hosptype-month) N=" _N
quietly merge hosptype insNUM code2A dsfSHT generic month using `y`prov'',
sort unquising
tabulate _merge
drop _merge

***UC ONLY
keep if insNUM==3
***HEALTH CENTER AND DISTRICT/GENERAL/REGIONAL HOSPITALS
keep if inlist(hosptype,0,1,2,3)
display "drugWkElderly`prov' UC only, HC-DH-GH-RH (monthly long) N=" _N
tempfile z`prov'
quietly save `z`prov'', replace

*MONTHLY WIDE FORM
order insNUM hosptype generic dsfSHT code2A sumPCUsMo sumRxMo medianRxMo
meanRxMo sdRxMo
reshape i insNUM hosptype generic dsfSHT code2A
reshape j month

```

```

reshape xij sumPCUsMo sumRxMo medianRxMo meanRxMo sdRxMo
reshape wide
display "drugWkElderly`prov' (monthly wide) N=" _N
gsort hosptype -sumRxMo1
order insNUM hosptype generic dsfSHT *1 *2 *3 *4 *5 *6 *7
xmlsave AnalyzeDrugElderlyUC`prov', doctype(excel) legible replace
}

*****ALL PROVINCES BY HOSPTYPE
local province 26
foreach prov of local province {
  use `z`prov'', clear
  display "drugWkElderly`prov' UC only, HC-DH-GH-RH (long) N=" _N
}
local province 34 35 54 65 70 80 82
foreach prov of local province {
  quietly append using `z`prov''
  display "to drugWkElderly`prov' UC only, HC-DH-GH-RH (long) N=" _N
}
*COMBINED GENERAL-REGIONAL HOSPITAL TYPES
quietly recode hosptype (2/3=23), generate(htype)
collapse (sum)sumPCUsMo (sum)sumRxMo, by(htype generic dsfSHT code2A month)
display "drugWkElderly all provinces by htype: UC only, HC-DH-GH-RH (long)
N=" _N
tempfile xx
quietly save `xx', replace

*(0) HEALTH CENTER
use `xx', clear
quietly keep if inlist(htype,0)
display "drugWkElderly: UC only, HC (long) N=" _N
reshape i htype generic dsfSHT code2A
reshape j month
reshape xij sumPCUsMo sumRxMo
reshape wide
display "drugWkElderly: UC only, HC (monthly wide) N=" _N
order sumRxMo*
egen sumRx=rsum(sumRxMo1-sumRxMo7)
gsort -sumRx
drop sumRx
order htype generic dsfSHT *1 *2 *3 *4 *5 *6 *7
xmlsave AnalyzeDrugElderlyUC8provHC, doctype(excel) legible replace
*(1) DISTRICT HOSPITAL
use `xx', clear
quietly keep if inlist(htype,1)
display "drugWkElderly: UC only, DH (long) N=" _N
reshape i htype generic dsfSHT code2A
reshape j month
reshape xij sumPCUsMo sumRxMo
reshape wide
display "drugWkElderly: UC only, DH (monthly wide) N=" _N
order sumRxMo*
egen sumRx=rsum(sumRxMo1-sumRxMo7)
gsort -sumRx
drop sumRx
order htype generic dsfSHT *1 *2 *3 *4 *5 *6 *7
xmlsave AnalyzeDrugElderlyUC8provDH, doctype(excel) legible replace
*(2/3) GENERAL/REGIONAL HOSPITAL
use `xx', clear
quietly keep if inlist(htype,23)
display "drugWkElderly: UC only, GH/RH (long) N=" _N
reshape i htype generic dsfSHT code2A
reshape j month

```

```
reshape xij sumPCUsMo sumRxMo
reshape wide
display "drugWkElderly: UC only, GH/RH (monthly wide) N=" _N
order sumRxMo*
egen sumRx=rsum(sumRxMo1-sumRxMo7)
gsort -sumRx
drop sumRx
order htype generic dsfSHT *1 *2 *3 *4 *5 *6 *7
xmlsave AnalyzeDrugElderlyUC8provGHRH, doctype(excel) legible replace
```

ตารางที่ 8ก กลุ่มยาที่ใช้มากสำหรับผู้สูงอายุ เรียงตามจำนวนใบสั่งยารวมและสัดส่วนในแต่ละประเภทสถานพยาบาล

Group	Number of scripts				% within Types		
	GH/RH	DH	HC	Total	GH/RH	DH	HC
Ungrouped	506,378	1,096,645	1,945,885	3,548,908	44.87%	47.25%	55.98%
Infection, low	62,602	123,545	297,062	483,209	5.55%	5.32%	8.55%
Allergies	51,593	93,727	284,054	429,374	4.57%	4.04%	8.17%
Vitamin	35,298	53,382	121,313	209,993	3.13%	2.30%	3.49%
Pain/Inflammatory	54,290	91,947	109,904	256,141	4.81%	3.96%	3.16%
Hypertension	27,462	82,271	100,280	210,013	2.43%	3.55%	2.88%
Diabetes	54,913	122,940	88,491	266,344	4.87%	5.30%	2.55%
IHD/Hypertension	51,234	115,077	67,162	233,473	4.54%	4.96%	1.93%
Anxiety and tension	30,044	53,838	60,027	143,909	2.66%	2.32%	1.73%
Gastric acid disorder	39,152	75,644	57,800	172,596	3.47%	3.26%	1.66%
CHF/Hypertension	43,547	85,092	51,382	180,021	3.86%	3.67%	1.48%
Eczema	11,584	19,576	47,950	79,110	1.03%	0.84%	1.38%
Muscle relaxant (combine)	7,291	51,931	46,366	105,588	0.65%	2.24%	1.33%
Hyperlipidemia	47,876	81,526	45,413	174,815	4.24%	3.51%	1.31%
Antiplatelet	27,252	58,085	39,649	124,986	2.41%	2.50%	1.14%
EENT	8,693	8,919	35,241	52,853	0.77%	0.38%	1.01%
Iron deficiency	11,323	12,532	28,745	52,600	1.00%	0.54%	0.83%
Infection, medium	15,402	19,018	18,691	53,111	1.36%	0.82%	0.54%
Depression	15,884	25,050	14,262	55,196	1.41%	1.08%	0.41%
Folate deficiency	15,318	22,646	13,966	51,930	1.36%	0.98%	0.40%
Reactive airway disease	11,479	27,315	2,609	41,403	1.02%	1.18%	0.08%
Total	1,128,615	2,320,706	3,476,252	6,925,573			

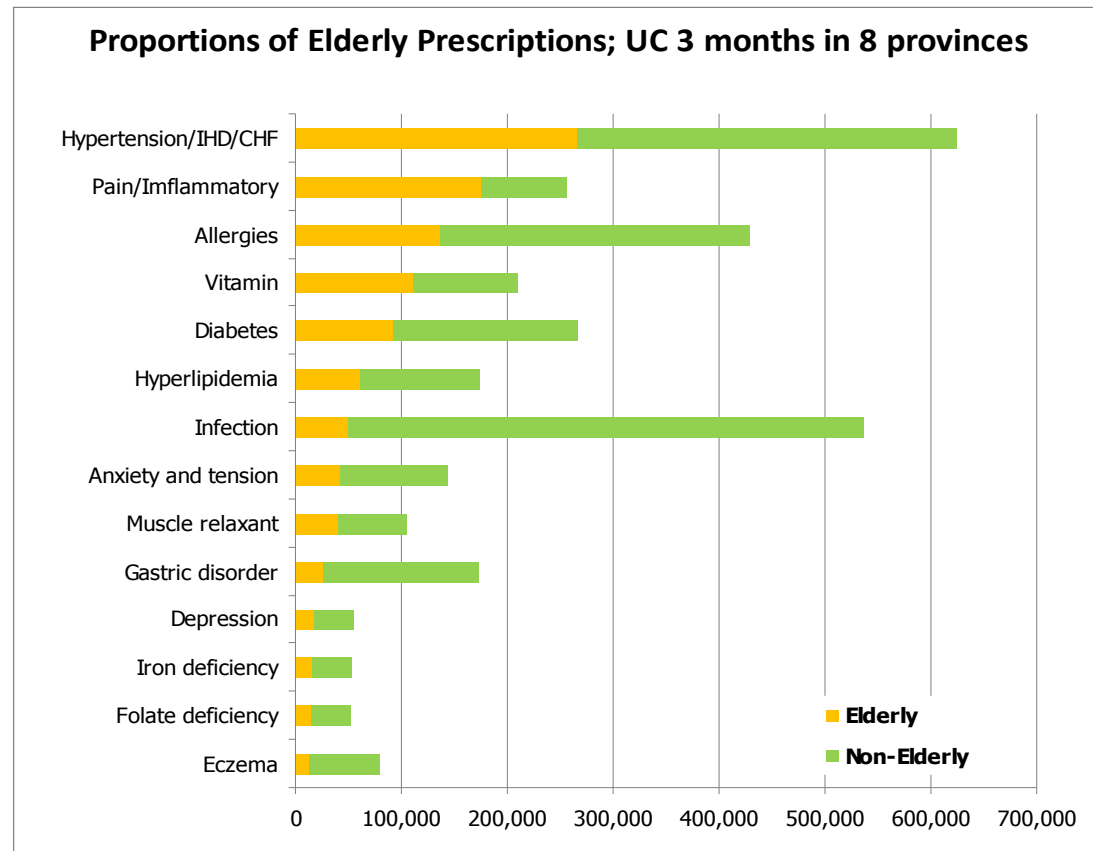
Group	Number of scripts				% within hospital types			
	GH/RH	DH	HC	Total	GH/RH	DH	HC	Total
Infection	78,004	142,563	315,753	536,320	6.91%	6.14%	9.08%	7.74%
Infection, low	62,602	123,545	297,062	483,209				
Infection, medium	15,402	19,018	18,691	53,111				
Endocrine & metabolic diseases	291,436	620,635	450,177	1,362,248	25.82%	26.74%	12.95%	19.67%
Antiplatelet	27,252	58,085	39,649	124,986				
CHF/Hypertension	43,547	85,092	51,382	180,021				
Diabetes	54,913	122,940	88,491	266,344				
Hyperlipidemia	47,876	81,526	45,413	174,815				
Hypertension	27,462	82,271	100,280	210,013				
IHD/Hypertension	51,234	115,077	67,162	233,473				
Gastric acid disorder	39,152	75,644	57,800	172,596	3.47%	3.26%	1.66%	2.49%
Respiratory, EENT	71,765	129,961	321,904	523,630	6.36%	5.60%	9.26%	7.56%

Group	Number of scripts				% within hospital types			
	GH/RH	DH	HC	Total	GH/RH	DH	HC	Total
Allergies	51,593	93,727	284,054	429,374				
EENT	8,693	8,919	35,241	52,853				
Reactive airway disease	11,479	27,315	2,609	41,403				
Muscle, bone and joints	61,581	143,878	156,270	361,729	5.46%	6.20%	4.50%	5.22%
Muscle relaxant (combine)	7,291	51,931	46,366	105,588				
Pain/Inflammatory	54,290	91,947	109,904	256,141				
Neuro, psychotic	45,928	78,888	74,289	199,105	4.07%	3.40%	2.14%	2.87%
Anxiety and tension	30,044	53,838	60,027	143,909				
Depression	15,884	25,050	14,262	55,196				
Vitamin, Electrolyte	61,939	88,560	164,024	314,523	5.49%	3.82%	4.72%	4.54%
Folate deficiency	15,318	22,646	13,966	51,930				
Iron deficiency	11,323	12,532	28,745	52,600				
Vitamin	35,298	53,382	121,313	209,993				
Eczema	11,584	19,576	47,950	79,110	1.03%	0.84%	1.38%	1.14%
Ungrouped	506,378	1,096,645	1,945,885	3,548,908	44.87%	47.25%	55.98%	51.24%

ตารางที่ 8 ข รายการยาที่ใช้สำหรับผู้สูงอายุในแต่ละประเภทสถานพยาบาล รวม มกราคม-มีนาคม 2553

group	generic	dsfSHT	HC	DH	GH/RH	Total
5.2	PARACETAMOL	TAB	58,509	31,301	6,949	96,759
5.2	ANALGESIC CREAM	CRE	27,599	26,528	5,066	59,193
5.2	ASPIRIN	TAB	17,528	25,914	5,710	49,152
5.2	DICLOFENAC	TAB	24,627	15,841	2,756	43,224
5.1	ORPHENADRINE+PARACETAMOL	TAB	821	13,912	11,154	25,887
5.2	IBUPROFEN	TAB	12,623	3,750	682	17,055
5.1	TOLPERISONE HYDROCHLORIDE	TAB	3,215	8,814	2,097	14,126
5.2	TRAMADOL	CAP	262	4,920	1,264	6,446
5.3	PREDNISOLONE	TAB	959	2,381	1,260	4,600
5.2	INDOMETHACIN	CAP	3,477	765	121	4,363
5.2	METHYL SALICYLATE	CRE	2,187	1,752	351	4,290
5.2	MELOXICAM	TAB	146	1,575	948	2,669
5.3	DEXAMETHASONE	INJ	263	1,180	372	1,815
5.2	PIROXICAM	CAP	205	1,220	365	1,790
5.2	SERRATIOPEPTIDASE	TAB	205	594	124	923
5.2	NAPROXEN	TAB	51	366	500	917
5.2	MEFENAMIC ACID	CAP	210	372	96	678
5.2	CELECOXIB	CAP	5	272	363	640
5.1	ORPHENADRINE	TAB	13	16	259	288
5.2	FLOCTAFENINE	TAB	0	0	279	279
5.1	EPERISONE	TAB	0	0	108	108
5.2	NIMESULIDE	TAB	0	68	32	100
5.1	BACLOFEN	TAB	0	8	78	86
5.2	SULINDAC	TAB	0	0	80	80
5.2	LOXOPROFEN	TAB	0	36	15	51
5.2	KETOPROFEN	GEL	0	43	0	43
5.2	MORPHINE	CAP	0	28	1	29
5.2	PARCOXIB	INJ	0	1	26	27
5.2	ASPIRIN	TAB	21	0	0	21
5.2	TENOXICAM	TAB	0	12	7	19
5.2	PROGLUMETACIN	CAP	0	0	16	16
5.2	PARACETAMOL+LIDOCAINE HYD	INJ	13	1	0	14
5.2	IBUPROFEN+PARACETAMOL	INJ	10	0	0	10
5.2	NABUMETONE	TAB	6	0	0	6

group	generic	dsfSHT	HC	DH	GH/RH	Total
5.1	TIZANIDINE	TAB	0	0	2	2
5.2	ETORICOXIB	TAB	0	0	2	2
5.2	FENTANYL	TRA	0	0	2	2
5.2	LEFLUNOMIDE	TAB	0	0	1	1



2. สัดส่วนจำนวนผู้ป่วยที่ใช้ยาโรคเรื้อรัง จำแนกตามกลุ่มอายุ

1. หน่วยการวิเคราะห์ (unit of analysis) ใช้การนับตาม 'PID' เป็น "รายผู้ป่วย (patients)" ในแต่ละเดือน ของแต่ละจังหวัด
2. การแบ่งประเภทของโรคเรื้อรัง
 - 2.1 ใช้การบ่งชี้ด้วยยาที่ใช้สำหรับโรคนั้นๆ ได้แก่ reactive airway disease (RAD), DM, และ cardio-vascular diseases (CVS) (ดูไฟล์ excel สำหรับรายชื่อยาที่ใช้สำหรับแต่ละโรค)
 - 2.2 การจัดกลุ่มและนับ

กรณีที่ผู้ป่วยได้รับยา RAD 1 ชนิด หรือหลายชนิด แต่ไม่ได้รับยาสำหรับ DM หรือ CVS ในรอบ 1 เดือน จะนับว่า ผู้ป่วยรายนั้นเป็น RAD only

กรณีที่ผู้ป่วยได้รับยา DM 1 ชนิด หรือหลายชนิด แต่ไม่ได้รับยาสำหรับ RAD หรือ CVS ในรอบ 1 เดือน จะนับว่า ผู้ป่วยรายนั้นเป็น DM only

กรณีที่ผู้ป่วยได้รับยา CVS 1 ชนิด หรือหลายชนิด แต่ไม่ได้รับยาสำหรับ RAD หรือ DM ในรอบ 1 เดือน จะนับว่า ผู้ป่วยรายนั้นเป็น CVS only

กรณีที่ผู้ป่วยได้รับยา RAD 1 ชนิด หรือหลายชนิด และได้รับยา DM หรือ CVS 1 ชนิด หรือหลายชนิดในรอบเดือนเดียวกัน จะนับว่า ผู้ป่วยรายนั้นเป็น RAD +DM/CVS

กรณีที่ผู้ป่วยได้รับยา DM 1 ชนิด หรือหลายชนิด และได้รับยา CVS 1 ชนิด หรือหลายชนิดในรอบเดือนเดียวกัน จะนับว่า ผู้ป่วยรายนั้นเป็น DM+CVS

กรณีที่ผู้ป่วยไม่ได้รับยา RAD, DM หรือ CVS เลยในรอบ 1 เดือน จะนับว่า ผู้ป่วยรายนั้นเป็นโรคอื่นๆ (no RAD/DM/CVS)

ขั้นตอนที่ 1

```
clear
set more off
set memory 700m

local province 26 34 35 54 65 70 80 82
foreach prov of local province {

***DRUG
use drugWkAmountPricCostHosptypeIns`prov', clear
display "DrugWk`prov' N=" _N
keep pid date insNUM categoryCode

*KEEP UC ONLY
quietly keep if inlist(insNUM,3)
display "DrugWk`prov': UC only N=" _N
drop insNUM
*KEEP YEAR 2010/MONTHS 1-7
generate month=month(date)
generate year=year(date)
quietly keep if inlist(year,2010)&inrange(month,1,7)
display "DrugWk`prov': UC only, Jan-Jul 2010 (Rxs) N=" _N

*REGROUP SELECTED CHRONIC DISEASES: REACTIVE AIRWAY D; DIABETES; CHF-HT,
HYPERLIPID, HT, IHD-ANGINA, IHD-HT
quietly recode categoryCode (53=1) (17=2) (13 32 33 34 35=3) (else=.),
generate(d)
contract year month date pid d
drop _freq
display "DrugWk`prov': UC only, Jan-Jul 2010 (Visits-disease categories) N="
_N

*MERGE WITH DEMOGRAPHIC
quietly merge pid using demowk`prov', sort uniquing
tabulate _merge
quietly drop if _merge==2
drop _merge
```

```

quietly generate age=round((date-datebirth)/365)
quietly egen ageyr=max(age), by(pid)

contract year month pid sex ageyr d
drop _freq
display "DrugWk`prov': UC only, Jan-Jul 2010 (PIDs-disease categories by
months) N=" _N

quietly egen dMIN=min(d), by(year month pid)
quietly egen dMAX=max(d), by(year month pid)
quietly generate NCD=1 if dMIN==1&dMAX==1
quietly replace NCD=2 if NCD==.&dMIN==2&dMAX==2
quietly replace NCD=3 if NCD==.&dMIN==3&dMAX==3
quietly replace NCD=123 if NCD==.&dMIN==1&inlist(dMAX,2,3)
quietly replace NCD=23 if NCD==.&dMIN==2&dMAX==3
quietly replace NCD=0 if NCD==.
label define NCD 0 "No RAD/DM/CVS" 1 "RAD only" 2 "DM only" 3 "CVS only:
CHF/HT/IHD/Lipid" 23 "DM+CVS" 123 "RAD+DM/CVS"
label value NCD NCD
label variable NCD "Selected chronic diseases"
contract year month pid sex ageyr NCD
drop _freq
display "DrugWk`prov': UC only, Jan-Jul 2010 (PIDs by months) N=" _N
tabulate month NCD, row

sort year month NCD
order year month pid sex ageyr NCD
save drugWkNCD`prov', replace
}

```

ขั้นตอนที่ 2

```

clear
set more off
set memory 700m

local province 26 34 35 54 65 70 80 82
foreach prov of local province {

use drugWkNCD`prov', clear
display "drugWkNCD`prov' (PIDs-month) N=" _N

quietly generate agegroup=1 if ageyr<50
quietly replace agegroup=2 if inrange(ageyr,50,59)
quietly replace agegroup=3 if inrange(ageyr,60,69)
quietly replace agegroup=4 if inrange(ageyr,70,79)
quietly replace agegroup=5 if ageyr>=80&ageyr~=.
quietly replace agegroup=9 if ageyr==.
label define agegroup 1 "0-49 yr" 2 "50-59 yr" 3 "60-69 yr" 4 "70-79 yr" 5
">=80 yr" 9 "Unknown"
label value agegroup agegroup

contract month NCD agegroup
rename _freq PatientsMo
display "drugWkNCD`prov' (agegroup-month) N=" _N
quietly generate province=`prov'
tempfile x`prov'
quietly save `x`prov'', replace
}

local province 26
foreach prov of local province {

```

```

use `x`prov'', clear
}
local province 34 35 54 65 70 80 82
foreach prov of local province {
quietly append using `x`prov''
}
display "All provinces (long) N=" _N

reshape i province agegroup NCD
reshape j month
reshape xij PatientsMo
reshape wide
display "All provinces (wide) N=" _N
sort province agegroup NCD
order province agegroup NCD
xmlsave AnalyzeNCDelderly, doctype(excel) legible replace

```

ตารางที่ 9 จำนวนผู้ป่วยสูงอายุที่เข้ารักษาโรคเรื้อรัง 3 กลุ่ม จำแนกตามกลุ่มอายุ มกราคม-กรกฎาคม 2553

กลุ่มอายุ	กลุ่มโรค	มค.	กพ.	มีค.	เมย.	พค.	มิย.	กค.
0-49 yr	No RAD/DM/CVS	169,736	161,465	173,050	150,281	169,771	215,484	395,625
	RAD only	2,678	2,520	2,557	2,133	2,399	3,090	4,849
	DM only	3,173	2,882	3,288	3,050	3,201	3,121	4,083
	CVS only	11,147	10,223	12,501	12,032	12,842	12,216	19,617
	DM+CVS	4,603	4,466	5,346	4,961	5,475	5,218	7,451
	RAD+DM/CVS	172	157	212	161	195	208	276
50-59 yr	No RAD/DM/CVS	32,466	30,258	33,668	31,084	33,686	39,389	65,524
	RAD only	620	610	667	648	717	639	962
	DM only	3,700	3,345	3,723	3,509	3,613	3,430	4,388
	CVS only	15,518	14,162	17,223	16,176	17,537	15,821	24,965
	DM+CVS	9,076	8,637	10,197	9,309	10,289	9,602	13,573
	RAD+DM/CVS	308	270	357	320	351	299	439
60-69 yr	No RAD/DM/CVS	24,491	22,741	24,917	22,954	25,000		45,178
	RAD only	621	560	627	587	582	621	856
	DM only	2,898	2,508	2,849	2,640	2,851	2,679	3,334
	CVS only	16,352	14,891	17,934	16,695	17,989	16,145	24,856
	DM+CVS	9,733	8,883	10,694	9,705	10,427	9,869	13,488
	RAD+DM/CVS	407	359	467	443	450	457	599
70-79 yr	No RAD/DM/CVS	17,968	16,527	17,972	17,053	18,208	20,451	30,835
	RAD only	569	546	628	627	610	595	863
	DM only	1,327	1,174	1,287	1,199	1,235	1,234	1,468
	CVS only	14,598	12,754	15,609	14,307	15,675	14,065	21,030
	DM+CVS	5,745	5,370	6,297	5,826	6,231	5,857	7,908
	RAD+DM/CVS	504	434	539	489	540	519	645
>=80 yr	No RAD/DM/CVS	6,800	6,227	6,857	6,634	6,904	7,716	11,870
	RAD only	234	208	252	215	237	222	322
	DM only	263	224	252	208	237	207	306
	CVS only	6,003	5,179	6,324	5,835	6,381	5,670	8,832

	DM+CVS	1,235	1,121	1,413	1,322	1,377	1,308	1,758
	RAD+DM/CVS	168	173	233	231	232	197	295
Unknown	No RAD/DM/CVS	248,411	231,030	258,333	212,689	233,121	253,960	
	RAD only	2,954	2,533	2,725	2,151	2,169	2,957	
	DM only	2,969	2,489	2,878	2,609	2,055	3,039	
	CVS only	28,461	26,857	30,704	27,147	23,435	36,516	
	DM+CVS	9,040	8,485	9,842	9,075	6,819	12,674	
	RAD+DM/CVS	687	597	651	627	458	825	

การประเมินสมรรถนะการให้บริการ

1. สัดส่วนการไปใช้บริการใบสั่งยาที่อื่นในครั้งถัดไปสำหรับยาแต่ละกลุ่ม ตามรายสถานพยาบาล

ขั้นตอนที่ 1

```
clear
set more off
set memory 700m

***** (1) DRUGS
use drugWkAmountPricCostHosptypeIns, clear
display _N
keep insNUM pid date pcucode hosptype categoryCode

*DROP OUT-OF-RANGE MONTHS
generate byte month=month(date)
keep if inrange(month,1,3)
drop month
display _N
*KEEP ONLY UC PATIENTS
keep if insNUM==3
drop insNUM
display _N
tempfile x
quietly save `x', replace

***TARGET CATEGORIES
*PATIENTS
local category 3 6 7 13 17 23 32 33 35 37 45 49 60 //ALLERGY; ANTIPLATELET;
ANXIEITY-TENSION; CHF-HT; DIABETES, GASTRIC ACID DISORDER; HYPERLIPID; HT;
IHD-HT; INFECTION-LOW; MUSCLE; PAIN-INFLAM; VITAMIN
foreach c of local category {
use `x', clear
display "All-drug: Scripts N=" _N
quietly keep if inlist(categoryCode,`c')
display "Category `c'-drug: script N=" _N
contract pid
drop _freq
display "Category `c': Patients N=" _N
*ALL SCRIPTS OF THE SELECTED PATIENTS
quietly merge pid using `x', sort uniqmaster
tabulate _merge
quietly drop if _merge==2
drop _merge
display "Category `c'-patient: Target + (not-unique)other scripts N=" _N
*KEEP ONE RECORD PER VISIT
quietly replace categoryCode=88 if categoryCode~=`c'
contract pid date pcucode hosptype categoryCode
drop _freq
display "Category `c'-patient: Target + (unique)other scripts N=" _N
quietly generate byte categoryTARGET=categoryCode==`c'
quietly generate byte categoryOTHER=categoryCode==88
quietly collapse (max)categoryTARGET (max)categoryOTHER, by(pid date pcucode
hosptype)
display "Category `c'-patient: All unique visits N=" _N
label variable categoryTARGET "Target drug category?"
label variable categoryOTHER "Other drug category?"
label define yesno 1 "Yes" 0 "No", modify
```

```
quietly for varlist categoryTARGET categoryOTHER: label value X yesno
```

```
***** (2) MERGE WITH LOCATE AND AREA
```

```
merge pcucode pid date using LocateReferWk2, sort uniquing
```

```
tabulate _merge
```

```
quietly drop if _merge==2
```

```
drop _merge
```

```
***TRANSFER TYPE
```

```
sort pid date pcucode
```

```
quietly generate byte transferOUT=1 if
```

```
categoryTARGET==1&categoryTARGET==categoryTARGET[_n+1]&pid==pid[_n+1]&pcucode  
~=pcucode[_n+1]
```

```
quietly replace transferOUT=0 if transferOUT==.
```

```
quietly generate transferOUT1wk=1 if transferOUT==1&date[_n+1]-date<=7
```

```
quietly replace transferOUT1wk=0 if transferOUT1wk==.
```

```
quietly generate transferOUT2wk=1 if transferOUT==1&date[_n+1]-date<=14
```

```
quietly replace transferOUT2wk=0 if transferOUT2wk==.
```

```
quietly generate transferOUT4wk=1 if transferOUT==1&date[_n+1]-date<=28
```

```
quietly replace transferOUT4wk=0 if transferOUT4wk==.
```

```
quietly generate byte transferIN=1 if
```

```
categoryTARGET==1&categoryTARGET==categoryTARGET[_n-1]&pid==pid[_n-  
1]&pcucode~=pcucode[_n-1]
```

```
quietly replace transferIN=0 if transferIN==.
```

```
quietly generate transferIN1wk=1 if transferIN==1&date-date[_n-1]<=7
```

```
quietly replace transferIN1wk=0 if transferIN1wk==.
```

```
quietly generate transferIN2wk=1 if transferIN==1&date-date[_n-1]<=14
```

```
quietly replace transferIN2wk=0 if transferIN2wk==.
```

```
quietly generate transferIN4wk=1 if transferIN==1&date-date[_n-1]<=28
```

```
quietly replace transferIN4wk=0 if transferIN4wk==.
```

```
label variable transferOUT "Next visit to other PCU? (same target category)"
```

```
label variable transferOUT1wk "Next visit (1-wk) to other PCU? (same target  
category)"
```

```
label variable transferOUT2wk "Next visit (2-wk) to other PCU? (same target  
category)"
```

```
label variable transferOUT4wk "Next visit (4-wk) to other PCU? (same target  
category)"
```

```
label variable transferIN "Previous visit from other PCU? (same target  
category)"
```

```
label variable transferIN1wk "Previous visit (1-wk) from other PCU? (same  
target category)"
```

```
label variable transferIN2wk "Previous visit (2-wk) from other PCU? (same  
target category)"
```

```
label variable transferIN4wk "Previous visit (4-wk) from other PCU? (same  
target category)"
```

```
quietly for varlist transferOUT transferOUT1wk transferOUT2wk transferOUT4wk  
transferIN transferIN1wk transferIN2wk transferIN4wk: label value X yesno
```

```
order categoryTARGET categoryOTHER pid date pcucode transfer* hosptype locate  
refer*
```

```
save drugWkShopAroundCategory`c', replace
```

```
clear
```

```
}
```

ขั้นตอนที่ 2

```
clear
```

```
set more off
```

```
set memory 700m
```

```
***VISIT LEVEL
```

```

local category 3 6 7 13 17 23 32 33 35 37 45 49 60 //ALLERGY; ANTIPLATELET;
ANXIEITY-TENSION; CHF-HT; DIABETES, GASTRIC ACID DISORDER; HYPERLIPID; HT;
IHD-HT; INFECTION-LOW; MUSCLE; PAIN-INFLAM; VITAMIN
foreach c of local category {
  use drugWkShopAroundCategory`c', clear
  display "Category `c': All visits N=" _N
  *KEEP ONLY THE VISIT WITH TARGET DRUG CATEGORY
  keep categoryTARGET pcucode hosptype transfer* refer*
  quietly keep if categoryTARGET==1
  display "Category `c': Target category visits N=" _N
  *EDIT TRANSFER IF REFERRAL
  quietly for varlist transferOUT transferOUT1wk transferOUT2wk transferOUT4wk:
  replace X=0 if X==1&referout==1
  quietly for varlist transferIN transferIN1wk transferIN2wk transferIN4wk:
  replace X=0 if X==1&referin==1
  drop categoryTARGET refer*
  tempfile x`c'
  quietly save `x`c'', replace

***PCU LEVEL
local type OUT IN
foreach t of local type {
  *OVERALL
  use `x`c'', clear
  display "Category `c': visits N=" _N
  contract hosptype pcucode transfer`t'
  display "Category `c': transfer`t' PCUs (long) N=" _N
  reshape i hosptype pcucode
  reshape j transfer`t'
  reshape xij _freq
  quietly reshape wide
  display "Category `c': transfer`t' PCUs (wide) N=" _N
  quietly egen visitTOTAL=rsum(_freq0 _freq1)
  drop *0
  rename _freq1 transfer`t'total
  order hosptype pcucode visitTOTAL transfer`t'
  tempfile y`c`t'
  quietly save `y`c`t'', replace
  *WITHIN 1, 2, 4 WEEKS
  local week 1 2 4
  foreach w of local week {
    use `x`c'', clear
    display "Category `c': visits N=" _N
    contract pcucode transfer`t`w'wk
    display "Category `c': transfer`t`w'wk PCUs (long) N=" _N
    reshape i pcucode
    reshape j transfer`t`w'wk
    reshape xij _freq
    quietly reshape wide
    display "Category `c': transfer`t`w'wk PCUs (wide) N=" _N
    drop *0
    rename _freq1 transfer`t`w'wk
    order pcucode transfer`t`w'wk
    tempfile y`c`t`t`w'
    quietly save `y`c`t`t`w'', replace
  }
  *MERGE
  use `y`c`t't'', clear
  display "Category `c': transfer`t' PCUs N=" _N
  local week 1 2 4
  foreach w of local week {
    merge pcucode using `y`c`t`t`w'', sort
    tabulate _merge
  }
}

```



```

drop _merge
}
quietly generate categoryCode=`c'
quietly merge categoryCode using dictionaryCategoryCode, sort uniqueness
quietly drop if _merge==2
drop _merge categoryCode

order category hosptype pcucode visitTOTAL transfer`t'total transfer`t'1wk
transfer`t'2wk transfer`t'4wk
sort hosptype pcucode
xmlsave ShopAround`t'category`c', doctype(excel) legible replace
}
}

```

ตารางที่ 10 สัดส่วนการไปใช้บริการที่อื่นในครั้งถัดไปภายใน 1, 2 และ 4 สัปดาห์ จำแนกตามรายสถานีนอนมัย - ยาโรคติดต่อ

รหัส สอ.	รวมทั้งสิ้น (ครั้ง)	รวม	สัดส่วนที่ใช้บริการที่อื่น (%)		
			ใน 1 สัปดาห์	ใน 2 สัปดาห์	ใน 4 สัปดาห์
02384	78	5	3	4	5
02385	104	6	5	5	6
02386	118	7	4	5	5
02387	150	13	3	6	9
02388	88	5	3	5	5
02389	166	6	3	4	5
02390	428	6	4	5	6
02391	327	15	7	8	12
02392	125	9	4	6	8
02393	116	3	2	3	3
02394	226	13	9	9	10
02395	109	8	6	6	7
02396	231	13	10	10	12
02397	67	3	1	3	3
02398	118	9	3	5	8
02399	259	17	10	11	14
02400	537	22	11	13	16
02401	131	6	4	6	6
02402	31	1		1	1
02403	92	1	1	1	1
02404	84	3	3	3	3
02405	190	8	7	8	8
02406	218	9	6	8	8
02407	49	1			1
02408	177	3	3	3	3
02409	291	6	4	6	6
02410	218	15	7	9	14
02411	85	9	6	6	6
02412	197	10	6	10	10
02413	302	13	7	10	11
02414	89	5	4	4	4
02415	196	10	8	8	8

ตารางที่ 11 สัดส่วนการใช้บริการมาจากที่อื่นในครั้งก่อนภายใน 1, 2 และ 4 สัปดาห์ จำแนกตามรายสถานีนอนมัย - ยาคลายกังวลและเครียด

รหัส สอ.	รวมทั้งสิ้น (ครั้ง)	สัดส่วนที่ใช้บริการมาจากที่อื่น (%)			
		รวม	ใน 1 สัปดาห์	ใน 2 สัปดาห์	ใน 4 สัปดาห์
02388	2				
02394	14	3		1	2
02401	12				
02403	27				
02405	4				
02406	22	1			1
02408	27	1	1	1	1
02409	20				
02425	7				
03525	140	1		1	1
03526	75				
03527	30				
03530	128				
03531	64				
03532	265	1	1	1	1
03533	14				
03534	27				
03535	57				
03536	48	2	1	1	2
03537	136	2		1	2
03538	65				
03539	43				
03540	59				
03543	1				
03545	1				
03551	2				
03554	12				

2. สัดส่วนการให้บริการใบสั่งยาสำหรับโรคเรื้อรัง

ขั้นตอนที่ 1

```

clear
set memory 700m
set more off

***TYPE AND PLACE OF FACILITY
use HmainCodeNHS02010, clear
display _N
keep pcode hmain catm subtype
keep if inlist(pcode,"26","34","35","54","65","70","80","82")
display _N
rename hmain hcode
quietly destring hcode subtype, replace force
contract hcode catm subtype
drop _freq
drop if hcode==.
tempfile hcode
quietly save `hcode', replace

***VISITS FOR PRESCRIPTIONS
local changwat 20 26 27 45 55 58 66 68
foreach c of local changwat {
use drugWk`c', clear
display "drugWk`c' (Rxs) initial N=" _N
keep pid_dum hcode date code2A
quietly drop if pid_dum==0|hcode==.
display "drugWk`c' (Rxs) N=" _N

*MERGE WITH DIABETIC DRUGS (MOPH CODE 2A)
quietly merge code2A using code2A diabetes, sort uniqusing
tabulate _merge
quietly generate byte DMdrug=1 if _merge==3
quietly replace DMdrug=0 if _merge==1
drop _merge
quietly collapse (max)DMdrug, by(pid_dum hcode date)
display "drugWk`c' (visits) DM+nonDM N=" _N
label variable DMdrug "Having diabetic drug?"
label define DMdrug 1 "Yes" 0 "No"
label value DMdrug DMdrug

*MERGE WITH HCODE
quietly merge hcode using `hcode', sort uniqusing
tabulate _merge
display "drugWk`c' (visits) DM+nonDM N=" _N
tempfile x`c'
quietly save `x`c'', replace

*NUMBER OF DM AND NON-DM VISITS BY HCODE-MONTH
drop if _merge==2|DMdrug==.
drop _merge
display "drugWk`c' (visits) DM+nonDM N=" _N
quietly generate month=month(date)
quietly generate byte visitN=1
collapse (sum)visitN, by(month hcode catm subtype DMdrug)
display "drugWk`c' (hcode-month-DMdrug) DM+nonDM N=" _N
quietly replace visitN=0 if visitN==.
tempfile y`c'

```

```

quietly save `y`c'', replace
}

***ALL PROVINCES
local changwat 20
foreach c of local changwat {
use `y`c'', clear
display "drugWk`c' (hcode-month-DMdrug) DM+nonDM N=" _N
}
local changwat 26 27 45 55 58 66 68
foreach c of local changwat {
quietly append using `y`c''
display "to drugWk`c' (hcode-month-DMdrug) DM+nonDM N=" _N
}
*HCODE-MONTH LEVEL
quietly reshape wide visitN, i(hcode catm subtype month) j(DMdrug)
display "drugWk (hcode-month) N=" _N
quietly egen visitTotal=rsum(visitN0 visitN1)
rename visitN1 visitDMdrug
quietly replace visitDMdrug=0 if visitDMdrug==.&visitTotal>0&visitTotal~=.
drop visitN0
order catm subtype hcode month visitTotal visitDMdrug
sort catm subtype hcode month
save VisitTotalAntiDMbyHcodeMonth, replace
clear

```

ขั้นตอนที่ 2

```

clear
set more off
set memory 400m

*HCODE WITH AND WITHOUT ON-TOP SUPPORTS
use ontopPCU8provinces, clear
display _N
keep hmain ontop changwat
keep if inlist(changwat,"26","34","35","54","65","70","80","82")
display _N
replace ontop=0 if ontop==.
label define ontop 0 "No on-top" 1 "With on-top"
label value ontop ontop
rename hmain hcode
destring hcode, replace force
tempfile ontop
quietly save `ontop', replace

*NUMBER OF VISITS FOR ANY DRUGS AND FOR ANTI-HT PER HCODE-MONTH
use VisitTotalAntiHTbyHcodeMonth, clear
display _N
*HC AND DH
quietly keep if inlist(subtype,1004,1005)
display _N
quietly generate cwt=substr(catm,1,2)
*MONTH 1-10 OF FISCAL YEAR 2010
quietly generate mo=month-9 if inrange(month,10,12)
quietly replace mo=month+3 if inrange(month,1,7)

*ONTOP HC
merge hcode using `ontop', sort uniquing
quietly drop if _merge==2
drop _merge

```

```

display _N
*CMU
merge hcode using CMU8provinces, sort uniqusing
drop if _merge==2
rename _merge cmu
display _N

quietly generate group=0 if subtype==1004
quietly replace group=1 if group==.&subtype==1005&cmu==3
quietly replace group=2 if group==.&subtype==1005&ontop==1
quietly replace group=3 if group==.&subtype==1005&ontop==0

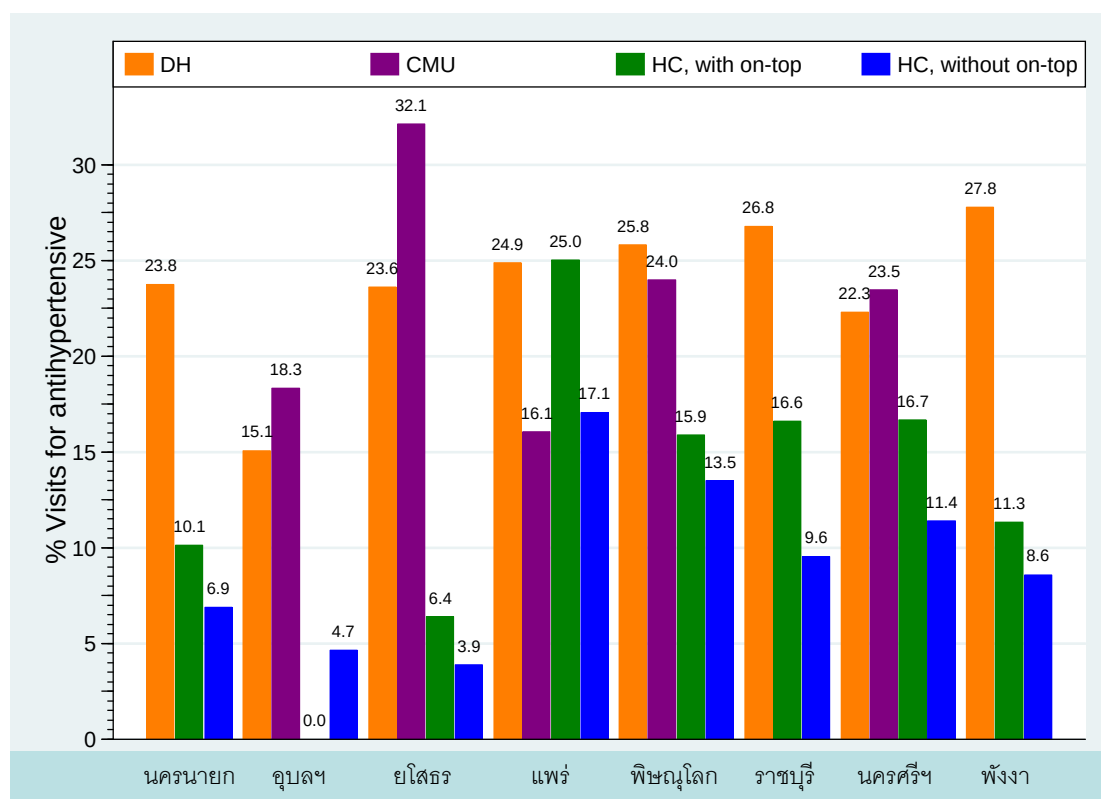
label define group 0 "DH" 1 "CMU" 2 "HC-OT" 3 "HC-noOT"
label value group group

tempfile x
quietly save `x', replace

***(1) CHANGWAT-GROUP LEVEL
use `x', clear
display _N
quietly generate antiHTpct=100*visitHTdrug/visitTotal
*(1.1) DESCRIPTIVE TABLE
table cwt group mo, content(n visitTotal sum visitTotal sum visitHTdrug)
format(%8.0fc) missing
table cwt group mo, content(mean antiHTpct) format(%4.1fc)
*(1.2) BAR
quietly generate byte hNUM=1
collapse (sum)hNUM (sum)visitTotal (sum)visitHTdrug, by(group cwt)
quietly generate antiHTpct=100*visitHTdrug/visitTotal
quietly reshape wide hNUM visitTotal visitHTdrug antiHTpct, i(cwt) j(group)

graph bar (asis) antiHTpct0 antiHTpct1 antiHTpct2 antiHTpct3 ///
, over(cwt, sort(cwt) gap(40) label(labsize(small)) axis(line)) ///
bargap(5) nofill yscale(range(0 35)) ymtick(0(0.5)30) ytick(0(2.5)30)
ylabel(0(5)30, angle(horizontal) format(%3.0f) labsize(small)) ///
bar(1, color(orange)) bar(2, color(purple)) bar(3, color(green)) bar(4,
color(blue)) ///
blabel(bar, position(outside) format(%4.1f) size(vsmall) color(gs0)) ///
legend(order(1 "DH" 2 "CMU" 3 "HC, with on-top" 4 "HC, without on-top") ///
rows(1) size(small) symxsize(4) keygap(1) symysize(small) textwidth(25)
bmargin(zero) position(12) ring(0)) ///
ytittle("% Visits for antihypertensive")
graph export barAntiHTpctOntopByCwt.wmf, replace

```



รูปที่ 1 สัดส่วนการใช้บริการสำหรับยาควบคุมโรคความดันโลหิตสูง ที่โรงพยาบาล หน่วยบริการปฐมภูมิที่ได้และไม่ได้งบ On Top รายจังหวัด

3. สัดส่วนการให้บริการใบสั่งยาครั้งถัดไป ณ. สถานพยาบาลที่อื่นสำหรับโรคเรื้อรังและโรคที่พบบ่อย

ขั้นตอนที่ 1

```
clear
set memory 700m
set more off
```

*** (1a) TYPE AND PLACE OF PROVIDER FACILITY (HCODE)

```
use HmainCodeNHS02010, clear
display _N
keep pcode hmain catm subtype
quietly keep if inlist(pcode,"26","34","35","54","65","70","80","82")
display _N
rename hmain hcode
quietly destring hcode subtype, replace force
contract hcode catm subtype
drop _freq
drop if hcode==.
display _N
quietly generate byte typehcode=1 if inlist(subtype,1005,1006,1007,1013)
quietly replace typehcode=2 if inlist(subtype,1004)
quietly replace typehcode=3 if inlist(subtype,1003,1002,1101,1204)
quietly replace typehcode=subtype if typehcode==.
label variable typehcode "Provider type"
label define typehcode 1 "HC" 2 "DH" 3 "PH/UH"
label value typehcode typehcode
drop subtype
tempfile hcode
quietly save `hcode', replace
```

*** (1b) TARGET DRUGS: CODE2A-CODE4 FOR 8 CATEGORIES

```
use DrugStdCodeCategoryWk, clear
display _N
quietly keep if inlist(categoryCode,3,7,17,23,33,37,45,49) //ALLERGY;
ANXIETY-TENSION; DIABETES, GASTRIC ACID; HT; INFECTION-LOW; MUSCLE; PAIN-
INFLAM
display _N
tempfile ctgr
quietly save `ctgr', replace
```

*** (2) VISITS FOR PRESCRIPTIONS

```
local changwat 20 26 27 45 55 58 66 68
foreach c of local changwat {
  use drugWk`c', clear
  display "drugWk`c': All drugs (Rxs, initial) N=" _N
  *(2.1) PRESCRIPTION LEVEL
  keep pid_dum hcode date code2A code4
  quietly drop if pid_dum==0|hcode==.
  display "drugWk`c': All drugs (Rxs) N=" _N
  *(2.1a) MERGE FOR TARGET 8 CATEGORIES
  quietly merge code2A code4 using `ctgr', sort uniquing
  quietly keep if _merge==3
  drop _merge code2A code4
  display "drugWk`c': 8-categories (Rxs) N=" _N
  *(2.1b) MERGE FOR TYPE OF HCODE
  quietly merge hcode using `hcode', sort uniquing
  quietly drop if _merge==2
  drop _merge
  tempfile x`c'
  quietly save `x`c'', replace
```

```

*(2.2) DAILY VISIT LEVEL FOR EACH CATEGORY
local category 3 7 17 23 33 37 45 49
foreach cat of local category {
  use `x`c'', clear
  display "drugWk`c': 8-categories (Rxs) N=" _N
  quietly keep if inlist(categoryCode, `cat')
  display "drugWk`c': Category `cat' (Rxs) N=" _N
  contract pid_dum hcode date typehcode catm
  drop _freq
  display "drugWk`c': Category `cat' (Daily visits) N=" _N

*(2.2a) SINGLE VISIT AND LAST MULTIPLE (REPEATED) VISIT PER PATIENT
sort pid_dum date
quietly bysort pid_dum: generate N=_N
quietly bysort pid_dum: generate n=_n
quietly generate byte visitS=1 if N==1
quietly generate byte visitRL=1 if N>=2&n==N

*(2.2b) REPEATED VISIT WITH NEXT TRANSFER-OUT PER PATIENT
*(2.2b1) ANY TRANSFER OUT
quietly generate byte outTotal=0 if
N>=2&pid_dum==pid_dum[_n+1]&hcode==hcode[_n+1]
quietly replace outTotal=1 if
outTotal==. & N>=2&pid_dum==pid_dum[_n+1]&hcode~=hcode[_n+1]
drop N n
*(2.2b2) BY DURATION UNTIL NEXT TRANSFER-OUT
quietly generate byte out1wk=1 if outTotal==1&date[_n+1]-date<=7
quietly replace out1wk=0 if out1wk==.
quietly generate byte out1to2wk=1 if outTotal==1&date[_n+1]-
date>=8&date[_n+1]-date<=14
quietly replace out1to2wk=0 if out1to2wk==.
quietly generate byte out2to4wk=1 if outTotal==1&date[_n+1]-
date>=15&date[_n+1]-date<=28
quietly replace out2to4wk=0 if out2to4wk==.
quietly generate byte outbeyond4wk=1 if outTotal==1&date[_n+1]-date>=29
quietly replace outbeyond4wk=0 if outbeyond4wk==.
*(2.2b3) BY LEVEL OF HCODE
quietly generate byte outLevel=1 if
outTotal==1&typehcode==typehcode[_n+1]&inrange(typehcode,1,3)&inrange(typehco
de[_n+1],1,3)
quietly replace outLevel=0 if
outLevel==.&inrange(typehcode,1,3)&inrange(typehcode[_n+1],1,3)
quietly generate byte outLower=1 if
outTotal==1&typehcode>typehcode[_n+1]&inrange(typehcode,1,3)&inrange(typehcod
e[_n+1],1,3)
quietly replace outLower=0 if
outLower==.&inrange(typehcode,1,3)&inrange(typehcode[_n+1],1,3)
quietly generate byte outHigher=1 if
outTotal==1&typehcode<typehcode[_n+1]&inrange(typehcode,1,3)&inrange(typehcod
e[_n+1],1,3)
quietly replace outHigher=0 if
outHigher==.&inrange(typehcode,1,3)&inrange(typehcode[_n+1],1,3)

*(2.3) MONTHLY VISITS AND TRANSFERS
quietly generate month=month(date)
quietly generate year=year(date)
quietly generate byte mo=1 if year==2009&month==10
quietly replace mo=2 if year==2009&month==11
quietly replace mo=3 if year==2009&month==12
quietly replace mo=4 if year==2010&month==1
quietly replace mo=5 if year==2010&month==2
quietly replace mo=6 if year==2010&month==3

```



```

quietly replace mo=7 if year==2010&month==4
quietly replace mo=8 if year==2010&month==5
quietly replace mo=9 if year==2010&month==6
quietly replace mo=10 if year==2010&month==7
quietly replace mo=11 if year==2010&month==8
quietly replace mo=12 if year==2010&month==9
*(2.3a) NUMBER OF VISITS
quietly generate byte visitN=1
collapse (sum)visitN (sum)visitS (sum)visitRL (sum)outTotal (sum)out1wk
(sum)out1to2wk (sum)out2to4wk (sum)outbeyond4wk (sum)outLevel (sum)outLower
(sum)outHigher, by(typehcode hcode catm mo)
display "drugWk`c`: Category `cat' (Monthly visits) N=" _N
quietly for varlist visitN visitS visitRL: replace X=0 if X==.
quietly generate visitRP=visitN-visitS-visitRL
tempfile x`c``cat'
quietly save `x`c``cat'', replace
}
}

local category 3 7 17 23 33 37 45 49
foreach cat of local category {
*(2.3b) ALL PROVINCES TOGETHER
local changwat 20
foreach c of local changwat {
use `x`c``cat'', clear
display "`cat': `c' N=" _N
}
local changwat 26 27 45 55 58 66 68
foreach c of local changwat {
quietly append using `x`c``cat''
display "`cat': to `c' N=" _N
}
display "`cat': (all 8 provinces) N=" _N
label variable visitN "# Total visits for target category `cat'"
label variable visitS "# Single visits for target category `cat'"
label variable visitRL "# Last repeated visits for category `cat'"
label variable visitRP "# Potential repeated visits for target category
`cat'"
label variable outTotal "# Visits for category `cat': Next visit to any other
hcode"
label variable out1wk "# Visits for category `cat': Next visit to other hcode
within 7 days"
label variable out1to2wk "# Visits for category `cat': Next visit to other
hcode between 8-14 days"
label variable out2to4wk "# Visits for category `cat': Next visit to other
hcode between 15-28 days"
label variable outbeyond4wk "# Visits for category `cat': Next visit to other
hcode after 28 days"
label variable outLevel "# Visits for category `cat': Next visit to same
level, other hcode"
label variable outLower "# Visits for category `cat': Next visit to lower
level hcode"
label variable outHigher "# Visits for category `cat': Next visit to higher
level hcode"

order typehcode hcode catm mo visitN visitS visitRL visitRP outTotal out1wk
out1to2wk out2to4wk outbeyond4wk outLevel outLower outHigher
save visitTransferByHcodeMonthCategory`cat', replace
}

```

ขั้นตอนที่ 2

```

clear
set more off
set memory 400m

use ontopPCU8provinces, clear
display _N
keep hmain ontop changwat
keep if inlist(changwat,"26","34","35","54","65","70","80","82")
display _N
replace ontop=0 if ontop==.
label define ontop 0 "No" 1 "OnTop"
label value ontop ontop
rename hmain hcode
destring hcode, replace force
tempfile ontop
quietly save `ontop', replace

local category 3 7 17 23 33 37 45 49
foreach cat of local category {
use visitTransferByHcodeMonthCategory`cat', clear
quietly generate category=`cat'
display "Category `cat' N=" _N
tempfile x`cat'
quietly save `x`cat'', replace
}
local category 3
foreach cat of local category {
use `x`cat'', clear
display "Category `cat' N=" _N
}
local category 7 17 23 33 37 45 49
foreach cat of local category {
quietly append using `x`cat''
display "to Category `cat' N=" _N
}
label define category 3 "Antiallergic" 7 "Antianxiety" 17 "Antidiabetic" 23
"Antiulcerant" 33 "Antihypertensive" 37 "Anti-infective" 45 "M.relaxant" 49
"NSAID"
label value category category

*TYPE OF HCODE=HEALTH CENTER
quietly keep if inlist(typehcode,1)
display _N

*DROPPING IF POTENTIAL REPEATED VISITS <=5 PER MONTH
*quietly drop if visitRP<=5
*display _N
tempfile hc
quietly save `hc', replace

*HCODE WITH >= 8 MONTHS OF DATA
contract category hcode mo
drop _freq
display _N
quietly bysort category hcode: generate N=_N
quietly keep if N>=8
contract category hcode
drop _freq
display _N
quietly merge category hcode using `hc', sort uniqmaster
quietly keep if _merge==3

```

```

drop _merge
display _N

merge hcode using `ontop', sort uniquising
quietly drop if _merge==2
drop _merge

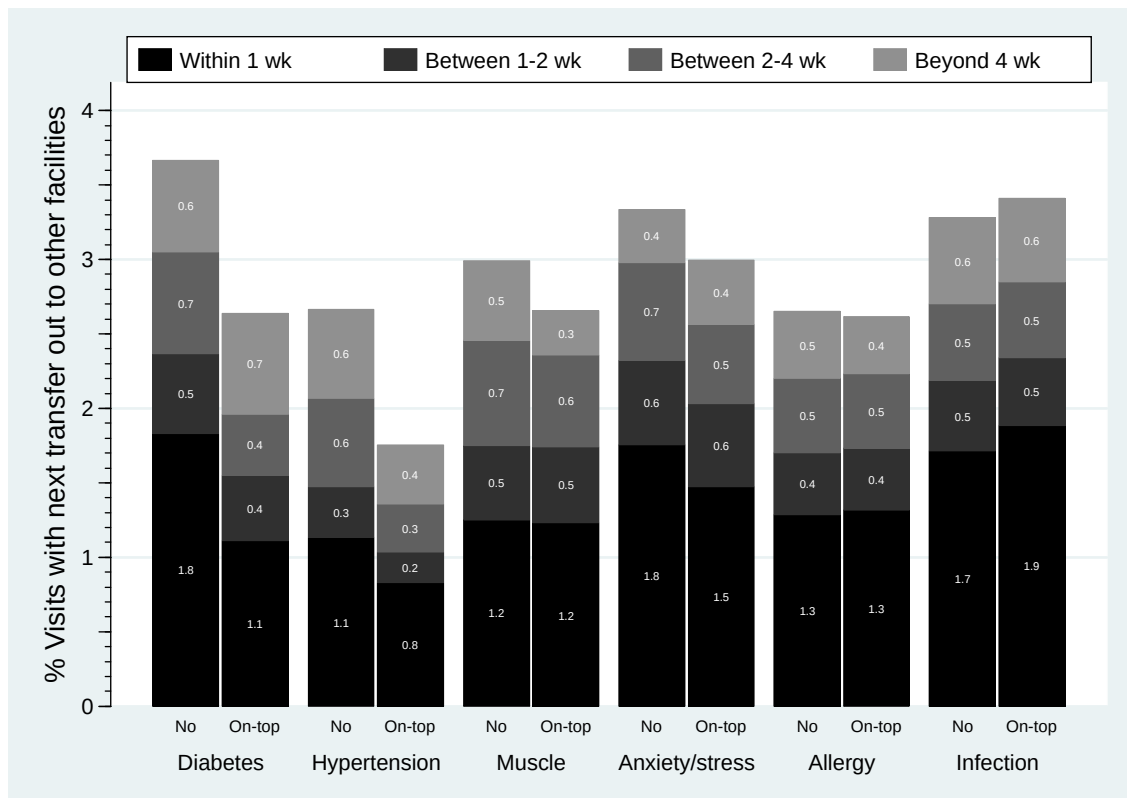
***(1) MONTHLY VISITS PER HCODE
*PERCENTAGE OF TRANSFER OUT
quietly for varlist outTotal out1wk out1to2wk out2to4wk outbeyond4wk:
generate XPct=100*X/visitRP
quietly for varlist outLevel outLower outHigher: generate X_pct=100*X/visitRP
quietly generate outLevelDK_pct=outTotalPct-outLevel_pct-outHigher_pct-
outLower_pct
quietly generate cwt=substr(catm,1,2)
table cwt ontop, by(category) content(n visitRP p50 visitRP) missing
table cwt ontop [aweight=visitRP], by(category) content(mean outTotalPct)
format(%4.1f) missing
table cwt ontop [aweight=visitRP], by(category) content(mean out1wk mean
out1to2wk mean out2to4wk mean outbeyond4wk) format(%4.1f) missing
table cwt ontop [aweight=visitRP], by(category) content(mean outLevel_pct
mean outHigher_pct mean outLevelDK_pct) format(%4.1f) missing

tempfile x
quietly save `x', replace

***(2) ALL CHANGWAT-MONTHS PER CATEGORY BY ONTOP
use `x', clear
display _N
* TOTAL NUMBER OF REPEATED VISITS
quietly egen vNUM=sum(visitRP), by(category ontop)
tempfile y
quietly save `y', replace

*DURATION UNTIL TRANSFER OUT BY OP-TOP
use `y', clear
display _N
collapse (mean)outTotalPct (mean)out1wkPct (mean)out1to2wkPct
(mean)out2to4wkPct (mean)outbeyond4wkPct [aweight=visitRP], by(vNUM category
ontop)
display _N
graph bar (asis) out1wkPct out1to2wkPct out2to4wkPct outbeyond4wkPct ///
, stack over(ontop, sort(ontop) gap(5) label(labsize(tiny)) axis(noline)) ///
over(category, sort(category) gap(30) label(labsize(vsmall)) axis(noline))
///
bargap(30) nofill ymtick(0(0.5)20) ytick(0(2.5)20) ylabel(0(5)20,
angle(horizontal) format(%3.0f) labsize(small)) ///
bar(1, color(pink)) bar(2, color(blue)) bar(3, color(lime)) bar(4,
color(gs6)) ///
blabel(bar, position(center) format(%4.1f) size(vsmall) color(gs0)) ///
legend(order(1 "Within 1 wk" 2 "Between 1-2 wk" 3 "Between 2-4 wk" 4 "Beyond
4 wk")) ///
rows(1) size(small) symxsize(4) keygap(1) symysize(small) textwidth(20)
bmargin(zero) position(12) ring(1)) ///
ytittle("% HC visits with next transfer to other facilities")
graph export barOutHC_8categoriesDuration.wmf, replace

```



รูปที่ 2 สัดส่วนการใช้บริการ สำหรับยาควบคุมโรคเบาหวาน ความดันโลหิตสูง ยาคลายกล้ามเนื้อ ยาลดความกังวลความเครียด ยารักษาภูมิแพ้ และยารักษาโรคติดเชื้อ ณ สถานพยาบาลแห่งอื่น ในครั้งถัดไป เปรียบเทียบระหว่าง PCU ที่ได้ และไม่ได้อบรม On Top ใน 8 จังหวัด

4. สกัดส่วนผู้ป่วยโรคเบาหวานที่ได้รับยา ACEI-ARB

ขั้นตอนที่ 1

```

clear
set memory 700m
set more off

***TYPE AND PLACE OF FACILITY
use HmainCodeNHS02010, clear
display _N
keep pcode hmain catm subtype
keep if inlist(pcode,"26","34","35","54","65","70","80","82")
display _N
rename hmain hcode
quietly destring hcode subtype, replace force
contract hcode catm subtype
drop _freq
drop if hcode==.
display _N
quietly generate byte typehcode=1 if inlist(subtype,1005,1006,1007,1013)
quietly replace typehcode=2 if inlist(subtype,1004)
quietly replace typehcode=3 if inlist(subtype,1003,1002,1101,1204)
quietly replace typehcode=subtype if typehcode==.
label variable typehcode "Provider type"
label define typehcode 1 "HC" 2 "DH" 3 "PH/UH"
label value typehcode typehcode
drop subtype
tempfile hcode
quietly save `hcode', replace

***(1) ALL DRUGS
local changwat 20 26 27 45 55 58 66 68
foreach c of local changwat {
use drugWk`c', clear
display "drugWk`c' (all drugs) initial Rxs N=" _N
keep pid_dum hcode date code2A
quietly drop if pid_dum==0|hcode==.
display "drugWk`c' (all drugs) Rxs N=" _N
*(1a) TARGET DRUGS
*(1a1) DIABETIC DRUGS
quietly merge code2A using code2A_diabetes, sort uniquing
tabulate _merge
quietly drop if _merge==2
quietly generate byte drug=1 if _merge==3
drop _merge
display "drugWk`c' (all drugs) Rxs N=" _N
*(1a2) ACEI-ARB
quietly merge code2A using code2A_acei_arb, sort uniquing
tabulate _merge
quietly drop if _merge==2
quietly replace drug=2 if _merge==3
drop _merge ATC* *drugname* code2A
display "drugWk`c' (all drugs) Rxs N=" _N

***DIABETICS AND/OR ACEI-ARB
quietly egen drugMIN=min(drug), by(pid_dum)

*PATIENTS WITH DIABETICS AND/OR ACEI-ARB
quietly keep if drugMIN==1

```

```

quietly drop if drug~=1&drug~=2
contract _all
drop _freq drugMIN
display "drugWk`c' (with diabetics and/or ACEI-ARB) Rxs N=" _N

***FIRST DATE OF DRUGS
*PER PATIENT
quietly egen dateF=min(date), by(pid_dum drug)
quietly generate dateFdm=dateF if date==dateF&drug==1
quietly generate dateFaceiarb=dateF if date==dateF&drug==2
quietly egen dateDMfirst=min(dateFdm), by(pid_dum)
quietly egen dateACEI_ARBfirst=min(dateFaceiarb), by(pid_dum)
*PER HCODE
quietly egen dateFh=min(date), by(pid_dum drug hcode)
quietly generate dateFdmH=dateFh if date==dateFh&drug==1
quietly generate dateFaceiarbH=dateFh if date==dateFh&drug==2
quietly egen dateDMfirstH=min(dateFdmH), by(pid_dum hcode)
quietly egen dateACEI_ARBfirstH=min(dateFaceiarbH), by(pid_dum hcode)

*PER PATIENT-HCODE LEVEL
contract pid_dum hcode dateDM* dateACEI_ARB*
drop _freq
display _N

*PATIENT-HCODE WITH DIABETICS BY ACEI-ARB
quietly generate byte ACEI_ARB=4 if
dateACEI_ARBfirstH~=. & dateACEI_ARBfirstH<=dateDMfirst
quietly replace ACEI_ARB=3 if
ACEI_ARB==. & dateACEI_ARBfirstH~=. & dateACEI_ARBfirstH>dateDMfirst & dateACEI_ARB
firstH<=dateDMfirstH
quietly replace ACEI_ARB=2 if
ACEI_ARB==. & dateACEI_ARBfirstH~=. & dateACEI_ARBfirstH>dateDMfirstH
quietly replace ACEI_ARB=1 if
ACEI_ARB==. & dateACEI_ARBfirstH==. & dateACEI_ARBfirst~=.
quietly replace ACEI_ARB=0 if
ACEI_ARB==. & dateACEI_ARBfirstH==. & dateACEI_ARBfirst==.
label variable ACEI_ARB "ACEI-ARB use type?"
label define ACEI_ARB 0 "Never ACEI-ARB" 1 "ACEI-ARB at other facility" 2
"ACEI-ARB after this facility antiDM" 3 "ACEI-ARB with this facility antiDM"
4 "ACEI-ARB since first antiDM"
label value ACEI_ARB ACEI_ARB
quietly for varlist dateDMfirst dateDMfirstH dateACEI_ARBfirst
dateACEI_ARBfirstH: format X %td
label variable dateDMfirst "First date of diabetic drugs per patient"
label variable dateDMfirstH "First date of diabetic drugs per patient-hcode"
label variable dateACEI_ARBfirst "First date of ACEI-ARB per patient"
label variable dateACEI_ARBfirstH "First date of ACEI-ARB per patient-hcode"

order pid_dum hcode ACEI_ARB *first *firstH

*HCODE LEVEL
quietly generate byte patientN=1
collapse (sum)patientN, by(ACEI_ARB hcode)
display _N
quietly reshape wide patientN, i(hcode) j(ACEI_ARB)
display _N
tempfile x`c'
quietly save `x`c'', replace
}

local changwat 20
foreach c of local changwat {
use `x`c'', clear

```

```

display "`c' N=" _N
}
local changwat 26 27 45 55 58 66 68
foreach c of local changwat {
quietly append using `x`c'
display "to `c' N=" _N
}
display _N

quietly for varlist patientN0 patientN1 patientN2 patientN3 patientN4:
replace X=0 if X==.
quietly egen patientTotal=rsum(patientN0 patientN1 patientN2 patientN3
patientN4)
label variable patientTotal "Total patients for antidiabetics"
label variable patientN0 "Patients with never ACEI_ARB received"
label variable patientN1 "Patients with ACEI_ARB at other facility"
label variable patientN2 "Patients with ACEI_ARB received after antidiabetics
in this facility"
label variable patientN3 "Patients with ACEI_ARB received no later than
antidiabetics in this facility"
label variable patientN4 "Patients with ACEI_ARB received since the very
beginning"

merge hcode using `hcode', sort uniquising
quietly drop if _merge==2
drop _merge
order typehcode hcode catm patientTotal

save patientDiabetic_ACEI_ARBbyHcodeMonth, replace
clear

ขั้นตอนที่ 2
clear
set more off
set memory 400m

local ds Diabetic_ACEI_ARB

use ontopPCU8provinces, clear
display _N
keep hmain ontop changwat
keep if inlist(changwat,"26","34","35","54","65","70","80","82")
display _N
replace ontop=0 if ontop==.
label define ontop 0 "No" 1 "OnTop"
label value ontop ontop
rename hmain hcode
destring hcode, replace force
tempfile ontop
quietly save `ontop', replace

use patient`ds'byHcodeMonth, clear
display _N

*TYPE OF HCODE=HEALTH CENTER
quietly keep if inlist(typehcode,1)
display _N

merge hcode using `ontop', sort uniquising
tabulate _merge
quietly drop if _merge==2
drop _merge

```

```
quietly generate cwt=substr(catm,1,2)
table cwt ontop, content(n patientTotal p25 patientTotal p50 patientTotal p75
patientTotal) missing
```

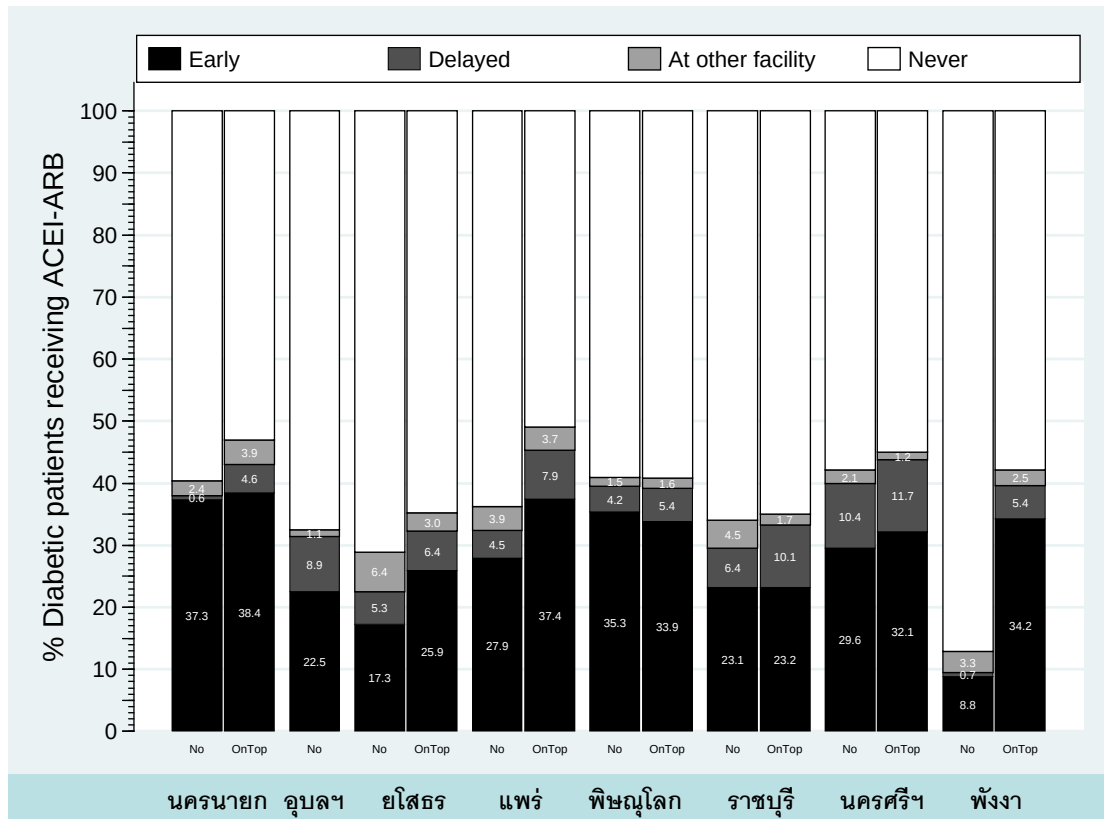
```
*DROP IF PATIENT-HCODE <=5
quietly drop if patientTotal<=5
display _N
```

```
*COMBINED CATEGORIES: SINCE THE BEGINNING PLUS IMMEDIATE WITH THIS FACILITY
ANTIDIABETICS
quietly egen patientN3N4=rsum(patientN3 patientN4)
```

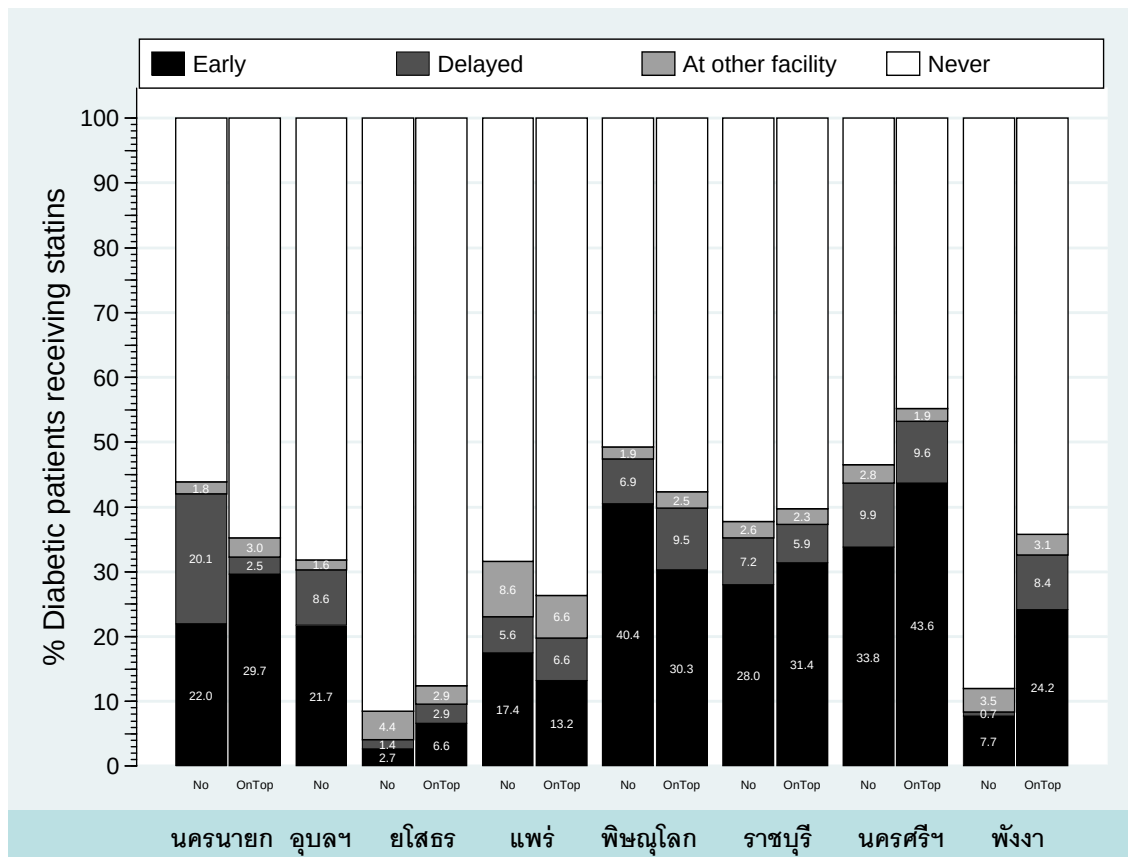
```
*PERCENTAGE OF ACEI-ARB TYPES FOR EACH HCODE
quietly for varlist patientN0 patientN1 patientN2 patientN3N4: generate
XPct=100*X/patientTotal
quietly generate hNUM=1
table cwt ontop [aweight=patientTotal], content(mean patientN0Pct mean
patientN1Pct mean patientN2Pct mean patientN3N4Pct) format(%4.1f) missing
```

```
display _N
tempfile x
quietly save `x', replace
```

```
*BY OP-TOP FOR EACH PROVINCE
use `x', clear
display _N
collapse (mean)patientN0Pct (mean)patientN1Pct (mean)patientN2Pct
(mean)patientN3N4Pct [aweight=patientTotal], by(ontop cwt)
display _N
graph bar (asis) patientN3N4Pct patientN2Pct patientN1Pct patientN0Pct ///
, stack over(ontop, sort(ontop) gap(5) label(labsize(tiny)) axis(noline)) ///
over(cwt, sort(cwt) gap(30) label(labsize(vsmall)) axis(noline)) ///
bargap(30) nofill ymtick(0(1)100) ytick(0(5)100) ylabel(0(10)100,
angle(horizontal) format(%3.0f) labsize(small)) ///
bar(1, color(gs0) lcolor(0) lwidth(vvthin)) bar(2, fcolor(gs5) lcolor(2)
lwidth(vvthin)) bar(3, fcolor(gs10) lcolor(4) lwidth(vthin)) bar(4,
fcolor(gs16) lcolor(6) lwidth(vthin)) ///
blabel(bar, position(center) format(%4.1f) size(tiny) color(gs16)) ///
legend(order(1 "Early" 2 "Delayed" 3 "At other facility" 4 "Never") ///
rows(1) size(small) symxsize(4) keygap(1) symysize(small) textwidth(20)
bmargin(zero) position(12) ring(1)) ///
ytile("% Diabetic patients receiving ACEI-ARB")
graph export BarHC_patient`ds'_Oct2009toJul2010.wmf, replace
```

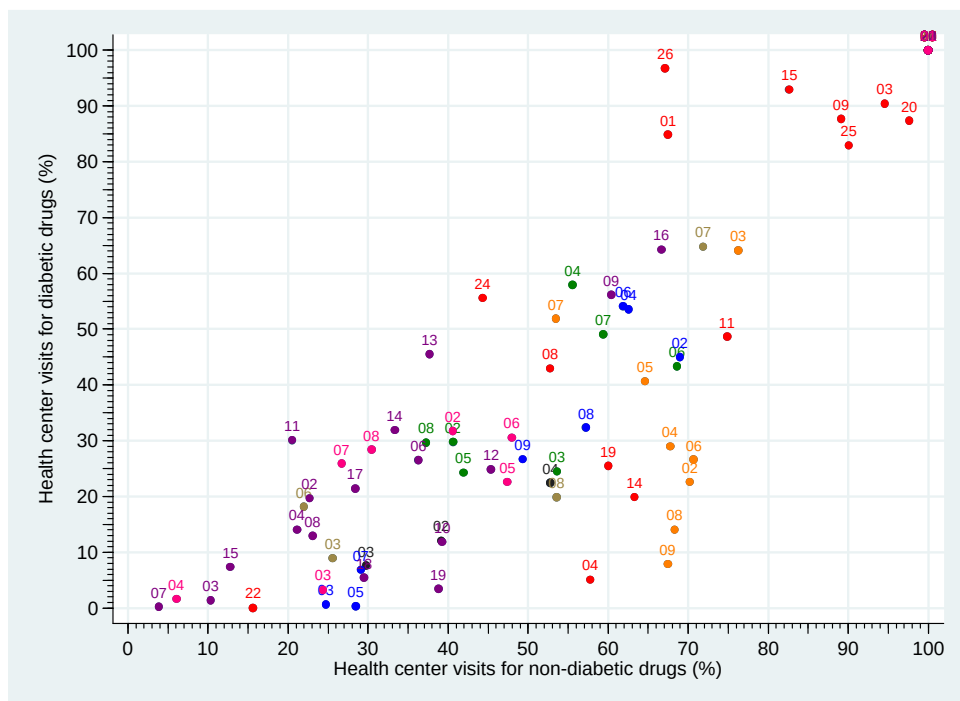
รูปที่ 3 สัดส่วนการได้รับ ACEI-ARB ในผู้ป่วยโรคเบาหวานที่รับบริการที่ PCU



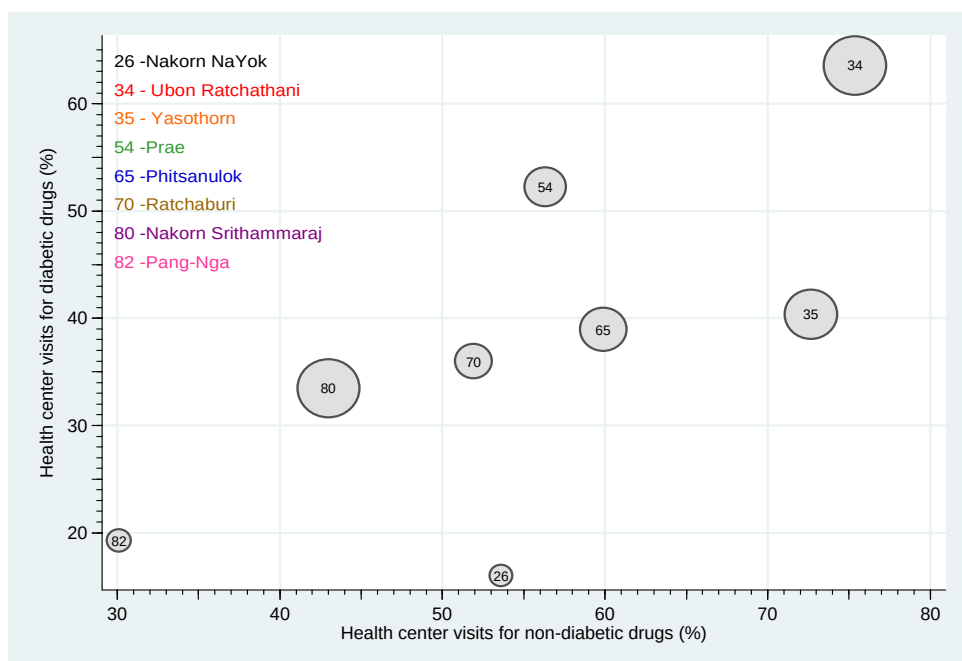
รูปที่ 4 สัดส่วนการได้รับ Statin ในผู้ป่วยโรคเบาหวานที่รับบริการที่ PCU

5. สัดส่วนการใช้บริการยาโรคเบาหวานและโรคอื่นที่สถานีนามัย รายอำเภอและรายจังหวัด

ขั้นตอนที่ 1



ภาพที่ 5ก. จำนวนครั้งการใช้บริการยาโรคเบาหวานและโรคอื่นที่สถานีนามัยคิดเป็นสัดส่วนต่อจำนวนใบสั่งยาทั้งหมด จำแนกตามรหัสอำเภอของแต่ละจังหวัด



ภาพที่ 5ข. จำนวนครั้งการใช้บริการยาโรคเบาหวานและโรคอื่นที่สถานีนามัยคิดเป็นสัดส่วนต่อจำนวนใบสั่งยาทั้งหมด จำแนกตามรหัสจังหวัด

6. สัดส่วนการใช้จ่ายข้ออักเสบ-ข้อเสื่อม และยาคลายกล้ามเนื้อ ตามระดับสถานพยาบาล เปรียบเทียบระหว่างกลุ่มที่ไม่มีและมีคะแนนโครงการแพทย์แผนไทย

ขั้นตอนที่ 1

```
clear
set memory 700m
set more off

***TYPE AND PLACE OF FACILITY
use HmainCodeNHS02010, clear
display _N
keep pcode hmain catm subtype
keep if inlist(pcode,"26","34","35","54","65","70","80","82")
display _N
rename hmain hcode
quietly destring hcode subtype, replace force
contract hcode catm subtype
drop _freq
drop if hcode==.
display _N
quietly generate byte typehcode=1 if inlist(subtype,1005,1006,1007,1013)
quietly replace typehcode=2 if inlist(subtype,1004)
quietly replace typehcode=3 if inlist(subtype,1003,1002,1101,1204)
quietly replace typehcode=subtype if typehcode==.
label variable typehcode "Provider type"
label define typehcode 1 "HC" 2 "DH" 3 "PH/UH"
label value typehcode typehcode
drop subtype
tempfile hcode
quietly save `hcode', replace

***TARGET DRUGS
local drug nsaid mr sysadoa
foreach d of local drug {
    use code2A_`d', clear
    keep code2A
    tempfile d`d'
    quietly save `d`d'', replace
}

**(1) ALL DRUGS
local changwat 20 26 27 45 55 58 66 68
foreach c of local changwat {
    use drugWk`c', clear
    display "drugWk`c' (all drugs) initial Rxs N=" _N
    keep pid_dum hcode date code2A
    quietly drop if pid_dum==0|hcode==.
    display "drugWk`c' (all drugs) Rxs N=" _N
    *(1a) TARGET DRUGS
    local drug nsaid mr sysadoa
    foreach d of local drug {
        quietly merge code2A using `d`d'', sort uniquing
        quietly drop if _merge==2
        quietly generate byte `d'=( _merge==3)
        drop _merge
    }
    display "drugWk`c' (target drugs) N=" _N
}
```

```

***(2) DAILY VISITS FOR TARGET DRUGS
contract pid_dum hcode date nsaid mr sysadoa
drop _freq
display "Site `c' (target drugs) daily visits N=" _N

***(3) MONTHLY VISITS
quietly generate month=month(date)
quietly generate year=year(date)
quietly generate byte mo=1 if year==2009&month==10
quietly replace mo=2 if year==2009&month==11
quietly replace mo=3 if year==2009&month==12
quietly replace mo=4 if year==2010&month==1
quietly replace mo=5 if year==2010&month==2
quietly replace mo=6 if year==2010&month==3
quietly replace mo=7 if year==2010&month==4
quietly replace mo=8 if year==2010&month==5
quietly replace mo=9 if year==2010&month==6
quietly replace mo=10 if year==2010&month==7
quietly replace mo=11 if year==2010&month==8
quietly replace mo=12 if year==2010&month==9
drop year month

***TYPE OF DRUG USE
quietly generate byte drug=0 if nsaid==0&mr==0&sysadoa==0
quietly replace drug=4 if
drug==.&((nsaid==1&(mr==1|sysadoa==1))|(mr==1&(nsaid==1|sysadoa==1))|(sysadoa
==1&(nsaid==1|mr==1)))
quietly replace drug=1 if drug==.&nsaid==1
quietly replace drug=2 if drug==.&mr==1
quietly replace drug=3 if drug==.&sysadoa==1
drop nsaid mr sysadoa

*TYPE AND LOCATION OF HCODE
quietly merge hcode using `hcode', sort uniqusing
quietly drop if _merge==2
drop _merge
display "Site `c' (target drugs with type-location of hcode) daily visits N="
_N

quietly generate byte visitN=1
collapse (sum)visitN, by(typehcode hcode catm mo drug)
display "Site `c' (target drugs with type-location of hcode) monthly visits
N=" _N
tempfile x`c'
quietly save `x`c'', replace
}

local changwat 20
foreach c of local changwat {
use `x`c'', clear
display "`c' N=" _N
}
local changwat 26 27 45 55 58 66 68
foreach c of local changwat {
quietly append using `x`c''
display "to `c' N=" _N
}
display _N

quietly reshape wide visitN, i(typehcode hcode catm mo) j(drug)
quietly for varlist visitN0 visitN1 visitN2 visitN3 visitN4: replace X=0 if
X==.
quietly egen visitTotal=rsum(visitN0 visitN1 visitN2 visitN3 visitN4)

```

```

label variable visitTotal "# Total visits for any drugs"
label variable visitN0 "# Total visits for other drugs"
label variable visitN1 "# Total visits for NSAID only"
label variable visitN2 "# Total visits for MR only"
label variable visitN3 "# Total visits for SYSADOA only"
label variable visitN4 "# Total visits for NSAID-MR-SYSADOA"

order typehcode hcode catm mo visitTotal visitN0 visitN1 visitN2 visitN3
visitN4
save visitNSAID_MR_SYSADOAbyHcodeMonth, replace

```

ขั้นตอนที่ 2

```

clear
set more off
set memory 400m

use visitNSAID_MR_SYSADOAbyHcodeMonth, clear
display _N
*KEEP ONLY HC, DH, AND GH-RH
quietly keep if inrange(typehcode,1,3)
display _N
*DROP IF TARGET DRUGS < 10 VISITS PER MONTH
quietly drop if visitTotal-visitN0<10
display _N
tempfile x
quietly save `x', replace

*HCODE WITH >= 8 MONTHS OF DATA
contract hcode mo
drop _freq
display _N
quietly bysort hcode: generate N=_N
quietly keep if N>=8
contract hcode
drop _freq
display _N
quietly merge hcode using `x', sort uniqmaster
keep if _merge==3
drop _merge
display _N

merge hcode using pointTraditionalMed8provinces, sort uniqusing
drop if _merge==2
drop _merge
quietly generate point=.
tempfile xx
quietly save `xx', replace

****VARIOUS THRESHOLD
local pointT 60 200 900 2500
foreach pt of local pointT{
use `xx', replace
*HCODE WITH NO POINTS
quietly replace point=1 if pointTraditionalMed>`pt'&pointTraditionalMed~=.
quietly replace point=0 if pointTraditionalMed<=`pt'
label define point 0 "No point" 1 "With point"
label value point point

*PERCENT OF TARGET DRUGS PER MONTH
forvalue i=0/4 {
quietly generate Rx`i'pct=100*visitN`i'/visitTotal

```

```
quietly format Rx`i'pct %4.1f
}
tempfile y
quietly save `y', replace
```

6.1 ภาพรวม

```
***(1) ALL MONTHS
```

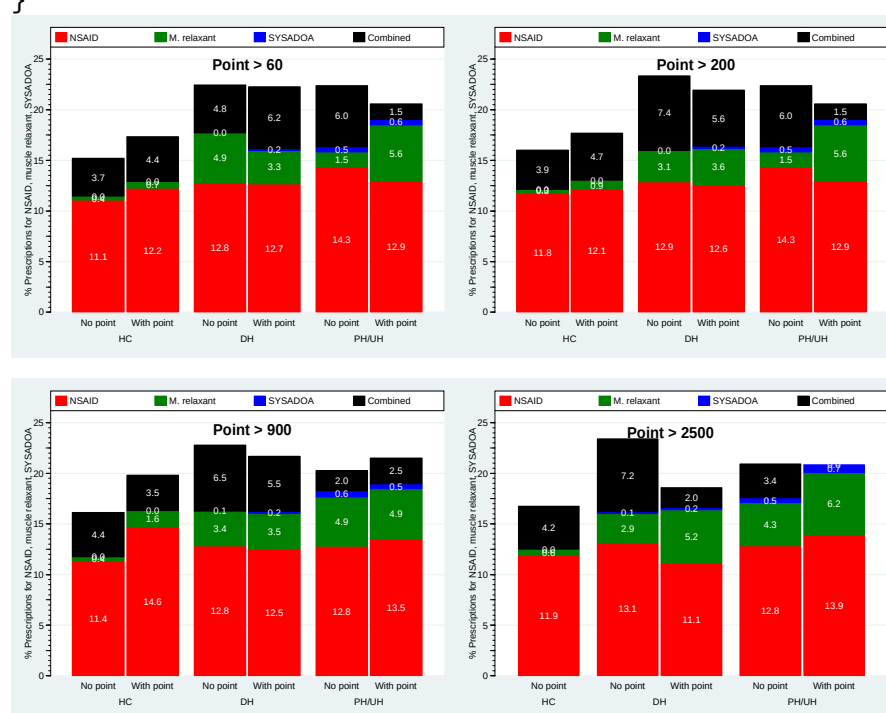
```
use `y', clear
```

```
display _N
```

```
collapse (mean)Rx0pct (mean)Rx1pct (mean)Rx2pct (mean)Rx3pct (mean)Rx4pct
[aweight=visitTotal], by(typehcode point)
```

```
display _N
```

```
graph bar (asis) Rx1pct Rx2pct Rx3pct Rx4pct ///
, stack over(point, sort(point) gap(5) label(labsize(small)) axis(noline))
///
over(typehcode, sort(typehcode) gap(30) label(labsize(small)) axis(noline))
///
bargap(30) nofill ymtick(0(0.5)25) ytick(0(2.5)25) ylabel(0(5)25,
angle(horizontal) format(%3.0f) labsize(small)) ///
bar(1, color(red)) bar(2, color(green)) bar(3, color(blue)) bar(4,
color(gs0)) ///
blabel(bar, position(center) format(%4.1f) size(small) color(gs16)) ///
legend(order(1 "NSAID" 2 "M. relaxant" 3 "SYSADOA" 4 "Combined") ///
rows(1) size(small) symxsize(4) keygap(1) symysize(small) textwidth(25)
bmargin(zero) position(12) ring(1)) ///
ytile("% Visits for NSAID, muscle relaxant, SYSADOA", size(small))
graph export BarRxNSAID_MR_SYSADOAby`pt'Point.wmf, replace
}
```



รูปที่ 6 อัตราการใช้ยาแผนปัจจุบันที่รักษาอาการปวดเมื่อยกล้ามเนื้อ ในสถานบริการที่ให้บริการแพทย์แผนไทย

6.2 แผนภูมิอนุกรมเวลา รายเดือน

```

***(2) MONTHLY
use `y', clear
display _N
table mo point typehcode, content(n visitTotal p50 visitTotal) format(%9.0fc)
missing
table mo point typehcode [aweight=visitTotal], content(mean Rx0pct mean
Rx1pct mean Rx2pct mean Rx3pct mean Rx4pct) format(%4.1f) missing
quietly generate byte h=1
quietly egen hNUM=sum(h), by(typehcode point mo)
collapse (mean)Rx0pct (mean)Rx1pct (mean)Rx2pct (mean)Rx3pct (mean)Rx4pct
[aweight=visitTotal], by(hNUM typehcode point mo)
display _N
sort mo
tempfile z
quietly save `z', replace

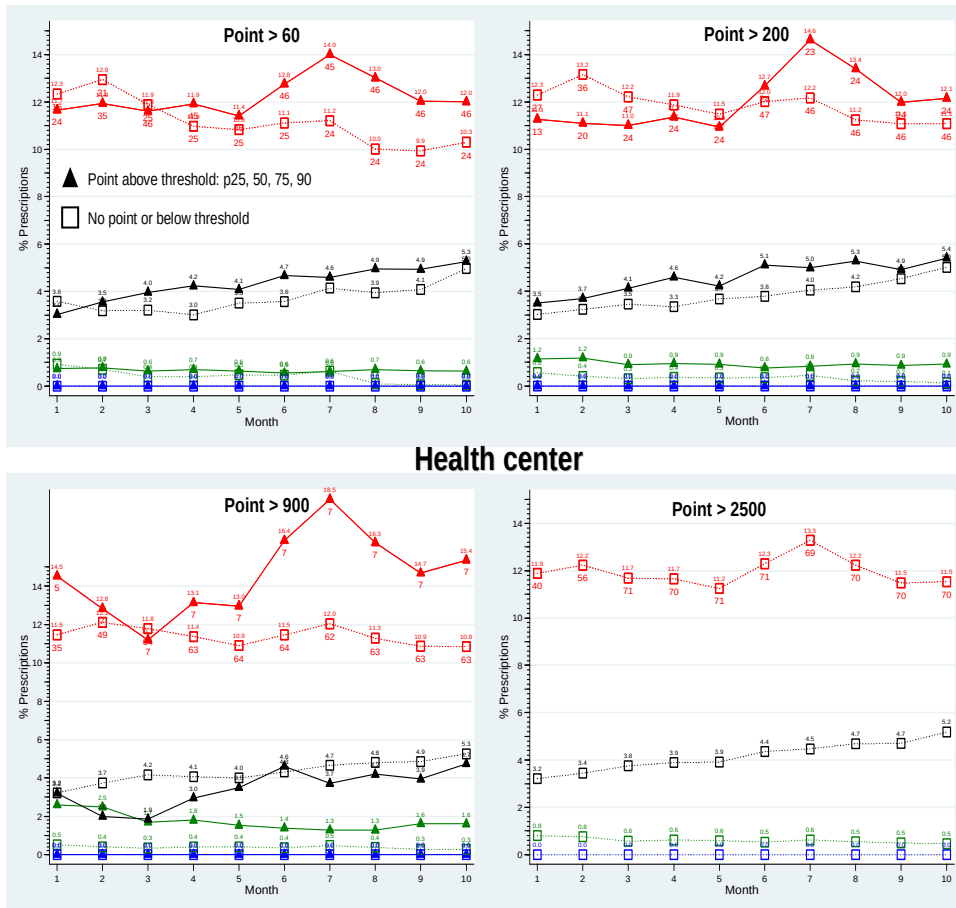
* BY HOSPITAL LEVEL
forvalue i=1/3 {
use `z', clear
display _N
keep if typehcode==`i'
display _N
scatter Rx1pct mo ///
, legend(off) msymbol(i) ///
xscale(range(1 10)) xlabel(1(1)10, labsize(vsmall) format(%3.0f))
xtitle("Month", size(small)) ///
yscale(range(0 15)) ymtick(0(0.2)15) ytick(0(1)15) ylabel(0(2)14,
labsize(vsmall) angle(horizontal) format(%3.0f)) ytitle("% Visits",
size(small)) ///
|| scatter Rx1pct mo if point==1 ///
, connect(line) lpattern(solid) lwidth(medthin) lcolor(red) ///
legend(off) msymbol(T) msize(*1.2) mcolor(red) ///
mlabel(hNUM) mlabpos(6) mlabsize(vsmall) mlabcolor(red) ///
|| scatter Rx1pct mo if point==1 ///
, connect(line) lpattern(solid) lwidth(medthin) lcolor(red) ///
legend(off) msymbol(T) msize(*1.2) mcolor(red) ///
mlabel(Rx1pct) mlabpos(12) mlabsize(tiny) mlabcolor(red) ///
|| scatter Rx2pct mo if point==1 ///
, connect(line) lpattern(solid) lwidth(medthin) lcolor(green) ///
legend(off) msymbol(T) msize(*1.2) mcolor(green) ///
mlabel(Rx2pct) mlabpos(12) mlabsize(tiny) mlabcolor(green) ///
|| scatter Rx3pct mo if point==1 ///
, connect(line) lpattern(solid) lwidth(medthin) lcolor(blue) ///
legend(off) msymbol(T) msize(*1.2) mcolor(blue) ///
mlabel(Rx3pct) mlabpos(12) mlabsize(tiny) mlabcolor(blue) ///
|| scatter Rx4pct mo if point==1 ///
, connect(line) lpattern(solid) lwidth(medthin) lcolor(gs0) ///
legend(off) msymbol(T) msize(*1.2) mcolor(gs0) ///
mlabel(Rx4pct) mlabpos(12) mlabsize(tiny) mlabcolor(gs0) ///
|| scatter Rx1pct mo if point==0 ///
, connect(line) lpattern(dot) lwidth(medthin) lcolor(red) ///
legend(off) msymbol(Sh) msize(*1.4) mcolor(red) ///
mlabel(hNUM) mlabpos(6) mlabsize(vsmall) mlabcolor(red) ///
|| scatter Rx1pct mo if point==0 ///
, connect(line) lpattern(dot) lwidth(medthin) lcolor(red) ///
legend(off) msymbol(Sh) msize(*1.4) mcolor(red) ///
mlabel(Rx1pct) mlabpos(12) mlabsize(tiny) mlabcolor(red) ///
|| scatter Rx2pct mo if point==0 ///
, connect(line) lpattern(dot) lwidth(medthin) lcolor(green) ///
legend(off) msymbol(Sh) msize(*1.4) mcolor(green) ///
mlabel(Rx2pct) mlabpos(12) mlabsize(tiny) mlabcolor(green) ///

```

```

|| scatter Rx3pct mo if point==0 ///
, connect(line) lpattern(dot) lwidth(medthin) lcolor(blue) ///
legend(off) msymbol(Sh) msize(*1.4) mcolor(blue) ///
mlabel(Rx3pct) mlabpos(12) mlabsize(tiny) mlabcolor(blue) ///
|| scatter Rx4pct mo if point==0 ///
, connect(line) lpattern(dot) lwidth(medthin) lcolor(gs0) ///
legend(off) msymbol(Sh) msize(*1.4) mcolor(gs0) ///
mlabel(Rx4pct) mlabpos(12) mlabsize(tiny) mlabcolor(gs0)
graph export LinerxNSAID_MR_SYSADOAby`pt'Point`i'.wmf, replace
}

```



รูปที่ 7 อัตราการสั่งใช้ยาแผนปัจจุบันที่รักษาอาการปวดเมื่อยกล้ามเนื้อเป็นรายเดือน ในหน่วยบริการปฐมภูมิ

การวิเคราะห์ข้อมูล: อัตราการเกิด drug interaction

ขั้นตอนที่ 1

```
clear
set memory 500m
set more off

***TARGET DRUGS WITH "POTENTIAL" DRUG INTERACTION
local code2A 00523
foreach c of local code2A {
  use DrugI`c', clear
  display "DrugI`c' N=" _N
}
local code2A 02222 00861 00425 01941 0703011 00328 00571 01046 01832 ///
00657 00658 00324 00326 01602 00772 05573 00670 00609 00663 ///
00443 00440 01331 01445 0110011 01382 01383 01391 01174 01380 ///
24866 01385 00825
foreach c of local code2A {
  quietly append using DrugI`c'
  display "to DrugI`c' N=" _N
}
*OBTAIN dsfsHT OF TARGET DRUG
display "All target DrugI N=" _N
quietly merge code2A using drugI1code2AdsfsHT, sort uniqmaster
quietly drop if _merge==2
keep code2A dsfsHT drugI*
drop *name
*GENERATE INDEX OF TARGET DRUG
quietly generate byte index=_n
tempfile x1
quietly save `x1', replace
keep code2A dsfsHT index
tempfile x2
quietly save `x2', replace

***ALL DRUGS
use drugWkAmountPricCostHosptypeIns, clear
display "Changwat=all: All visits with all drugs N=" _N
keep hosptype changwat pcucode pid date code2A dsfsHT
*YEAR 2010 (JAN-MAR)
quietly keep if date>=td(1jan2010)&date<=td(31mar2010)
display "Changwat=all, Jan-Mar 2010: All visits with all drugs N=" _N
tempfile y
quietly save `y', replace
*FOR EACH PROVINCE
local province 26 34 35 54 65 70 80 82
foreach p of local province {
  use `y', clear
  quietly keep if changwat==`p'
  drop changwat
  display "Changwat=`p': All visits with all drugs N=" _N
  *FOR EACH HOSPTYPE
  quietly generate byte HC=hosptype==0
  quietly generate byte DH=hosptype==1
  quietly generate byte OH=1 if HC==0&DH==0
  drop hosptype
  tempfile y`p'
  quietly save `y`p'', replace
  local htype HC DH OH
}
```

```

foreach h of local htype {
  use `y`p'', clear
  quietly keep if `h`==1
  drop `h'
  display "Changwat=`p', Htype=`h': All visits with all drugs (initial) N=" _N
  contract pcucode pid date code2A dsfSHT
  drop _freq
  display "Changwat=`p', Htype=`h': All visits with all drugs (unique) N=" _N
  tempfile y`p``h'
  quietly save `y`p``h'', replace

  *(1A) WITH TARGET DRUGS OF POTENTIAL INTERACTION
  quietly merge code2A dsfSHT using `x1', sort uniquising
  quietly keep if _merge==3
  drop _merge
  contract pcucode pid date index code2A dsfSHT drugI*
  drop _freq
  display "Changwat=`p', Htype=`h': Visits with drugI, index and dsfSHT N=" _N
  tempfile z1A`p``h'
  quietly save `z1A`p``h'', replace
  drop dsfSHT drugI*
  contract pcucode pid date index code2A
  drop _freq
  display "Changwat=`p', Htype=`h': (1A) Visits with unique drugI and index N="
  _N
  *FLAG "POTENTIALLY INTERACTING" TARGET DRUG
  quietly generate byte DI=1
  tempfile z1AA`p``h'
  quietly save `z1AA`p``h'', replace

  *(1B) POTENTIALLY INTERACTED DRUGS PER TARGET DRUGS
  use `z1A`p``h'', clear
  contract pcucode pid date index drugI*
  drop _freq
  display "Changwat=`p', Htype=`h': Visits with drugI-index/interacted (wide)
  N=" _N
  quietly bysort pcucode pid date index: generate n=_n
  reshape i pcucode pid date index n
  reshape j th
  reshape xij drugI@code2A
  quietly reshape long
  drop th n
  quietly drop if drugIcode2A==""
  display "Changwat=`p', Htype=`h': Visits with drugI-index/interacted (long)
  N=" _N
  contract pcucode pid date index drugIcode2A
  drop _freq
  display "Changwat=`p', Htype=`h': Visits with unique pid/date and drugI-
  index/interacted (long) N=" _N
  quietly bysort pcucode pid date: generate th=_n
  tempfile z1A1`p``h'
  quietly save `z1A1`p``h'', replace
  *DRUG INDEX
  keep pcucode pid date th index
  reshape i pcucode pid date
  reshape j th
  reshape xij index@
  quietly reshape wide
  display "Changwat=`p', Htype=`h': Visits with unique pid/date (drugI-index,
  wide) N=" _N
  tempfile z1A2`p``h'
  quietly save `z1A2`p``h'', replace
  *DRUG INTERACTED

```

```

use `z1A1`p``h'', clear
keep pcucode pid date th drugIcode2A
reshape i pcucode pid date
reshape j th
reshape xij drugI@code2A
quietly reshape wide
display "Changwat=`p', Htype=`h': Visits with unique pid/date (drugI-
interacted, wide) N=" _N
quietly merge pcucode pid date using `z1A2`p``h'', sort
drop _merge
display "Changwat=`p', Htype=`h': Visits with unique pid/date (drugI-
index/interacted, wide) N=" _N
order pcucode pid date index* drugI*
tempfile z1B`p``h'
quietly save `z1B`p``h'', replace

*(2) WITH ALL OTHER DRUGS
use `y`p``h'', clear
display "Changwat=`p', Htype=`h': All visits with all drugs N=" _N
quietly merge code2A dsfSHT using `x2', sort uniquing
quietly keep if _merge==1
contract pcucode pid date code2A dsfSHT
drop _freq
display "Changwat=`p', Htype=`h': (2) Visits with all other drugs N=" _N
tempfile z2`p``h'
quietly save `z2`p``h'', replace

*(3.1) OBTAIN OTHER DRUGS FOR THE SAME PID-DATE OF TARGET DRUGS
use `z1B`p``h'', clear
display "Changwat=`p', Htype=`h': Visits with unique pid/date (drugI-
index/interacted, wide) N=" _N
quietly merge pcucode pid date using `z2`p``h'', sort uniqmaster
quietly keep if _merge==3
drop _merge
display "Changwat=`p', Htype=`h': Visits with other drugs of the same
pid/date (drugI-index/interacted, wide) N=" _N
tempfile z3A1`p``h'
quietly save `z3A1`p``h'', replace
*DRUG INDEX
keep pcucode pid date code2A dsfSHT index*
reshape i pcucode pid date code2A dsfSHT
reshape j th
reshape xij index@
quietly reshape long
quietly drop if index==.
tempfile z3A2`p``h'
quietly save `z3A2`p``h'', replace
*DRUG "POTENTIALLY" INTERACTED
use `z3A1`p``h'', clear
keep pcucode pid date code2A dsfSHT drugI*
reshape i pcucode pid date code2A dsfSHT
reshape j th
reshape xij drugI@code2A
quietly reshape long
quietly drop if drugIcode2A==""
quietly merge pcucode pid date code2A dsfSHT th using `z3A2`p``h'', sort
drop _merge th
*FLAG NON-INTERACTED DRUGS
quietly replace drugIcode2A="" if drugIcode2A~=code2A
display "Changwat=`p', Htype=`h': Visits with other drugs of the same
pid/date (drugI-index/interacted, long) N=" _N

*(3.2) OBTAIN dsfSHT OF THE POTENTIALLY INTERACTED DRUGS

```

```

quietly merge drugIcode2A using drugI2code2A dsfSHT, sort uniqueness
quietly drop if _merge==2
drop _merge
display "Changwat=`p', Htype=`h': Visits with other drugs of the same
pid/date (drugI-index/interacted, long; with dsfSHT, wide) N=" _N
quietly generate id=_n
tempfile tempfile z3B`p``h'
quietly save `z3B`p``h'', replace
keep pcucode pid date code2A dsfSHT index drugIcode2A id
tempfile tempfile z3C`p``h'
quietly save `z3C`p``h'', replace

use `z3B`p``h'', clear
quietly drop if drugIcode2A=="
keep id *dsfSHT
reshape i id
reshape j th
reshape xij drugI@dsfSHT
quietly reshape long
drop th
quietly drop if drugIdsfSHT=="
quietly merge id using `z3C`p``h'', sort uniqueness
drop _merge id
display "Changwat=`p', Htype=`h': Visits with other drugs of the same pid-
date (drugI-index/interacted, long; with dsfSHT, long) N=" _N

*(3.3) FLAG OTHER DRUGS "POTENTIALLY" INTERACTED
*AT DRUG NAME-DOSAGE FORM LEVEL
quietly generate byte di=2 if code2A==drugIcode2A&dsfSHT==drugIdsfSHT
drop dsfSHT drugIcode2A drugIdsfSHT
*AT DRUG NAME LEVEL
quietly egen DI=max(di), by(pcucode pid date index code2A)
contract pcucode pid date index code2A DI
drop _freq
display "Changwat=`p', Htype=`h': (3) Visits with other drugs of the same
pid-date (unique drugI-index/interacted) N=" _N

*(4) APPEND TO VISITS WITH TARGET DRUGS OF POTENTIAL INTERACTION
quietly append using `z1AA`p``h'
display "Changwat=`p', Htype=`h': (4) All visits with drugI and with other
drugs N=" _N
*CHANGE FROM "POTENTIALLY" TO "NON"-INTERACTED DRUG UNLESS IN THE SAME SET OF
TARGET DRUG
quietly egen DImin=min(DI), by(pcucode pid date index)
quietly replace DI=. if DI==2&DImin~=1
drop DImin
tempfile z`p``h'
quietly save `z`p``h'', replace
}

***(5) APPEND ALL HTYPE
local htype HC
foreach h of local htype {
use `z`p``h'', clear
display "Changwat=`p', Htype=`h': All visits with drugI and with other drugs
N=" _N
}
local htype DH OH
foreach h of local htype {
quietly append using `z`p``h'
display "to Changwat=`p', Htype=`h': All visits with drugI and with other
drugs N=" _N
}

```

```

***FLAG PRESCRIPTIONS WITH DRUG INTERACTION
*FOR EACH SET OF TARGET DRUG
quietly egen DIset=max(DI), by(pcucode pid date index)
*FOR EACH PRESCRIPTION
quietly egen DIScript=max(DIset), by(pcucode pid date)
quietly generate DIdrug=0 if DI==.
quietly replace DIdrug=1 if DI==1&DIset==1
quietly replace DIdrug=2 if DI==1&DIset==2
quietly replace DIdrug=3 if DI==2
quietly for varlist DIset DIScript: replace X=0 if X==.
label define DI 0 "No" 1 "Target but no-DI" 2 "Target with DI" 3 "Interacted
drug"
quietly for varlist DIdrug DIset DIScript: label value X DI
label variable DIdrug "Drug interacting?"
label variable DIset "Set of drug interaction?"
label variable DIScript "Script with drug interaction?"
drop DI
order pcucode pid date DIScript DIset DIdrug code2A
sort pcucode pid date DIdrug code2A

save DrugIchangwat`p'wk, replace
clear
}

```

ขั้นตอนที่ 2

```

clear
set memory 500m
set more off

***HOSPITAL TYPE BY PCUCODE
use hcodeNHS0wk, clear
display _N
keep hcode hosptype
rename hcode pcucode
tempfile pcucode
quietly save `pcucode', replace
clear

```

```

***GENERIC NAME BY CODE2A
use code2AdrugI, clear
display _N
contract code2A generic
drop _freq
tempfile drugI
quietly save `drugI', replace
clear

```

```

*****DRUG INTERACTION FILES
local province 26 34 35 54 65 70 80 82
foreach p of local province {
use drugIchangwat`p'wk, clear
display "Changwat=`p' N="_N
generate province=`p'
tempfile x`p'
quietly save `x`p'', replace
}
local province 26
foreach p of local province {
use `x`p'', clear
display "Changwat=`p' N="_N
}

```

```

local province 34 35 54 65 70 80 82
foreach p of local province {
  quietly append using `x`p''
  display "to Changwat=`p' N="_N
}
quietly compress

***TO OBTAIN HOSPITAL TYPE
merge pcucode using `pcucode', sort uniquing
quietly drop if _merge==2
drop _merge
display _N

***TO OBTAIN GENERIC NAMES OF TARGET DRUGS AND THEIR INTERACTED DRUGS
merge code2A using `drugI', sort uniquing
tabulate _merge
quietly drop if _merge==2
drop _merge
display _N
order province hosptype pcucode pid date DIscrip DIdrug generic code2A
gsort province hosptype pcucode pid date -DIdrug
quietly save drugIwk, replace
clear

```

ขั้นตอนที่ 3

```

clear
set memory 400m
set more off

```

***** (1) PRESCRIPTION AND DRUG SET LEVEL

```

use drugIwk, clear
display _N
contract province hosptype pcucode pid date DIset DIscrip
drop _freq
display _N
for varlist province hosptype: tabulate X DIset, row

contract province hosptype pcucode pid date DIscrip
drop _freq
display _N
for varlist province hosptype: tabulate X DIscrip, row
clear

```

***** (2) DRUG LEVEL

```

use drugIwk, clear
display _N

```

*** (2.1) PREVALENCE

```

for varlist province hosptype: tabulate X DIdrug, row

```

*** (2.2) NAMES OF INTERACTING DRUGS

```

quietly keep if inlist(DIdrug, 2, 3)
display _N
contract province hosptype pcucode pid date DIdrug generic
drop _freq
display _N
*MANY(target)-TO-ONE(interacted) RELATIONSHIP
quietly bysort province hosptype pcucode pid date DIdrug: generate n=_n
quietly bysort province hosptype pcucode pid date DIdrug: generate N=_n
reshape i province hosptype pcucode pid date n N
reshape j DIdrug
reshape xij generic

```

```

quietly reshape wide
display _N
rename generic2 targetDrugI
rename generic3 interactedDrug
label variable targetDrugI "Target drug"
label variable interactedDrug "Interacted drug"
*EDIT FOR MANY-TO-ONE INTERACTION
sort province hosptype pcucode pid date
replace interactedDrug=interactedDrug[_n-1] if
interactedDrug==" "&n==N&N>=2&pid==pid[_n-1]&date==date[_n-1]
drop n N

***LIST INTERACTING DRUGS
*(2.2A) BY PCUCODE
contract targetDrugI interactedDrug hosptype pcucode
display _N
rename _freq scripts
sort hosptype pcucode targetDrugI interactedDrug
list hosptype pcucode targetDrugI interactedDrug scripts, noobs

*(2.2B) BY HOSPTYPE
collapse (sum)scripts, by(targetDrugI interactedDrug hosptype)
display _N
sort hosptype targetDrugI interactedDrug
list hosptype targetDrugI interactedDrug scripts, noobs

*(2.2C) BY DRUGS
collapse (sum)scripts, by(targetDrugI interactedDrug)
display _N
gsort -scripts targetDrugI interactedDrug
list targetDrugI interactedDrug scripts, noobs

clear

```

ตารางที่ 27 สัดส่วนจำนวนใบสั่งยาที่มีโอกาสเกิด drug interaction (DI)

จังหวัด	ใบสั่งยาทั้งหมด	ใบสั่งยาที่มียา เป้าหมาย	ใบสั่งยาที่พบ DI (%)
26	282,396	13,441	27 (0.05)
54	765,988	42,920	159 (0.11)
65	856,724	60,291	192 (0.09)
70	1,040,198	65,223	340 (0.12)
80	2,052,562	124,488	NA
82	202,518	14,090	4 (0.01)
34	1,016,179	33,879	29 (0.03)
35	888,659	34,950	88 (0.07)

ภาคผนวก

Patient Safety aspect

Potential inappropriate prescribing: Outpatient

Beers criteria: prescribing in elderly

We applied the 2003 Beers criteria in this study for estimating the prevalence of inappropriate prescribing in elderly. The 2003 Beers criteria consist of 2 lists. One is a list of 49 individual medications or medication classes that are inappropriate for patients 65 years or older regardless of their disease or condition. The other is a list of 56 medications or medication classes in 19 diseases or conditions for which they should be avoided.

Inclusion criteria:

- Elderly aged ≥ 65 years
- Having at least one visit each year
- Receiving at least one medication in form of IV or oral

Unit of analysis

- For medications that are inappropriate regardless of diseases or conditions, prevalence of potential inappropriate prescribing (number of OP patients that received these medications/ total OP patients) was presented.
- For medications that are potential inappropriate when considering diseases or conditions, prevalence of potential inappropriate prescribing was showed. However, the prevalence was calculated by number of OP patients with specific ICD10TM that received medications/ total OP patients with those specific ICD10TM.

For medications that are inappropriate regardless of disease or condition, we included only systemic medications that were 1) considered as high severity from Beers criteria and 2) available and widely use for out patients in Thailand. For some medications, dose was also used for consideration of an appropriateness of prescribing.

List of potential inappropriate prescribing: independent of diagnoses or conditions

Drugs (common trade name)	dosage form in Thailand	Severity	This study	Reasons	Analysis
Propoxyphene and combination products		low	x	Not available	Excluded
Indomethacin (Indocin, Indomed)	Cap 25 mg Film coat tab 25 mg Amp 50 mg (meglumine indomethacin)	high	/		
Pentazocine		high	/		
Trimethobenzamide		high	x	Not available	Excluded
Muscle relaxants and antispasmodics: - methocarbamol	Tab 500 mg	high	/		Included only - methocarbamol - carisoprodol (caritasone) - chlorzoxazone (Parafon forte) - oxybutynin (Ditropan)
- carisoprodol (caritasone)	Tab 1000 mg (combine with paracetamol)				
- chlorzoxazone (Parafon forte)	Tab 50, 250 mg combine				
- metaxalone	-				
- cyclobenzaprine	-				
- oxybutynin (Ditropan)	Tab 5 mg, 10 mg				
Flurazepam	-	high	x	Not available	Excluded
- Amitriptyline	Tab 10, 25, 50 mg	high	/		Included only amitriptyline and perphenazine+ amitriptyline
- Chlordiazepoxide Amitriptyline	-				
- Perphenazine-amitriptyline (Neuragon)	Tab				
Doxepin		high	x	Not available	Excluded
Meprobamate		high	x	Not widely use	Excluded

Drugs (common trade name)	dosage form in Thailand	Severity	This study	Reasons	Analysis
short-acting benzodiazepines: high dose - lorazepam $\geq$ 3 mg	Tab 0.5, 1, 2 mg	high	/		Condition for high dose Included only high dose lorazepam, alprazolam, temazepam, and triazolam
- oxazepam $\geq$ 60 mg	-				
- alprazolam $\geq$ 2 mg (xanax)	Tab 0.25, 0.5, 1 mg				
- temazepam $\geq$ 15 mg (Euhypnos)	Cap 20 mg				
- triazolam $\geq$ 0.25 mg (Halcion)	Tab 0.25 mg				
Long-acting benzodiazepines: - chlordiazepoxide (libirum)	10, 25 mg	high	/		Included only chlordiazepoxide, chlordiazepoxide-amitriptyline, diazepam, and chlorazepate
- chlordiazepoxide-amitriptyline	-				
- clidinium-chlordiazepoxide (Librax)	Tab 5 mg				
- diazepam (valium)	Tab, amp 2, 5 mg				
- quazepam	-				
- halazepam	-				
- chlorazepate (Tranxene)	Tab 5 mg				
Disopyramide		high	x	Not available	Excluded
Digoxin (lanoxin) > 0.125 mg/d except atrial arrhythmias	Tab 0.25 mg, elixir 0.05 mg/ml, amp 0.5 mg/2ml	low	/	Low severity	Excluded
Short-acting dipyridamole (Persantin)	Tab 75 mg, amp 10 mg/ 2 ml	low	/		
Methyldopa (aldomet)	Tab 125, 250 mg	high	/		
Reserpine > 0.25 mg (serapes)	Tab combine 0.1 mg/tab	low	/	Low severity	Excluded
Chlorpropamide (diabinese)	Tab 250 mg	high	/		
Gastrointestinal antispasmodic drugs: - dicyclomine - hyoscyamine - propantheline - belladonna alkaloids - clidinium-chlordiazepoxide	- - - -	high	/		Included only dicyclomine, hyoscyamine, and belladonna alkaloids
Anticholinergics and antihistamines: - chlorpheniramine, CPM	Tab 4 mg, syr	high	/		Included only CPM, diphenhydramine , hydroxyzine, cyproheptadine, promethazine, and dexchlorpheniramine
- diphenhydramine , (benadryl)	Syr				
- hydroxyzine (atarx)	Tab 10, 25 mg, syr				
- cyproheptadine (periactin)	Tab 4 mg				
- promethazine	Linctus				
- tripelennamine	-				
- dexchlorpheniramine	-				
- Diphenhydramine	Syr	high	/		
Ergot mesyloids (Hydergine) and cyclandelate		Low	x		Excluded
Ferrous sulfate _325 mg/d		Low	x		Excluded

Drugs (common trade name)	dosage form in Thailand	Severity	This study	Reasons	Analysis
Barbiturates except for seizure - Phenobarbital	Vial 200 mg/4 ml, tab 32.5, 65 mg, elixir, syr	high	/		Excluded ICD G40 (subdivision .0-.9) Included only phenobarbital, pentobarbital, amobarbital, and thiopental
- Pentobarbital	-				
- Amobarbital (Ama)	Tab combine with chlorpromazine				
- Secobarbital	-				
- Thiopental	Vial				
- Methohexital	-				
- Butalbital	-				
Meperidine		high	x	Not available	Excluded
Ticlopidine (Ticlid)	Tab 250 mg	high	/		
Ketorolac		high	/		
Amphetamines and anorexic agents		high	x	Not widely use	Excluded
Long-term use of full-dosage, longer half-life, non-COX-selective NSAIDs: - naproxen (synflex)	Tab 250 mg	high	/		Consideration for dose Naproxen 1000 mg/day Piroxicam 20 mg/day
- oxaprozin	-				
- piroxicam	Cap/tab 10 mg				
Daily fluoxetine		high	/		
Long-term use of stimulant laxatives: bisacodyl cascara sagrada, and Neoloid		high	x	Not widely use	Excluded
Amiodarone (amidarone)	Tab 200 mg	high	/		
Orphenadrine (muscol, norflex, norgesic)	Tab 35 mg combine with pracetamol	high	/		
Guanethidine		high	x	Not available	Excluded
Guanadrel		high	x	Not available	Excluded
Cyclandelate		Low	x	Not available	Excluded
Isoxsuprine		Low	x	Not available	Excluded
Nitrofurantoin		high	/		
Doxazosin (cardura, cardura XL)	Tab 1, 2, 4 mg	Low	/		
Methyltestosterone		high	/		
Thioridazine	Tab 25, 50, 100 mg	high	/		
Mesoridazine		high	x	Not widely use	Excluded
Short acting nifedipine (adalat)	Cap 5, 10 mg	high	/		
Clonidine		low	/		
Mineral oil		high	x	Not widely use	Excluded
Cimetidine		Low	/		
Ethacrynic acid		low	x	Low severity	Excluded

Drugs (common trade name)	dosage form in Thailand	Severity	This study	Reasons	Analysis
Desiccated thyroid		High	x	Not widely use	Excluded
Amphetamines		High	x	Not widely use	Excluded
Estrogens only		low	/		

** For analysis, the potential inappropriate medications regardless of diseases or conditions should be the systemic form: oral or injection.

For medications that are potential inappropriate when considering disease or condition, we included only medications that were considered as high severity, available and widely use for out patients in Thailand. According to limitation of electronic database, some diseases or conditions that could not be exactly defined from the available database were excluded.

List of potential inappropriate prescribing: dependent of diagnoses or conditions

Drugs	Trade name and dosage form in Thailand	Disease conditions	Severity	This study	Reasons	Analysis: ICD 10 TM
Disopyramide		Heart failure	high	X	Not widely use	Excluded
Phenylpropanolamine hydrochloride (removed from the market in 2001), Pseudoephedrine diet pills amphetamines		Hypertension	high	X	Not widely use	Excluded
- NSAIDs and aspirin (>325 mg)	Please see suppl table	Gastric or duodenal ulcers	high	/		K25, K26, K27 (subdivision .0-.9)
- Clozapine	Tab 25, 100 mg	Seizures or epilepsy	high	/		G40 (subdivision .0-.9)
- chlorpromazine	Tab 100 mg					
- thioridazine	Tab 25, 50 mg					
- thiothixene	-					
- Aspirin, NSAIDs	Please see suppl table	Blood clotting disorders or receiving anticoagulant therapy	high	X	Diseases or conditions were not be exactly defined by the database.	Excluded
- dipyridamole (Persantin)	Tab 75 mg, amp 10 mg/ 2 ml					
- Ticlopidine (Ticlid)	Tab 250 mg					
- clopidogrel (Plavix)	Tab 75 mg					
Anticholinergics and antihistamines, gastrointestinal antispasmodics, muscle relaxants, oxybutynin (Ditropan), flavoxate (Urispas), anticholinergics, antidepressants, decongestants, and tolterodine		Bladder outflow obstruction	high	X	Diseases or conditions were not be exactly defined by the database	Excluded
Alpha-Blockers (Doxazosin, Prazosin, and Terazosin), anticholinergics, tricyclic antidepressants (imipramine hydrochloride, doxepin hydrochloride, and amitriptyline hydrochloride), and long-acting benzodiazepines		Stress incontinence	high	X	Diseases or conditions were not be exactly defined by the database	Excluded
Tricyclic antidepressants - Imipramine	Tab 25 mg	Arrhythmias	high	/		I49 (subdivision .0-.9)

Drugs	Trade name and dosage form in Thailand	Disease conditions	Severity	This study	Reasons	Analysis: ICD 10 TM
- doxepin	Cap 25 mg					
- amitriptyline	Tab 10, 25, 50 mg					
Decongestants, theophylline (Theodur), methylphenidate (Ritalin), MAOIs, and amphetamines		Insomnia	high	X	Diseases or conditions were not be exactly defined by the database	Excluded
Metoclopramide (Reglan),	Tab 10 mg, amp 10 mg/2 mL	Parkinson disease	high	/		G20
Conventional antipsychotics - Chlorpromazine (Largactil, Thorazine)	Tab 100, 200 mg, amp 50mg/2ml					
- Thioridazine (Mellaril)	Tab 10, 25 mg					
- Perphenazine (Trilifon)	Tab 4, 8, 16 mg					
- Trifluoperazine (Stelazine)	Tab 5, 10 mg					
- Haloperidol (Haldol, Serenace)	Tab, amp 5 mg					
- Fluphenazine (Prolixin)	Tab 0.5, 2.5, 5 mg, amp 25 mg					
Barbiturates, anticholinergics, antispasmodics, and muscle relaxants. CNS stimulants: dextroAmphetamine (Adderall), methylphenidate (Ritalin), methamphetamine (Desoxyn), and pemolin		Cognitive impairment	high	X	Diseases or conditions were not be exactly defined by the database	Excluded
Long-term benzodiazepine use. Sympatholytic agents: methyldopa (Aldomet), reserpine, and guanethidine (Ismelin)		Depression	high	X	Diseases or conditions were not be exactly defined by the database	Excluded
CNS stimulants: DextroAmphetamine (Adderall), methylphenidate (Ritalin), methamphetamine (Desoxyn), pemolin, and fluoxetine (Prozac)		Anorexia and malnutrition	high	X	Diseases or conditions were not be exactly defined by the database	Excluded
Short- to intermediate-acting benzodiazepine and tricyclic antidepressants (imipramine hydrochloride, doxepin hydrochloride, and amitriptyline hydrochloride)		Syncope or falls	high	X	Diseases or conditions were not be exactly defined by the database	Excluded
SSRIs: fluoxetine (Prozac), citalopram (Celexa), fluvoxamine (Luvox), paroxetine (Paxil), and sertraline (Zoloft)		SIADH/hyponatremia	low	X	Diseases or conditions were not be exactly defined by the database	Excluded
Bupropion (Wellbutrin, quomem)	Tab 150 mg	Seizure disorder	high	/		G40 (subdivision .0-.9)
Olanzapine (Zyprexa)	Tab 5,10 mg	Obesity	low	X	Diseases or	Excluded

Drugs	Trade name and dosage form in Thailand	Disease conditions	Severity	This study	Reasons	Analysis: ICD 10 TM
	Vial 10 mg				conditions were not be exactly defined by the database	
Long-acting benzodiazepines: - chlordiazepoxide (Librium)	10, 25 mg	COPD	high	/		J44 (subdivision .0,.1,.2,.8,.9)
- chlordiazepoxide-amitriptyline	-					
- clidinium-chlordiazepoxide (Librax)	Tab 5 mg					
- diazepam (Valium)	Tab, amp 2,5 mg					
- chlorazepate (Tranxene).	Tab 5 mg					
beta-blockers: propranolol (Betalol, betapress)	Tab 10,40,100 mg					
Calcium channel blockers, anticholinergics, and tricyclic antidepressant (imipramine hydrochloride, doxepin hydrochloride, and amitriptyline hydrochloride)		Chronic constipation	low	X	Diseases or conditions were not be exactly defined by the database	Excluded
Hydrochlorothiazide		Gout		/		M10.0, M10.1, M10.2, M10.3, M10.4, M10.9

* Potential inappropriate prescribing was considered if the prescribing was given to patients after they were diagnosed with the above diseases or conditions

Drug-Drug interactions

Clinically important potential drug–drug interactions from previous studies (Malone DC et al 2005 and Solberg LI 2004) were used as the initial list of drug interactions in this study. The list was modified by 1) excluding medications that were not widely used in Thailand 2) excluding drug interactions that occurred from absorption interference because this type of drug interactions would not be occurred if health care persons give the patients instruction for taking 3) excluding pairs of medications that would be necessary to use together for treatment of particular diseases or conditions.

To determine potential drug-drug interactions, the days' supply of the conflicting drug must have overlapped with that of the base drug by at least 10 days. Co-prescription of a given drug-drug interaction combination was counted only once per year for a given patient, regardless of the number of fills for either drug. For the same patient with overlapping fills for a different combination during the same year, a separate potential DDI drug-drug interaction was counted.

Previous study		This study			Note
Drug 1	Drug 2	Drug 1	Dosage form	Drug 2	Dosage form
dicumarol, warfarin	Barbiturates: amobarbital, butabarbital, butalbital, mephobarbital, phenobarbital, pentobarbital, secobarbital, primidone	warfarin (Coumadin)	Tab 2, 3, 4, 5 mg	Phenobarbital (Gardenal)	Vial 200 mg/4 ml Tab 32.5 mg, 65 mg
warfarin	Cimetidine. Fibric acids: clofibrate, fenofibrate, gemfibrozil. Erythromycin, sulfonamides, metronidazole, lovastatin, fluvastatin, cholestyramine, colestipol NSAIDs and COX-2 selective NSAIDs: celecoxib, diclofenac, etodolac, flurbiprofen,	warfarin (Coumadin)	Tab 2, 3, 4, 5 mg	Cimetidine(Cigamet, ulsamet)	Tab 200 mg, 400 mg
				Fenofibrate (Febrate)	Cap 100 mg, 200 mg
				Gemfibrozil(Lopid)	Cap 300 mg Tab 600 mg, 900 mg
				Celecoxib (Celebrex)	Cap 200 mg, 400 mg

Previous study		This study			Note
Drug 1	Drug 2	Drug 1	Dosage form	Drug 2	Dosage form
	fenoprofen, ibuprofen, indomethacin, ketoprofen, ketorolac, meclofenamate, mefenamic acid, meloxicam, nabumetone, naproxen, oxaprozin, piroxicam, rofecoxib, sulindac, tolmetin. Sulfapyrazone			Diclofenac (Votaren)	Enteric-coated tab 25 mg, 50 mg SR tab 75 mg, 100 mg Amp 75 mg/3ml
				Ibuprofen (Brufen)	Tab 200, 400, 600 mg, syr
				Indomethacin (Indomed)	Cap 25 mg, 50 mg
				Ketoprofen	Cap 100 mg
				mefenamic acid(Ponstan)	Cap 250 mg Film-coated tab 500 mg
				meloxicam (Mobic)	Tab 7.5 mg, 15 mg Amp 15 mg/1.5 ml
				nabumetone (Relifex)	Tab 500 mg
				naproxen (Naprosyn)	Tab 250 mg
				piroxicam (Feldene)	Cap 10 mg Dispersible tab 20 mg
				Sulindac (Cenlidac)	Tab 150 mg
				Erythromycin (Erimycin)	Cap 250 mg Syr 125 mg/5 ml, 200 mg/5 ml
				Trimethoprim, trimethoprim-sulfamethoxazole (Bactrim, cotrimoxazole)	Tab 1,000's Syr 50 ml Amp 5 ml x 50s
				metronidazole (Flagyl)	Tab 200 mg, 400 mg Susp 200 mg/5 ml
				fluvastatin(Lescol)	Cap 20 mg, 40 mg ER tab 80 mg
anisindione, dicumarol, warfarin	Thyroid hormones: levothyroxine, liothyronine, liotrix, thyroid, dextrothyroxine	warfarin		Levothyroxine (Eltroxin)	Tab 100 mcg
alprazolam, triazolam	Azole antifungals: fluconazole, itraconazole, ketoconazole	Alprazolam (Xanax)	Tab 0.25 mg, 0.5 mg XR tab 0.5 mg, 1 mg	Fluconazole (Diflucan)	Cap 50 mg, 100 mg, 150 mg, 200 mg IV inj 2 mg/ml x50 ml, 100 ml
		Triazolam (Halcion)	Tab 0.25 mg	Itraconazole(Sporal)	Cap 100 mg Sporal OS 10 mg/ml x150 ml
				Ketoconazole (Nizoral)	Tab 200 mg
Pimozide	Macrolide antibiotics: clarithromycin, erythromycin, troleandomycin. Azole antifungals: fluconazole, itraconazole, ketoconazole	X		x	

Previous study		This study			Note
Drug 1	Drug 2	Drug 1	Dosage form	Drug 2	Dosage form
dihydroergotamine, ergotamine	Macrolide antibiotics: clarithromycin, erythromycin, troleandomycin	dihydroergotamine, ergotamine (Cafergot)	Tab 200's	Clarithromycin (Klacid)	Film-coated tab 250 mg, 500 mg Susp 125 mg/5 ml x60 ml IV vial 500 mg MR tab 500 mg
				Erythromycin (Erimycin)	Cap 250 mg Syr 125 mg/5 ml, 200 mg/5 ml
Digoxin	Clarithromycin Erythromycin Itraconazole Tetracycline Verapamil Cholestyramine Spironolactone	Digoxin (Lanoxin)	Tab 250 mcg Elixir 50 mcg/mlx60 ml PG tab 62.5 mcg	Clarithromycin (Klacid)	Film-coated tab 250 mg, 500 mg Susp 125 mg/5 ml x60 ml IV vial 500 mg MR tab 500 mg
				Erythromycin (Erimycin)	Cap 250 mg Syr 125 mg/5 ml, 200 mg/5 ml
				Itraconazole (Sporal)	Cap 100 mg Sporal OS 10 mg/ml x150 ml
				Tetracycline(Tetrano)	Cap 250 mg
Cyclosporine	Rifamycins: rifampin, rifabutin, rifapentine	Cyclosporine (Sandimmun neoral)	Cap 25 mg, 100 mg Soln 100 mg/ml Inj 50 mg/ml x 1 ml	Rifampin(Rifadin)	Cap 300 mg
estrogen and progestin products	Rifampin	estrogen and progestin products		Rifampin(Rifadin)	Cap 300 mg
Methotrexate	Trimethoprim, trimethoprim-sulfamethoxazole	Methotrexate	Tab 2.5 mg	Trimethoprim, trimethoprim-sulfamethoxazole (Bactrim, cotrimoxazole)	Tab 1,000's Syr 50 ml Amp 5 ml x 50s
Theophyllines: aminophylline, Theophylline	Ciprofloxacin, fluvoxamine Cimetidine, erythromycin	Aminophylline	Tab 100 mg Inj 250 mg x 10 ml	Ciprofloxacin (Ciprobay)	Tab 250 mg, 500 mg Inj 100 mg/50 ml, 200 mg/100 ml, 400 mg/200 ml
		Theophylline (theodur)	Cap 200 mg SR tab 200 mg	Cimetidine (Cigamet)	Tab 200 mg, 400 mg
				Erythromycin (Erimycin)	Cap 250 mg Syr 125 mg/5 ml, 200 mg/5 ml
nitroglycerin, isosorbide dinitrate, isosorbide mononitrate	Sildenafil	Nitroglycerin (Nitrocline)	Amp 10 mg/10 ml	Sildenafil (viagra)	Tab 50, 100 mg
		isosorbide dinitrate (Isordil)	Tab 10 mg, 30 mg Sublingual tab 5 mg		

Previous study		This study			Note
Drug 1	Drug 2	Drug 1	Dosage form	Drug 2	Dosage form
		isosorbide mononitrate (Ismo)	Tab 20 mg		
Carbamazepine	Propoxyphene	X		x	
azathioprine, mercaptopurine	Allopurinol	Azathioprine (Imuran)	Tab 50 mg	Allopurinol (Uricad)	Tab 100 mg, 300 mg
		Mercaptopurine (Empurine)	Tab 50 mg		
Ganciclovir	Zidovudine	Ganciclovir (Cynevene)	Vial 500 mg	Zidovudine(GPOvir Retrovir)	Cap 100 mg, 250 mg, syr
isocarboxazid, phenelzine, selegiline, tranlycypromine	Anorectics and CNS stimulants: amphetamine, benzphetamine, dexfenfluramine, dextroamphetamine, diethylpropion, fenfluramine, mazindol, methamphetamine, phendimetrazine, phentermine, phenylpropanolamine, sibutramine. Meperidine, dextromethorphan. Selective serotonin-reuptakeinhibitors: citalopram, fluoxetine, fluvoxamine, paroxetine, sertraline. Other antidepressants: venlafaxine, nefazodone. Sympathomimetics: dopamine, ephedrine, isometheptene, mephentermine, metaraminol, phenylephrine, pseudoephedrine	x		x	
Phenytoin	Cimetidine Fluconazole Isoniazid Sulfonamide Trimethoprim Phenylbutazone Disulfiram Doxycycline theophylline	Phenytoin (Dilantin)	Cap 100 mg Vial 50 mg/ml x 5 ml	Cimetidine(Cigamet, ulsamet)	Tab 200 mg, 400 mg
				Fluconazole (Diflucan)	Cap 50 mg, 100 mg, 150 mg, 200 mg IV inj 2 mg/ml x 50 ml, 100 ml
				Isoniazid, INH	Tab 100 mg
				Sulfonamide Trimethoprim (Bactrim, cotrimoxazole)	Tab 1,000's Syr 50 ml Amp 5 ml x 50s
				Doxycycline (Doxin)	Cap 100 mg Tab 100 mg
				Theophylline (theodur)	Cap 200 mg SR tab 200 mg
Lovastatin Simvastatin	Erythromycin Clarithromycin	Simvastatin (Zimmex)	Tab 10 mg, 20 mg, 40 mg	Erythromycin (Erimycin)	Cap 250 mg Syr 125 mg/5 ml, 200 mg/5 ml

Previous study		This study			Note
Drug 1	Drug 2	Drug 1	Dosage form	Drug 2	Dosage form
				Clarithromycin (Klacid)	Film-coated tab 250 mg, 500 mg Susp 125 mg/5 ml x60 ml IV vial 500 mg MR tab 500 mg
Verapamil	propranolol, atenolol, metoprolol, timolol	Verapamil (Isopstin)	SR tab 240 mg	Propranolol(Betalol)	Tab 10 mg, 20 mg, 40 mg
				Atenolol (prenolol),	Tab 25 mg, 50 mg, 100 mg
				Metoprolol (Betaloc)	Tab 100 mg
Clonidine	propranolol	Clonidine	Tab 0.075, 0.15 mg	Propranolol(Betalol)	Tab 10 mg, 20 mg, 40 mg
ACE inhibitors	Cox II inhibitors, NSAIDs				
Diltiazem	Cholestyramine, colestipol	Diltiazem		Cholestyramine Colestipol	
propranolol	rifampin	propranolol		rifampin	
Metoprolol	cimetidine	Metoprolol		cimetidine	
Sucralfate	Levofloxacin, ciprofloxacin	Sucralfate		Levofloxacin ciprofloxacin	
Insulin	Propranolol	Insulin		Propranolol	
Steroids	Barbiturates, rifampin	Cortisone Hydrocortisone Methylprednisolone Prednisolone Triamcinolone Betamethasone Dexamethasone Fludrocortisone		Phenobarbital Pentobarbital Amobarbital Thiopental Rifampin	
lithium	thiazides	lithium	Cap 300 mg	Hydrochlorothiazide, HCTZ (blopess, diovan, co-diovan, co-aprovel, hyzaar, micardis, ser-ap-es)	Tab 25, 50 mg

Drug-disease interactions

Few studies were conducted to examine rate of drug disease interactions. This study selected pairs of drug-disease interactions based on suggestion from clinical reviews (Chaurasia AN, et al 2005). However, some pairs of drug-disease interactions were excluded if 1) medications would be necessary for treatment of particular comorbidity in patients such as beta blockers in asthma and CHF; sodium salt drug in CHF or 2) potential adverse events were not severe such as lithium or amiodarone in thyroid diseases; thiazides in gout 3) diseases that would not be completely coded in the database such as TCA in bundle branch block; thiazides in hypercalcemia;; aspirin, NSAIDs, dipyridamone, ticlopidine, clopidogrel in blood clotting disorders. Even blood clotting disorders are of great concern for drug-disease interactions, drug duplication would be the better proxy to reflect the magnitude of problems in the situation where diagnosis data were incomplete.

Specific criteria were set for particular pair of drug disease interactions as the analysis protocol as in the right column in Table.... We used the same principle as drug-drug interactions for analysis. Potential drug-disease interactions were considered if the inappropriate drugs were prescribed for at least 10 days in patients with particular diseases and the drugs should be prescribed after disease has been diagnosed. Drug-disease interaction was counted only once per year for a given patient, regardless of the number of fills for either drug. For the same patient with overlapping fills for a different disease during the same year, a separate potential drug-disease interaction was counted.

Drugs	Dosage form in Thailand	Diseases	Note: ICD 10TM and specified conditions
- NSAIDs	See the suppl table	peptic ulcer	K25, K26, K27 (subdivision .0-.9)
- NSAIDs	See the suppl table	Moderate/severe hypertension	I10-I15 (subdivision I10, I11.0, I11.9, I12.0, I12.9, I13.0, I13.1, 13.2, 13.9,

Drugs	Dosage form in Thailand	Diseases	Note: ICD 10TM and specified conditions
			I15.0, 15.1, 15.2, 15.8, 15.9) and Moderate/severe hypertension: with stage 2 hypertension (SBP $\geq$ 160 mmHg or DBP $\geq$ 100 mmHg)
- NSAIDs	See the suppl table	Heart failure	I50.0 (subdivision .0, .1, .9)
- verapamil (Isoptin)	Tab 40, 240 mg		
- diltiazem (Herbesser)	Tab/cap 30, 60, 90, 100, 120 mg, IV 10, 50 mg		
- short-acting nifedipine (adalat)	Cap 5, 10 mg		
- disopyramide - quinidine - procainamide			
NSAIDs	See the suppl table	CKD, ARF	N17-N19 (subdivision N17.0, .1, .2, .8, .9: N18.0, .8, .9: N19) and CrCl < 50 ml/min by using MDRDs
non selective B blocker - <u>Carvedilol</u> (Dilatrend)	Tab 6.5, 12.5, 25 mg	COPD	J44 (subdivision .0, .1, .2, .8, .9)
<u>Labetalol</u>	Amp 25 mg		
<u>Propranolol</u> (Betalol, betapress)	Tab 10, 40, 100 mg		
TCAs including - imipramine	Tab 25 mg	Arrhythmia:	I49 (subdivision .0-.9)
- Doxepin	Cap 25 mg		
- amitriptyline	Tab 10, 25, 50 mg		
<u>Hydrochlorothiazide</u>		<u>Gout</u>	<u>M10.0, M10.1, M10.2, M10.3, M10.4, M10.9</u>

Duplicate drug

Few studies were conducted to examine rate of duplicate drug prescribing. For the problems of duplicate drug, some of them would affect adverse events while others would affect cost but not lead to adverse events. In this study, we tried to include all possible duplicate drugs that could be commonly found in clinical practice regardless of their adverse events.

To determine potential duplicate drug prescribing, the days' supply of duplicate drugs should be at least 10 days. Duplicate drug was counted only once per year for a given patient. For the same patient with overlapping fills for a different pair of duplicate drug during the same year, a separate potential duplicate drug was counted.

Drug 1	Drug 2
NSAIDs (see the suppl table)	NSAIDs (see the suppl table)
SSRIs - fluoxetine (Prozac) cap 20 mg - fluvoxamine (Fevarin, fluvoxin) tab 50, 100 mg - paroxetine (Seroxat) tab 12.5, 20 mg - sertraline (Zoloft, sertra) tab 50 mg	SSRIs - fluoxetine (Prozac) cap 20 mg - fluvoxamine (Fevarin, fluvoxin) tab 50, 100 mg - paroxetine (Seroxat) tab 12.5, 20 mg - sertraline (Zoloft, sertra) tab 50 mg
ACEIs - Benazepril - Captopril (capoten) tab 12.5, 25 mg - Enalapril (enaril, renitec) tab 5, 20 mg - Fosinopril (monopril) tab 10 mg - Lisinopril (zestril) tab 5, 10, 20 mg - Perindopril (coversyl) tab 2, 4, 8 mg	ACEIs - Benazepril - Captopril (capoten) tab 12.5, 25 mg - Enalapril (enaril, renitec) tab 5, 20 mg - Fosinopril (monopril) tab 10 mg - Lisinopril (zestril) tab 5, 10, 20 mg - Perindopril (coversyl) tab 2, 4, 8 mg

- Quinapril (accupril) tab 5, 10, 20, 40 mg - Ramipril (tritace) tab 2.5, 5, 10 mg	- Quinapril (accupril) tab 5, 10, 20, 40 mg - Ramipril (tritace) tab 2.5, 5, 10 mg
ACEIs - Benazepril - Captopril (capoten) tab 12.5, 25 mg - Enalapril (enaril, renitec) tab 5, 20 mg - Fosinopril (monopril) tab 10 mg - Lisinopril (zestril) tab 5, 10, 20 mg - Perindopril (coversyl) tab 2, 4, 8 mg - Quinapril (accupril) tab 5, 10, 20, 40 mg - Ramipril (tritace) tab 2.5, 5, 10 mg	ARBs Losartan (Cozaar, Hyzaar) tab 50, 100 mg Valsartan (Diovan, co-diovan) tab 80, 160, 320 mg Irbesartan (Approvel) tab 75, 150, 300 mg Telmisartan (Micardis) tab 40, 80 mg Candesartan (Blopess) tab 8, 16 mg Eprosartan (Teveten) 600 mg
NSAIDs (see the suppl table) - Aspirin (aspen, ASA, aggrenox, cadiprin) tab 60, 71, 80, 100, 325 mg - Dipyridamone (aggrenox, persantin) 75, 200 mg tab, amp 10 mg/2 ml - Ticlopidine (Ticlid) tab 250 mg - Clopidogrel (Plavix) tab 75 mg	Warfarin (coumadin) tab 2,3,4,5 mg
Salbutamol (Ventolin, Beclosal, combivent), tab, syr, NB, inhaler	Terbutaline (Bricanyl), tab, syr, NB, inhaler
Vitamin B (B1,6,12, B complex)	MTV (multivitamin)
Paracetamol combination formula - Paracetamol +tolperisone (Mydocalm) tablet - Paracetamol + orphenadrine (norgesic) - Paracetamol + carisprodol (caritasone) - Paracetamol + chlorzoxasone (parafon forte)	paracetamol
Cimetidine, ranitidine, famotidine, nizatidine, omeprazole, pantoprazole, lansoprazole, rabeprazole	Cimetidine, ranitidine, famotidine, nizatidine, omeprazole, pantoprazole, lansoprazole, rabeprazole