



Drug utilisation data sources in the EU.

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CONFLICTS OF INTEREST

- I have received unrestricted research grants from AMGEN Spain and BIOIBERICA.
- I have been involved in Advisory Boards for AMGEN.
- No other conflicts of interest.

LEARNING OBJECTIVES

- To identify and access a number of publicly available online EU drug utilisation data sources
- To estimate DDDs / 1000 inhabitants use of a certain medication or group of medications
- To discuss the relevance of population-based drug utilisation data

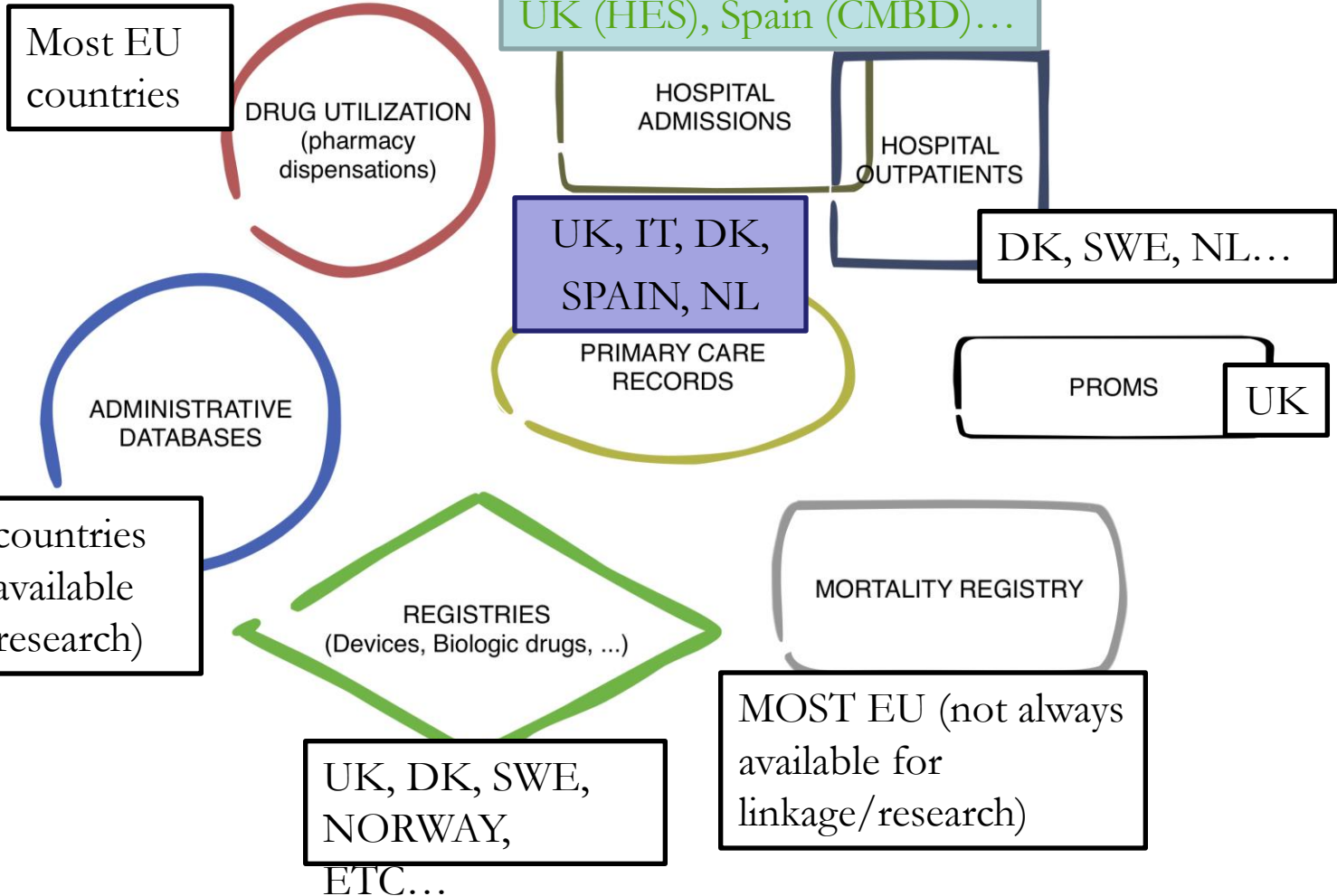
OUTLINE

- Breadth of routinely collected data in the EU: DU databases
- DU databases: DATA IN, DATA OUT
- Estimating DDDs/1000 persons/day
- Uses of population drug utilization data
- Advantages and pitfalls of DDD/1000/d
- EG: Alendronate in Norway and DK

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THE EU: BREADTH OF DATA FOR RESEARCH



AVAILABLE DATABASES IN THE EU: PROTECT: WP2, WG3

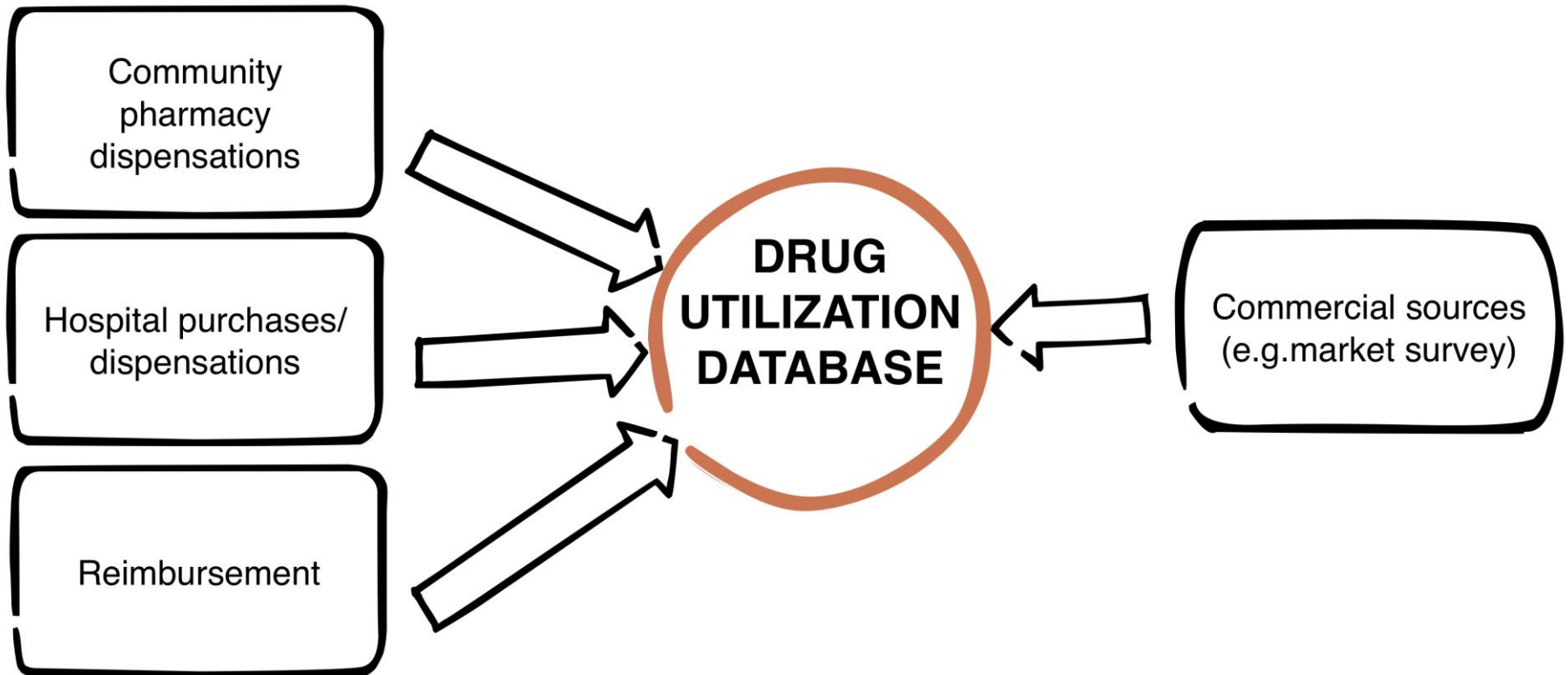
APPENDIX 5. SUMMARY TABLE OF NATIONAL DRUG CONSUMPTION DATABASES

Countries/ Characteristics	DENMARK (Danish National Prescription Database)		FRANCE (ERASME)	FINLAND (Prescription register database)	GERMANY	ITALY (OsMED database)	NORWAY (Norwegian Prescription database)
Data provider	The Danish Medicines Agency		Caisse Nationale d'Assurance Maladie des Travailleurs Salariés	Social Insurance Institution	Wissenschaftliche Institut der AOK (Research Institut of the AOK)	Italian Medicines Agency. Osservatorio sull'impiego dei medicinali	Norwegian Institute of Public Health
(accessibility) Web site	(Free online) www.medstat.dk/MedStatDataViewer.php		(Application) www.ameli.fr	(Application) http://kela.fi	(Application) www.wido.de	(Application) www.agenziafarmaco.gov.it	(Free online) www.norpd.no
Countries/ Characteristics	NETHERLANDS		POLAND NHF database	SPAIN	SWEDEN (The Swedish Prescribed Drug Register)	UNITED KINGDOM (ePACT database)	
	GIP database	SFK database					
Data provider	Health Care Insurance Board	Foundation for Pharmaceutical Statistics	National Health Fund	Department of Pharmacy and Health Products	The National Board of Health and Welfare	NHS Prescription Services	
(accessibility) Web site	(Free online) www.gipdatabank.nl	(Application) www.sfk.nl	(Application) www.nfz.gov.pl	(Application) www.aemps.es	(Free online) http://192.137.163.49/sdb/lak/val.aspx	(Application) www.epact.net	

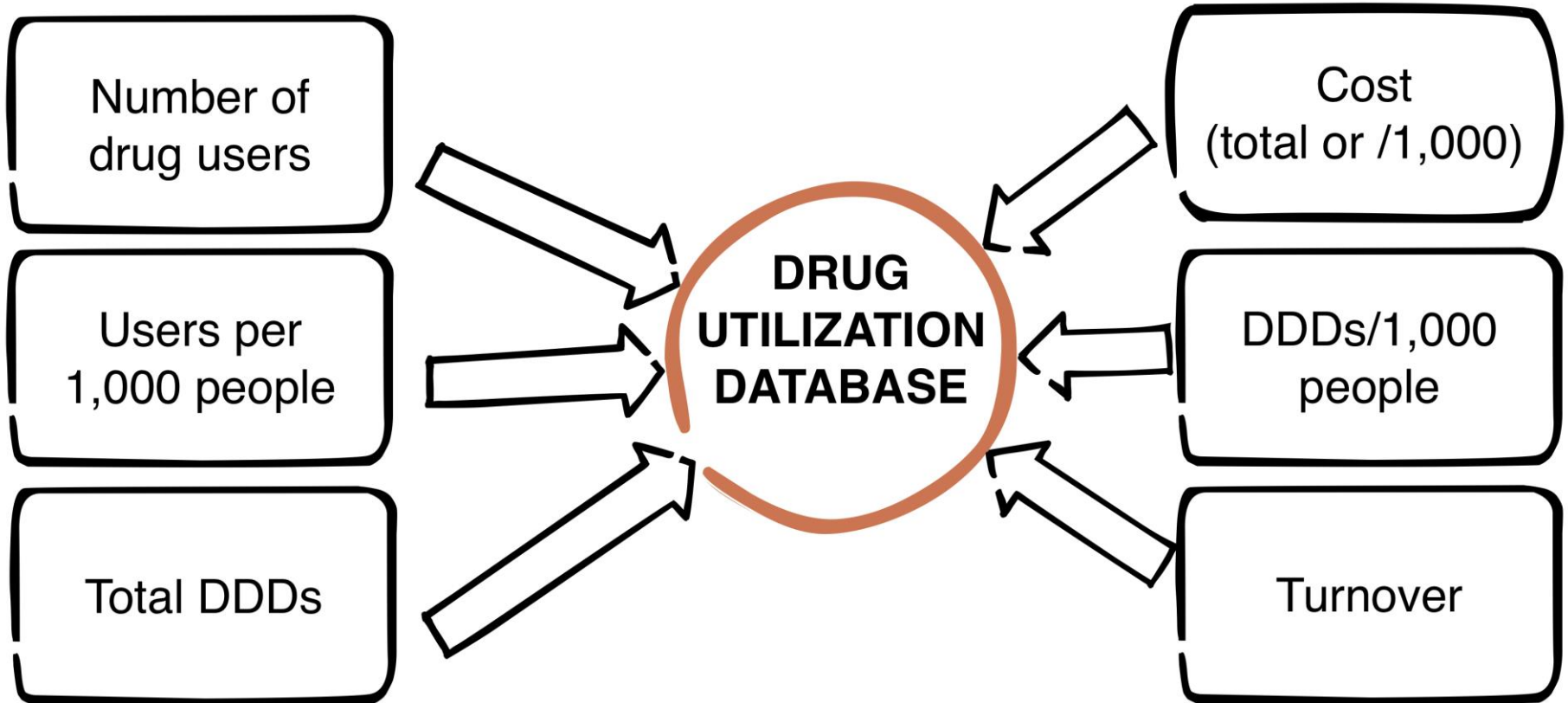
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DATA IN



DATA OUT



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CALCULATING DDDs/1,000 persons/day

- WHO: DDDs/1000 inhab/day are the gold standard of drug consumption.
- Rough estimate of the proportion of the population treated on a given day.
- E.G.: 10 DDDs/1000 inhabitants/day for drug A in region X indicates that on average 1% of the population from region X gets treatment with A daily.

CALCULATING DDDs/1,000 persons/day (2)

$$\text{DDD}_s/1000/d = \frac{\text{DDDs used in a year} \times 1000}{\text{Population} \times 365}$$

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USES OF DDD/1000/d DATA

- Drug utilization description/comparison¹
- Denominator for adverse drug reaction rates²
- Screening for problems in drug utilization³
- Monitoring the effects of regulatory and informational activities⁴
- Estimating prevalence of drug use for PARs⁵
- ...

DESCRIBING DRUG UTILIZATION

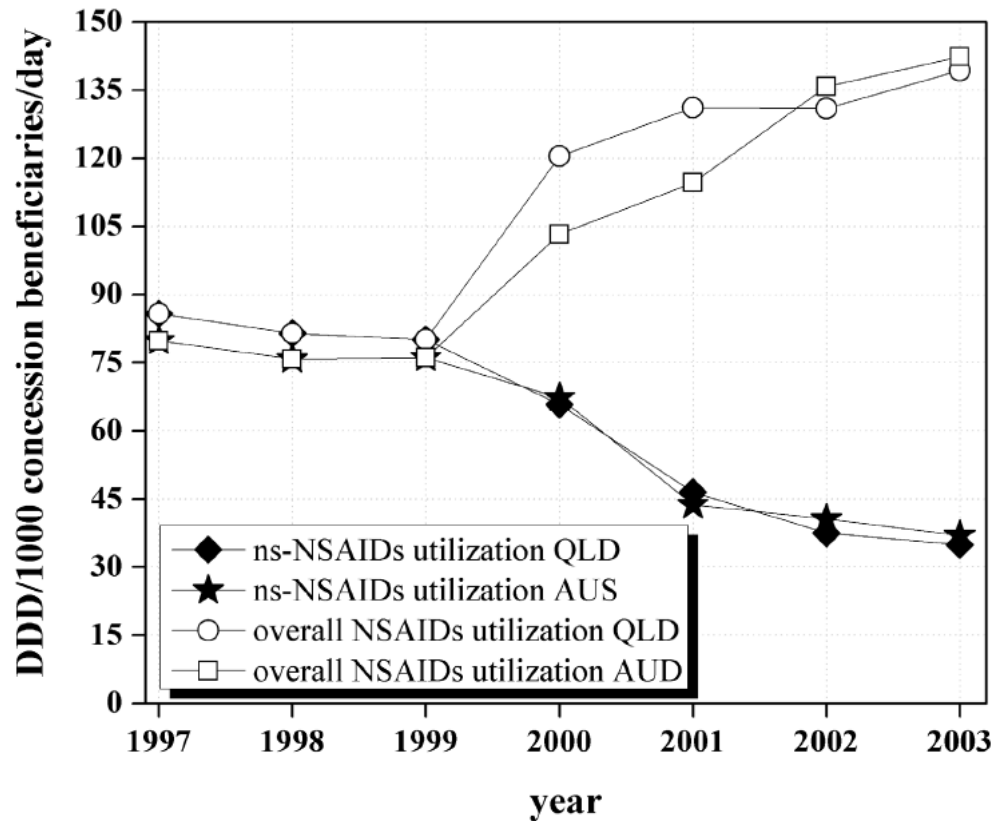
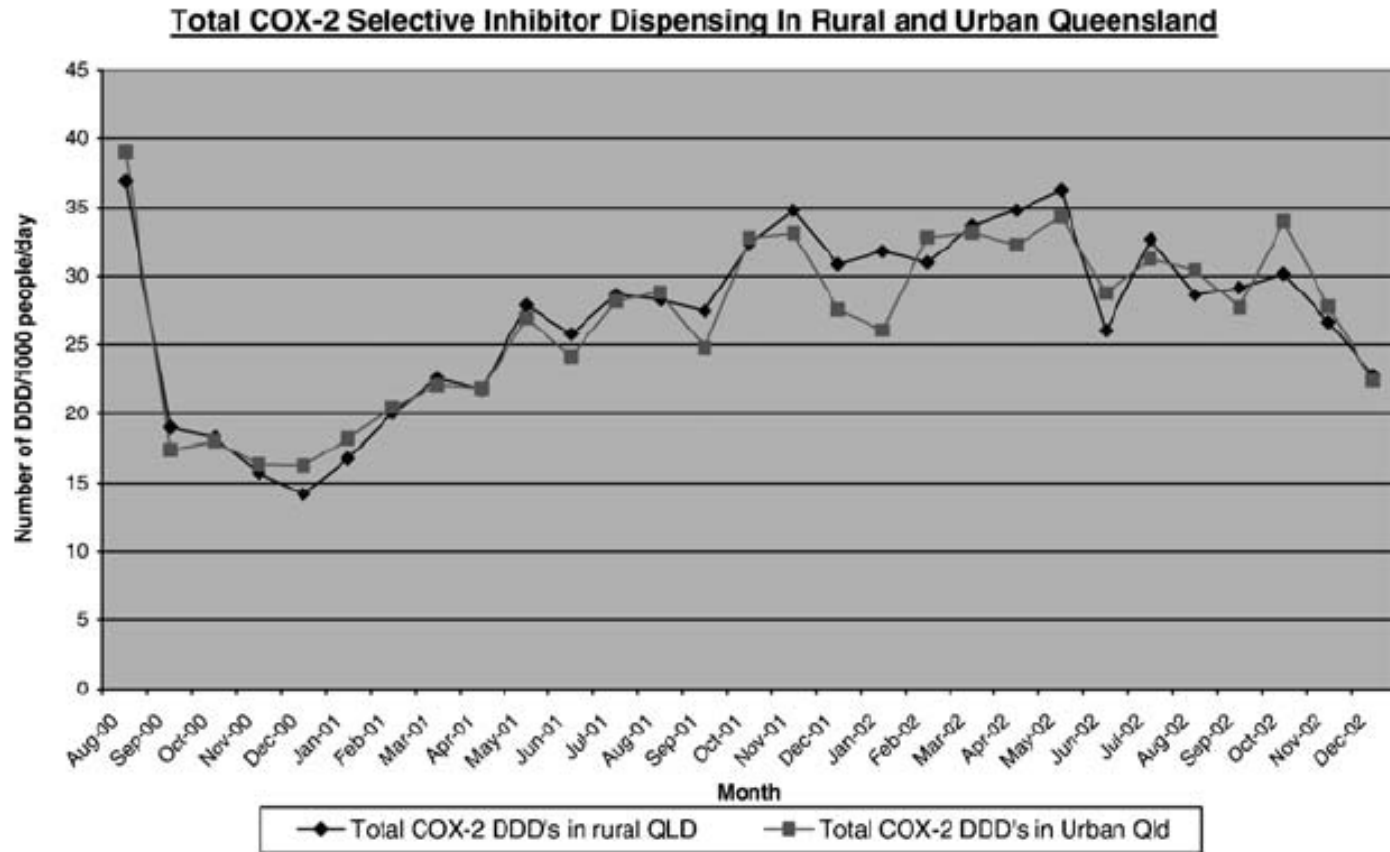
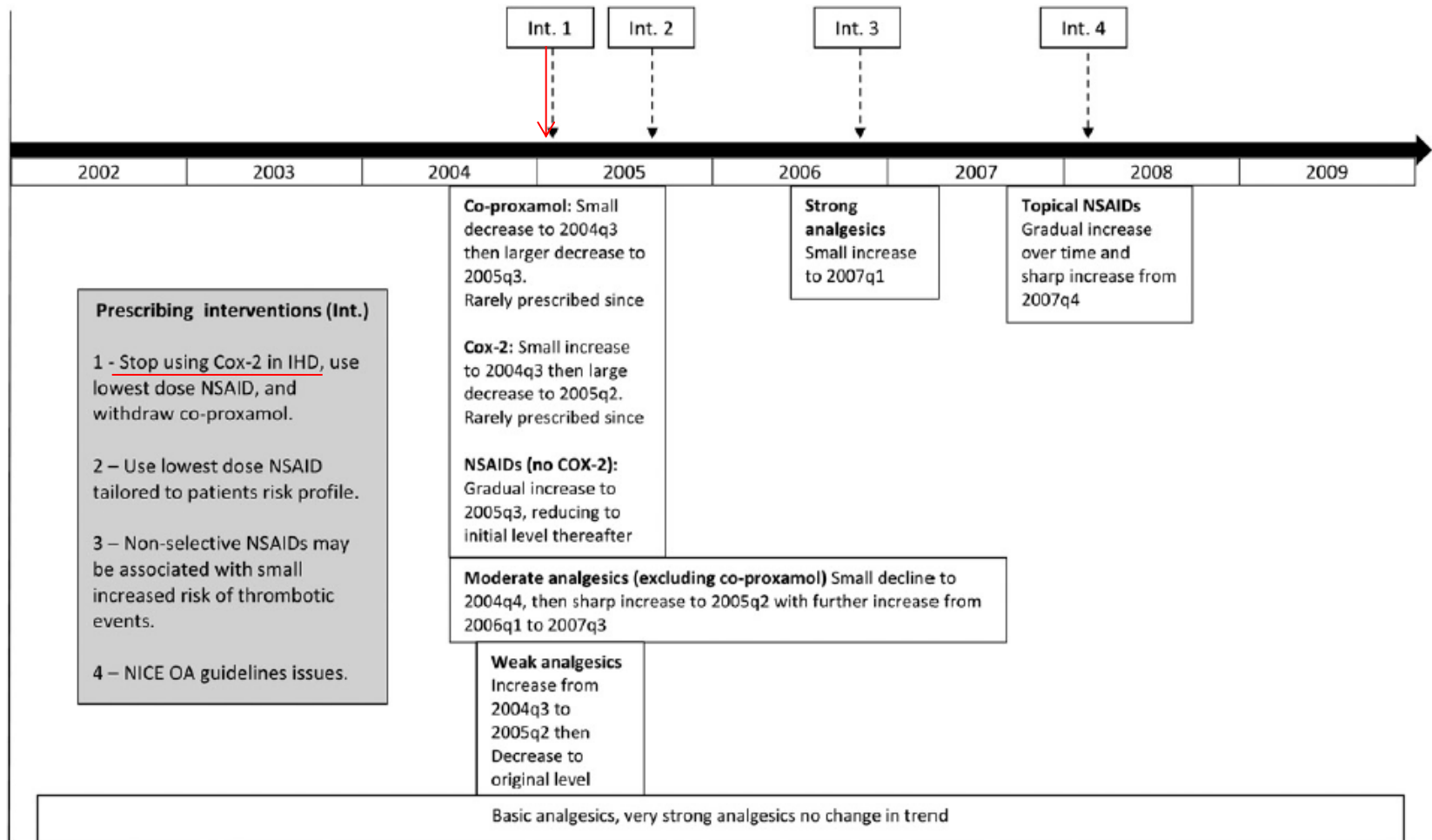


Figure 1
The ns-NSAID and COX-2 inhibitor prescription pattern in concession beneficiaries in Australia and in Queensland between 1997 and 2003.

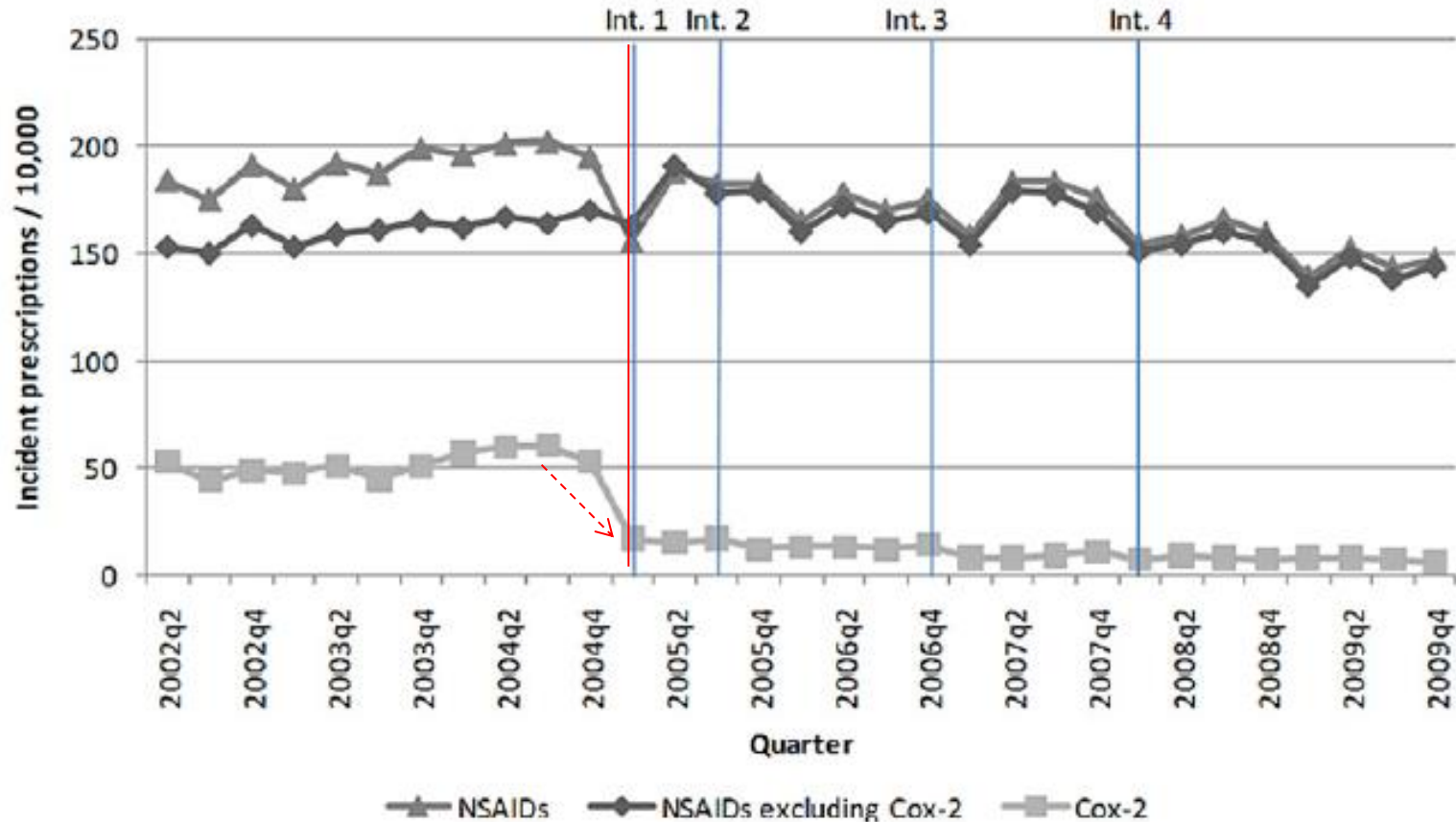
COMPARISON OF DRUG UTILIZATION



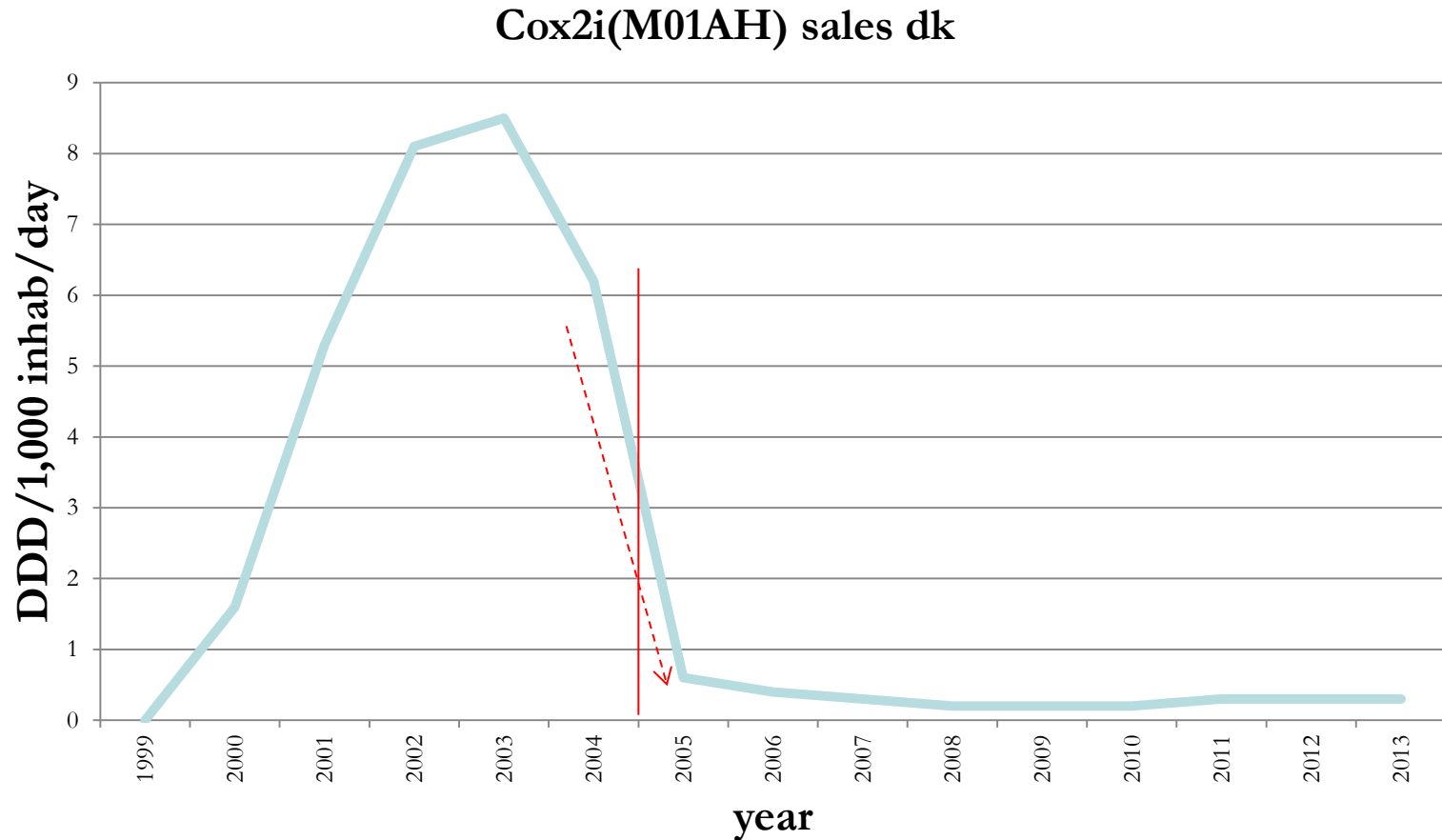
MONITORING THE EFFECTS OF REGULATORY ACTIVITIES AND GUIDELINES



MONITORING THE EFFECTS OF REGULATORY ACTIVITIES AND GUIDELINES(2)



FAST “REPLICATION” IN DK DATABASE



ADVANTAGES AND PITFALLS

+

- Rapid response (eg secular trends)
- International comparison
- Comparing the “effect” of different drugs
- ...

-

- DDD is not necessarily the prescribed dose
- Estimated for adults (not for children)
- Does not account for adherence
- ...

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DANISH MEDSTAT: SEARCHING FOR ALENDRONATE USE (DDDs/1,000/day)

MEDSTAT.DK



Home Groups of medicines ATC code Product name [Data basis and description](#)

ATC code	Year	Region
M05BX03	2013	Entire Denmark
	2012	Hovedstaden
	2011	Nordjylland
	2010	Midtjylland
	2009	Sjælland
	2008	Syddanmark

Gender	Age group (change)
Gender, combined	10 - 14 y.o.
Male	15 - 19 y.o.
Female	20 - 39 y.o.
	40 - 64 y.o.
	65 - 79 y.o.
	80+ y.o.

Sector
Primary sector
Hospital sector
Total

Search variable
Volume sold
Volume sold per 1,000 inhabitants per day

-M05BA04

-2009-13

-40-64y

-Volume per
1,000 inhab.

per day



DANISH MEDSTAT DATABASE : RESULTS FOR ALENDRONATE USERS

MEDSTAT.DK



ATC code: **M05BA04**

Search variable: **Volume sold per 1,000 inhabitants per day**

Sector: **Total**

Region: **Entire Denmark**

	2009	2010	2011	2012	2013
Total sales	Volume sold (DDD) per 1,000 inhabitants per day				
M05BA04 (Alendronic acid)	9.3	10.6	11.7	12.4	12.7

NORWEGIAN PRESCRIPTION DATABASE

folkehelseinstituttet

Home page Prescription Database

Statistics from the Norwegian Prescription Database

Select drugs using drug categories ⓘ

- ADHD, drugs used for
- Analgesics excluding opioids
- Analgetics
- Antibacterials
- Anti-dementia drugs

Select drugs using the ATC-system ⓘ Clear

- A Alimentary tract and metabolism
- B Blood and blood forming organs
- C Cardiovascular system
- D Dermatologicals
- G Genito urinary system and sex hormones
- Systemic hormonal preparations, excl.

Unit of measurement ⓘ

- Number of users
- Users per 1000 inhabitants
- Population base
- Turnover by value
- Turnover by dosage (DDD)

Age ⓘ Check all Clear

- All ages
- 0 - 4
- 5 - 9
- 10 - 14
- 15 - 19
- 20 - 24
- 25 - 29
- 30 - 34
- 35 - 39
- 40 - 44
- 45 - 49
- 50 - 54
- 55 - 59
- 60 - 64
- 65 - 69
- 70 - 74
- 75 - 79
- 80 - 84
- 85 - 89
- 90 - 94
- 95 - 99

Residence ⓘ Check regions / counties Clear

- Entire country
- Health region Midt-Norge
- Health region Nord-Norge
- Health region Sør-Øst
- Health region Vest
- Akershus
- Aust-Agder
- Buskerud
- Finnmark
- Hedmark
- Hordaland
- Jämtland
- Lister
- Møre og Romsdal
- Nordland
- Oppland
- Rogaland
- Sogn og Fjordane
- Telemark
- Trøndelag
- Valdres
- Vest-Agder
- Vestfold
- Øst-Agder
- Østfold

Period ⓘ

- 2013
- 2012
- 2011
- 2010
- 2009
- 2008
- 2007
- 2006
- 2005
- 2004

Sex ⓘ

- Both sexes
- Women
- Men

Select drugs by product name and/or active ingredient ⓘ

Active ingredient Product name Search

Show report in Excel

Clear

DDDs per 1000/day is not one of the units available..



REMEMBER ...

$$\text{DDD}_s/1000/d = \frac{\text{DDDs used in a year} \times 1000}{\text{Population} \times 365}$$

NORPD: ESTIMATING ALENDRONATE USE (DDDs/1,000/day)

folkehelseinstituttet

Home page Prescription Database

Statistics from the Norwegian Prescription Database

Select drugs using drug categories ADHD, drugs used for
 Analgesics excluding opioids
 Analgetics
 Antibacterials
 Anti-dementia drugs

Select drugs using the ATC-system M05BA Bisphosphonates M05BA01 Etidronic acid
 M05BA02 Clodronic acid
 M05BA03 Pamidronic acid
 M05BA04 Alendronic acid
 M05BA05 Tiludronic acid
 M05BA06 Ibandronic acid

Unit of measurement Number of users
 Users per 1000 inhabitants
 Population base
 Turnover by value
 Turnover by dosage (DDD)

Age All ages
 0 - 4
 5 - 9
 10 - 14
 15 - 19

Residence Entire country
 Health region Midt-Norge
 Health region Nord-Norge
 Health region Sør-Øst
 Health region Vest
 Akershus
 Aust-Agder
 Buskerud

Period 2013
 2012
 2011
 2010
 2009
 2008
 2007
 2006
 2005
 2004

Sex Both sexes
 Women
 Men

Select drugs by product name and/or active ingredient

Show report in Excel

Clear

-M05BA04
-2009-13
-40-64y
-Turnover by dosage (DDD)
-Population base

NORPD: ESTIMATING ALENDRONATE USE (DDDs/1,000/day) (2)

Norwegian Prescription Database

					Population base	Turnover by dosage (DDD)
M05BA04	2009	All ages	Both sexes	Entire country	4 829 800	15 348 329
	2010	All ages	Both sexes	Entire country	4 888 946	15 538 122
	2011	All ages	Both sexes	Entire country	4 953 216	15 471 983
	2012	All ages	Both sexes	Entire country	5 018 414	15 278 523
	2013	All ages	Both sexes	Entire country	5 080 148	15 176 424

NORPD: ESTIMATING ALENDRONATE USE (DDDs/1,000/day) (3)

Excel File Edit View Insert Format Tools Data Window Help

rapport-2_aln_DDDs&basepopulation_withDDDsper1000day.xls

Home Layout Tables Charts SmartArt Formulas Data Review

Font: Arial, 10, Bold, Italic, Underline, Text Color, Background Color, Paragraph: Wrap Text, Merge, Alignment: General, Number: 0%, 0.00, Conditional Formatting: Normal, Bad, Good, Neutral, Calculation, Check Cell, Cells: Insert, Delete, Format

SUM $=H11*1000/(G11*365)$

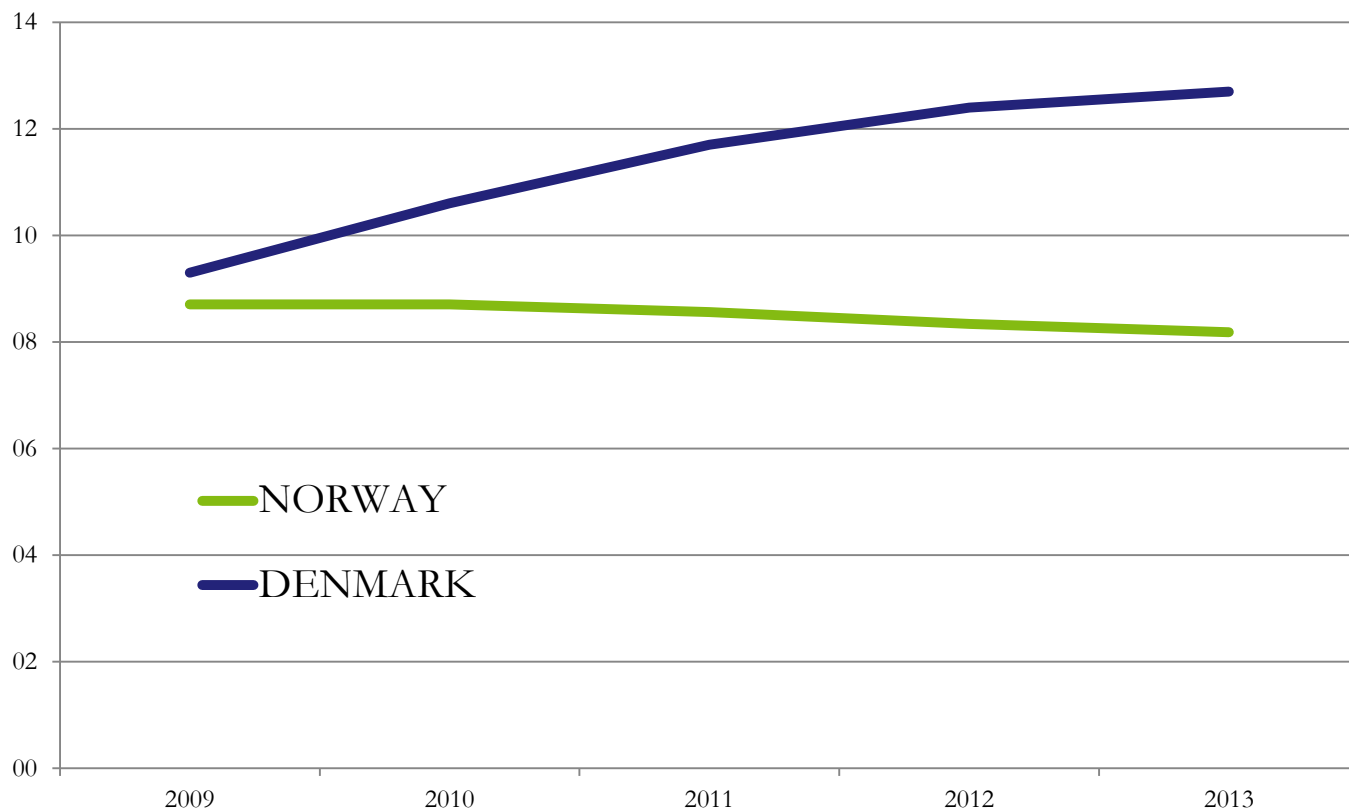
	A	B	C	D	E	F	G	H	I	J
1	Norwegian Prescription Database									
2										
3										
4										
5										
9							Population base	Turnover by dosage (DDD)		
10										
11	M05BA04	'2009	All ages	Both sexes	Entire country		4 829 800	15 348 329	$=H11*1000/(G11*365)$	
12		'2010	All ages	Both sexes	Entire country		4 888 946	15 538 122		
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NORPD RESULTS: ALENDRONATE USE (DDDs/1,000/day)

Norwegian Prescription Database

					Population base	Turnover by dosage (DDD)	
M05BA04	2009	All ages	Both sexes	Entire country	4 829 800	15 348 329	8,706409466
	2010	All ages	Both sexes	Entire country	4 888 946	15 538 122	8,70743863
	2011	All ages	Both sexes	Entire country	4 953 216	15 471 983	8,557873212
	2012	All ages	Both sexes	Entire country	5 018 414	15 278 523	8,341074914
	2013	All ages	Both sexes	Entire country	5 080 148	15 176 424	8,184652068

TRENDS OF USE OF ALN IN DK AND NOR IN THE YEARS 2009-2013





Drug utilisation data sources in the EU.

