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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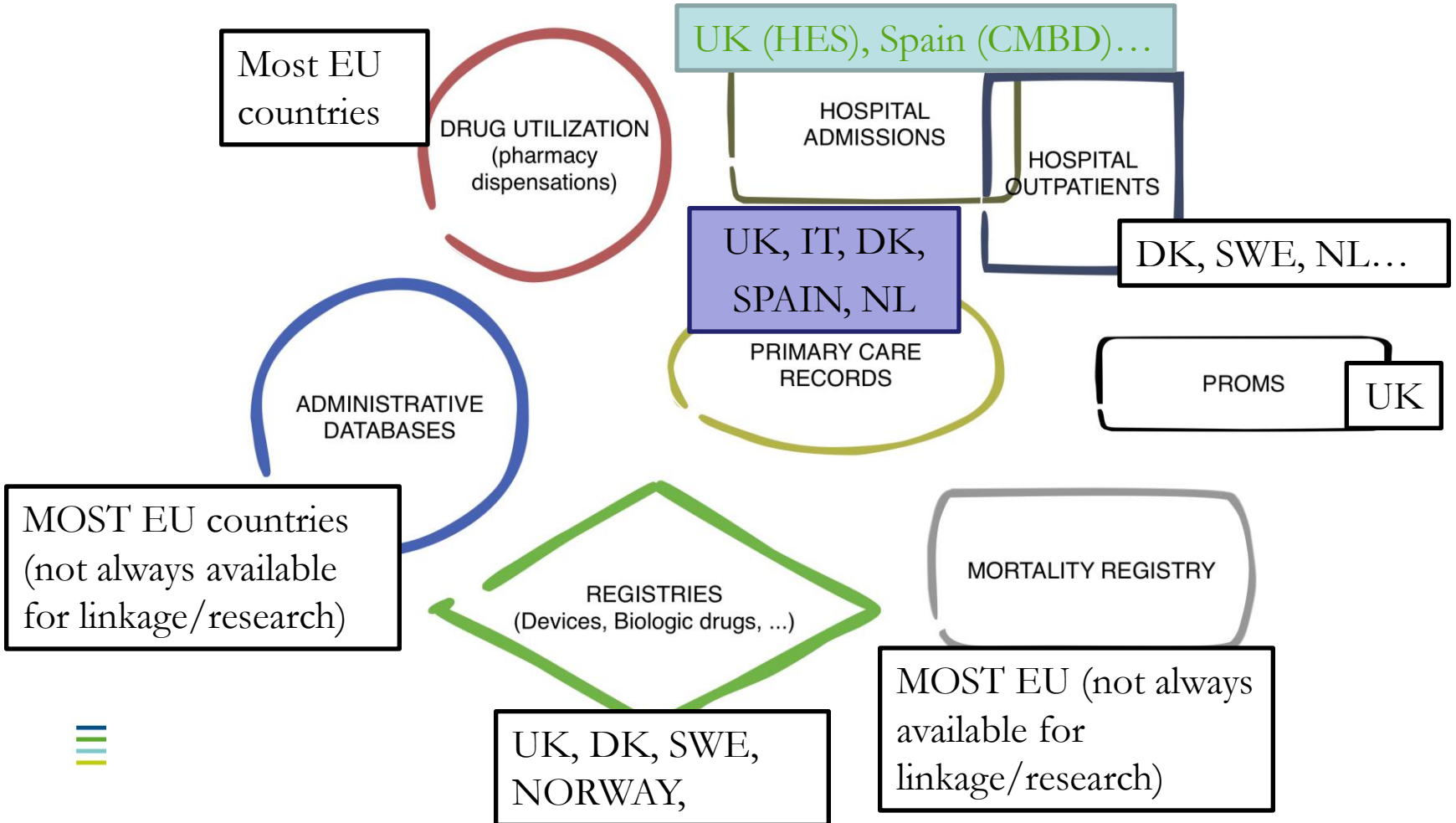
THE EU: BREADTH OF DATA FOR RESEARCH



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	Wissenschaftliches 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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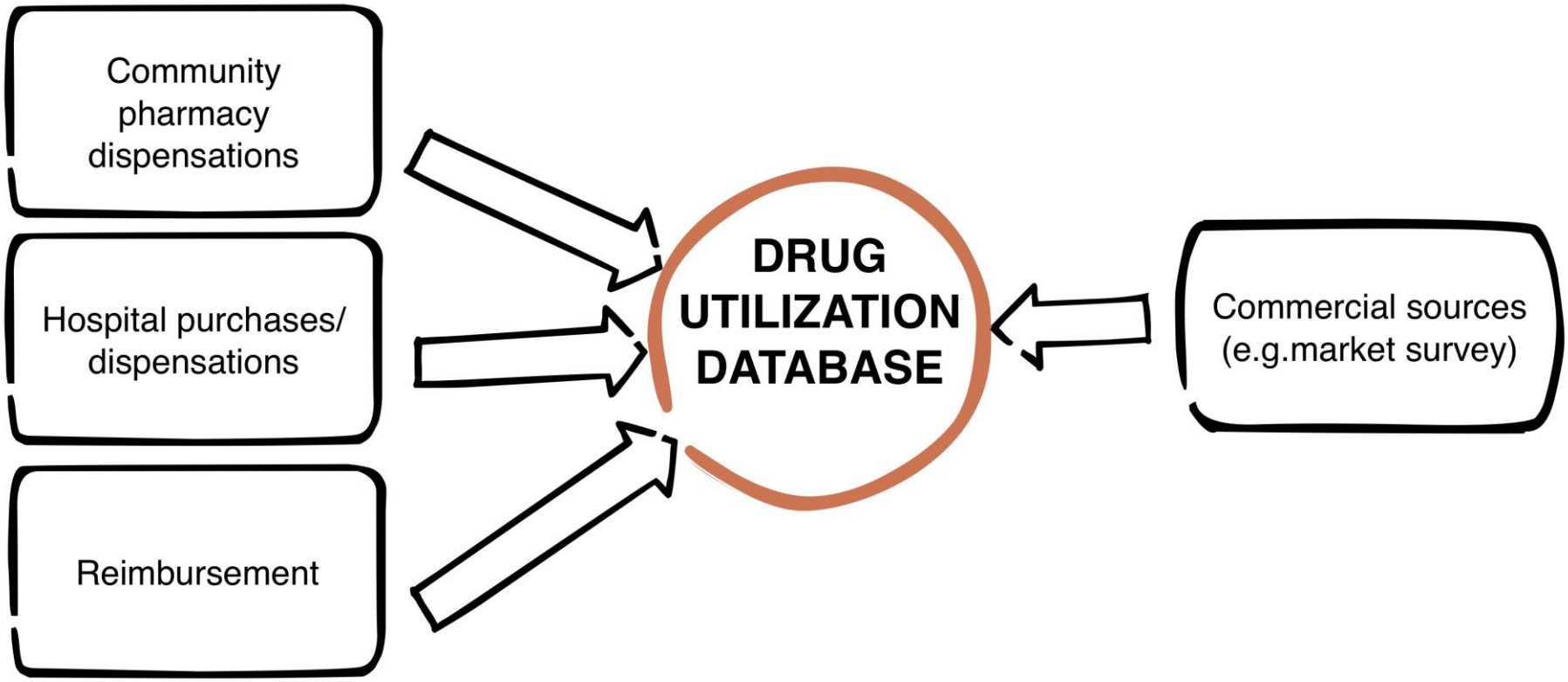
DATA IN



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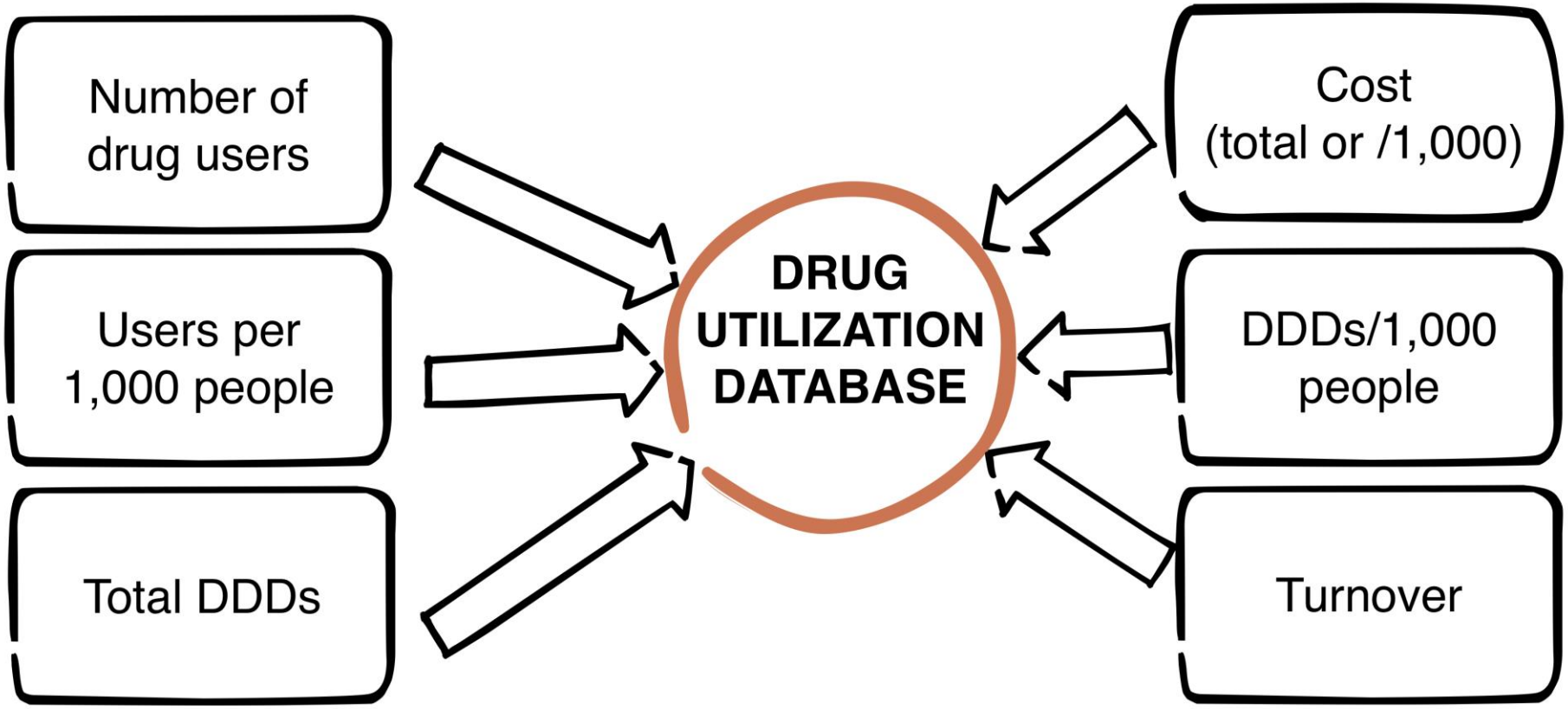
DATA OUT


Number of drug users
Users per 1,000 people
Total DDDs
DRUG UTILIZATION DATABASE
Cost (total or /1,000)
DDDs/1,000 people
Turnover

OUTLINE

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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)

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

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USES OF DDD/1000/d DATA

- Drug utilization description/comparison[1]
- Denominator for adverse drug reaction rates[2]
- Screening for problems in drug utilization[3]
- Monitoring the effects of regulatory and informational activities[4]
- Estimating prevalence of drug use for PARs[5]
- …

1.Bergman U et al. Clin Pharmacol Ther 1991
2.Bergman U et al. Br Med J 1978
3.Westerholm B et al. Br J Clin Pharmacol 1986
4.Schussel K et al Pharmazie 2006
5.Prieto-Alhambra D et al. Osteoporos Int 2014

DESCRIBING DRUG UTILIZATION

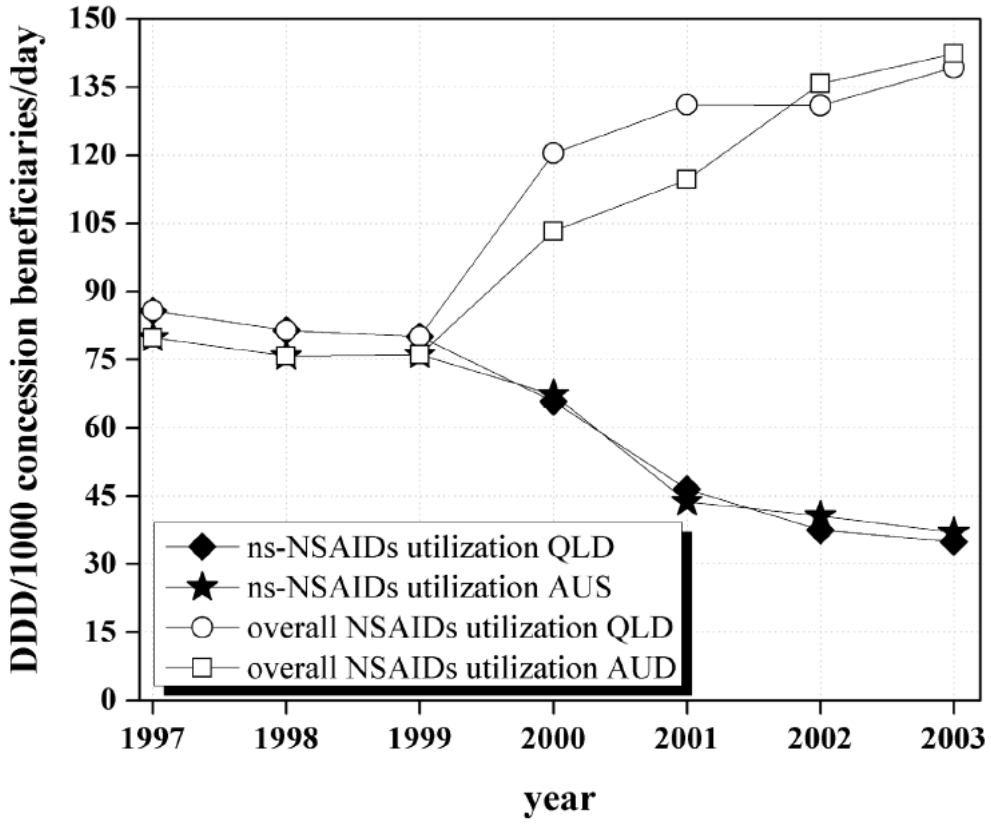
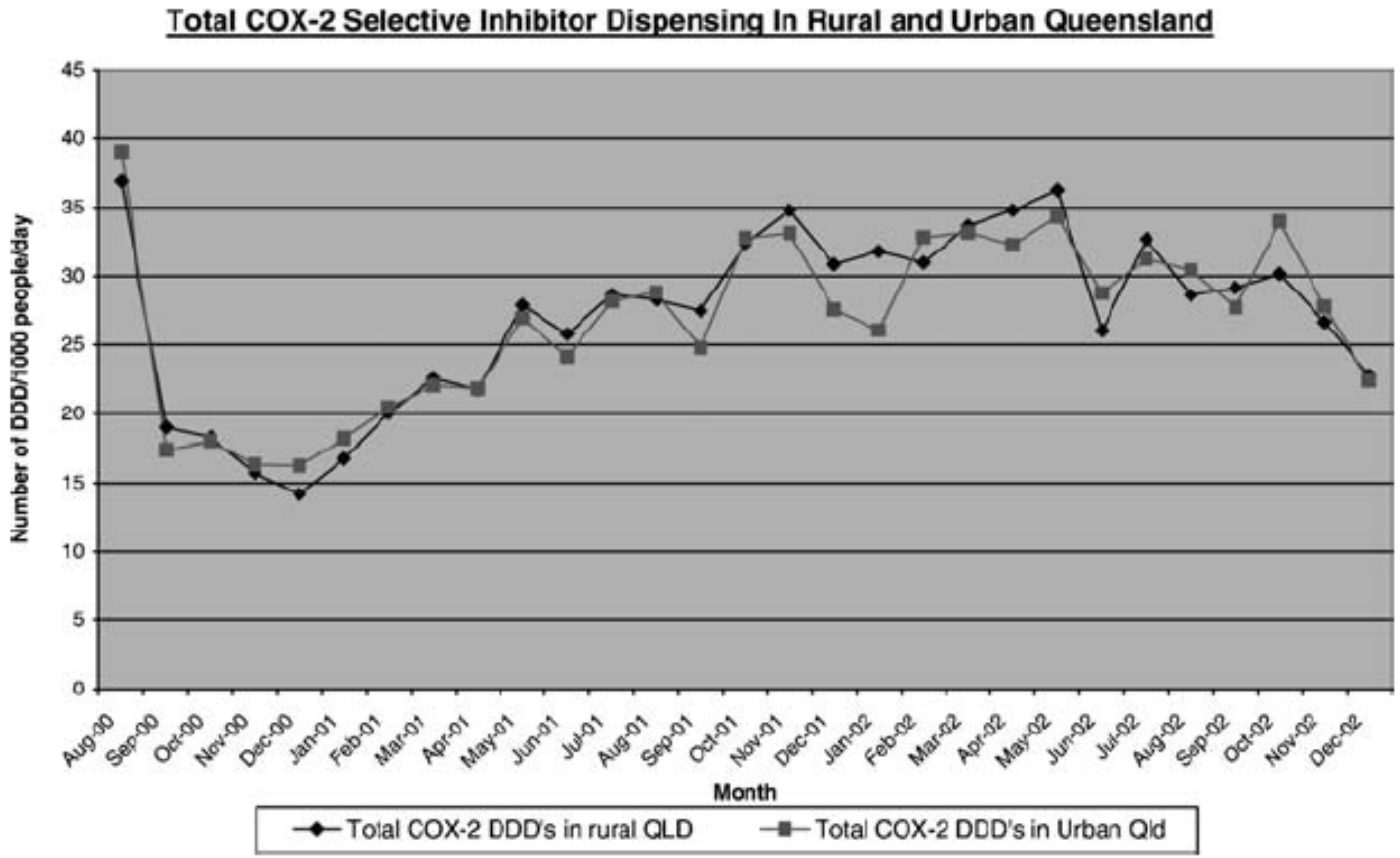


Figure 1
The ns-NSAID and COX-2 inhibitor prescription pattern in concession beneficiaries in Australia and in Queensland between 1997 and 2003.

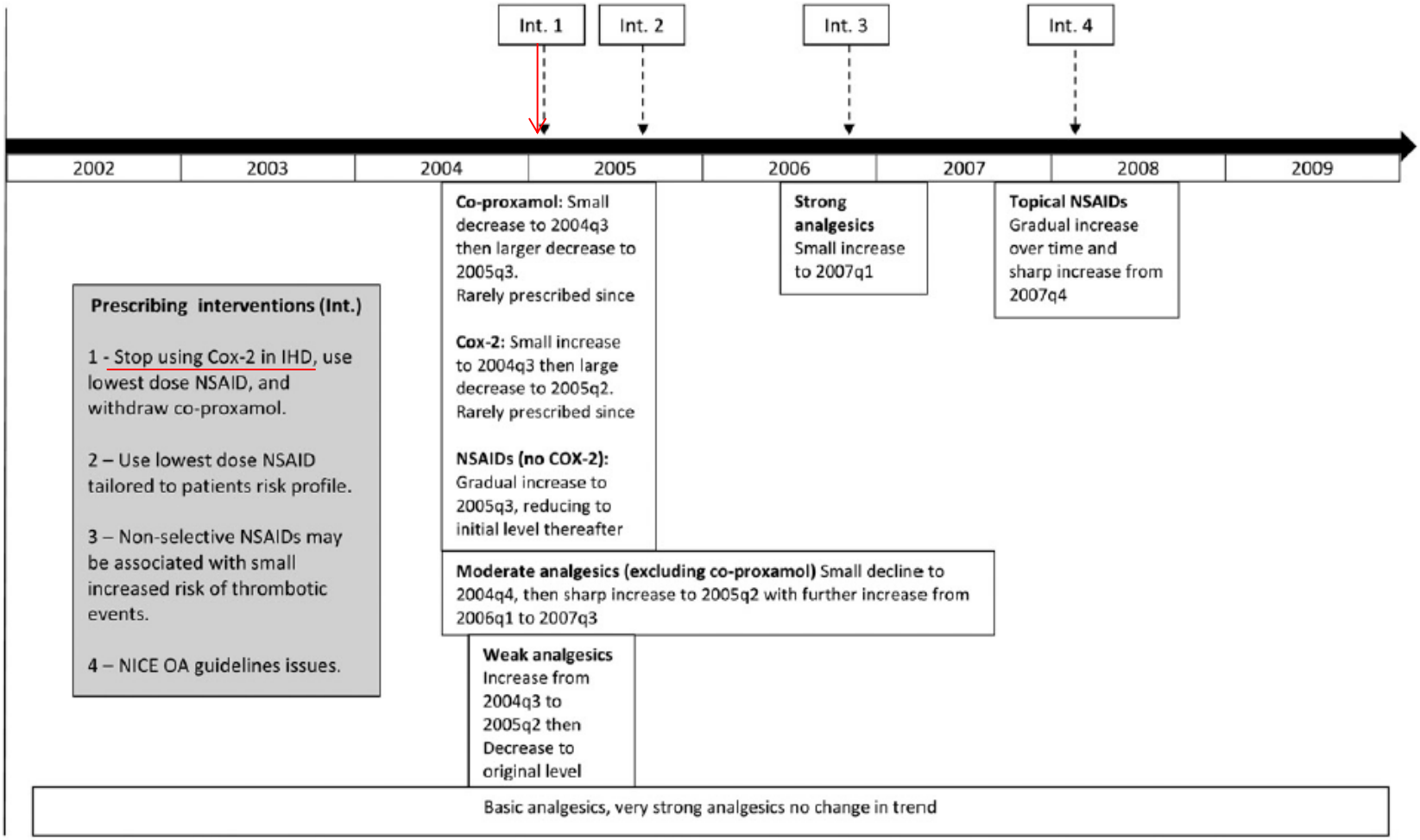
Barozzi N et al. BMC Health Services Res 2008

COMPARISON OF DRUG UTILIZATION



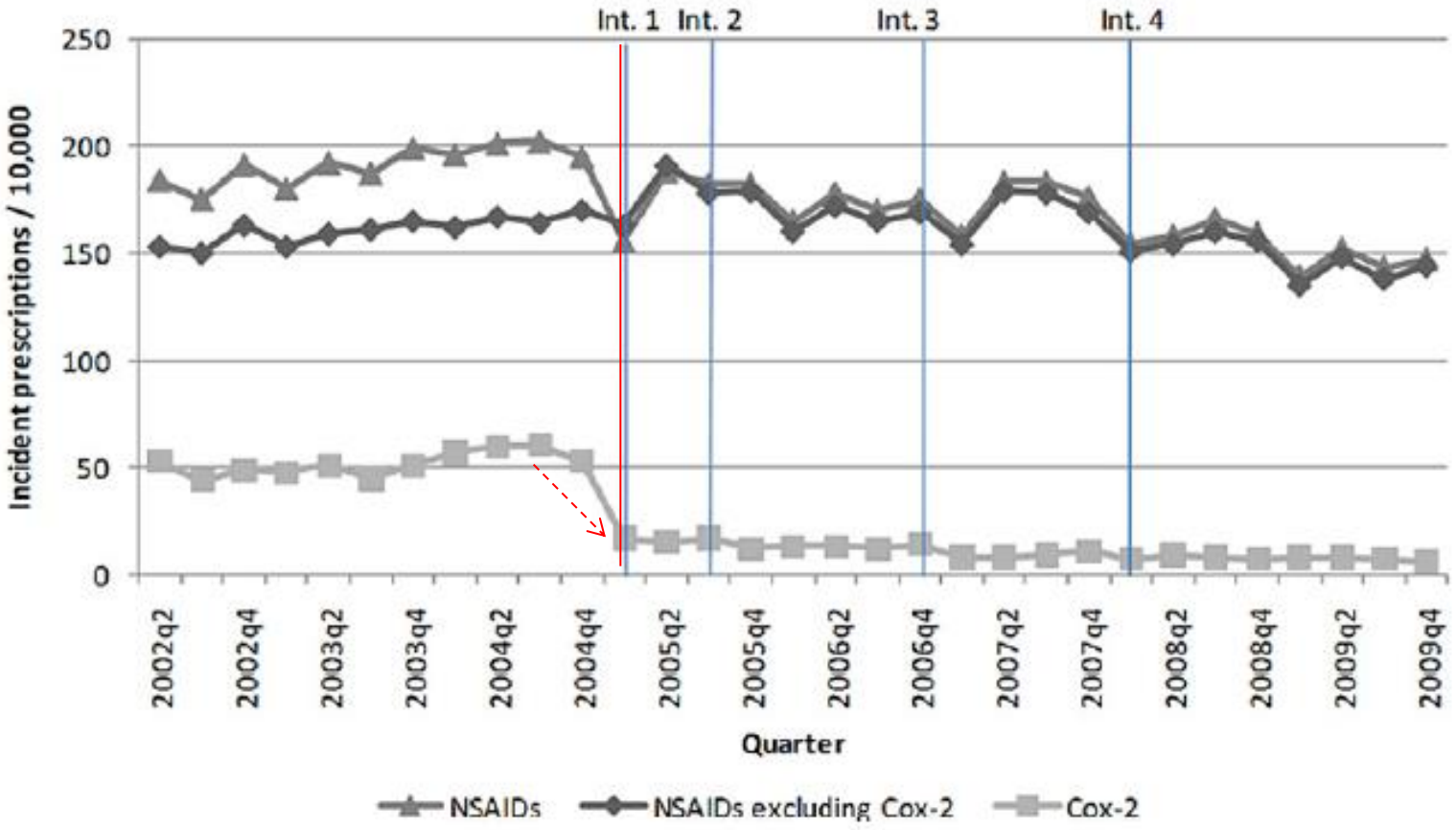
Behan K et al. Eur J Clin Pharmacol 2005

MONITORING THE EFFECTS OF REGULATORY ACTIVITIES AND GUIDELINES



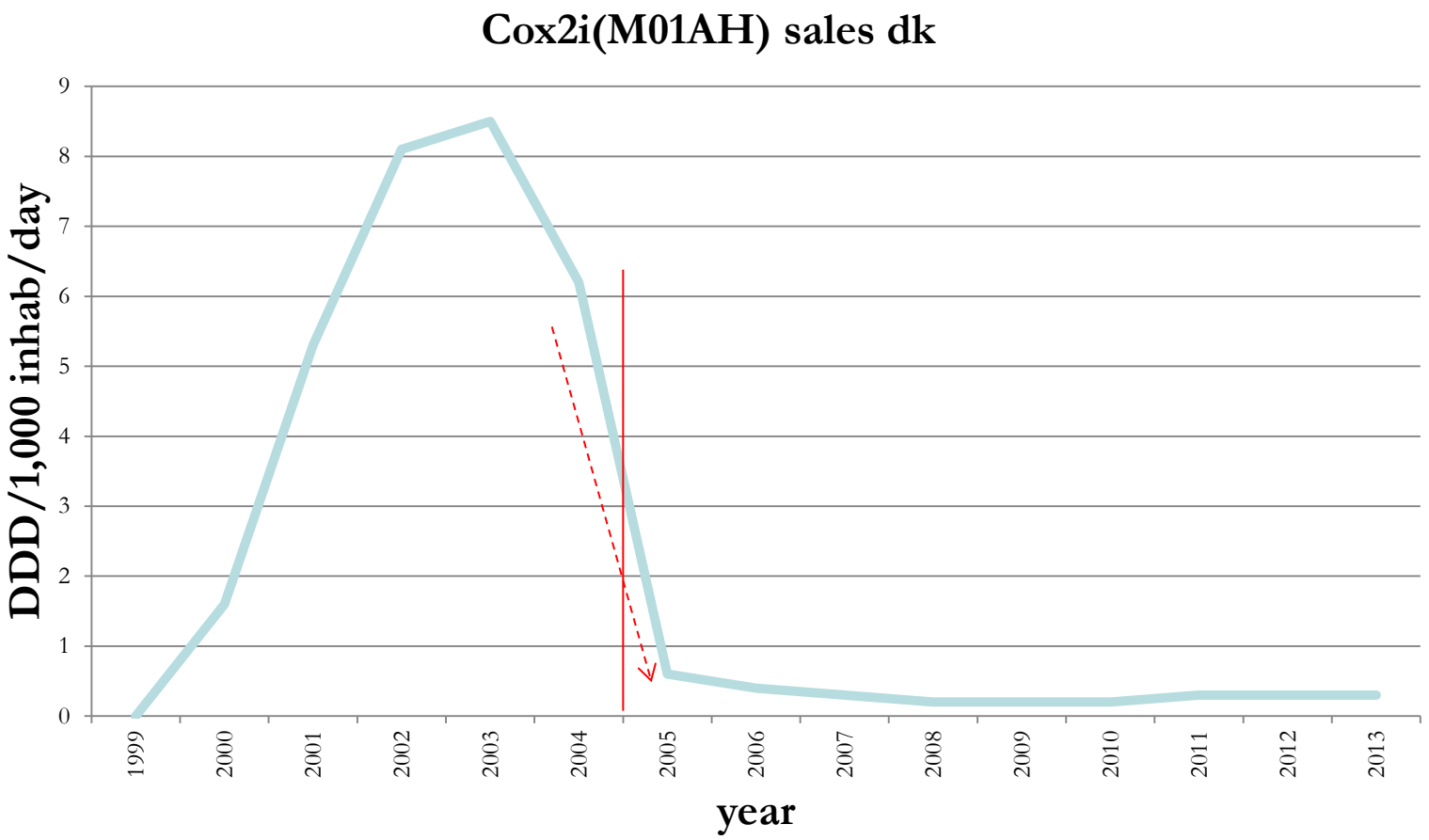
Bedson J et al. Eur J Pain 2012

MONITORING THE EFFECTS OF REGULATORY ACTIVITIES AND GUIDELINES(2)



Bedson J et al. Eur J Pain 2012

FAST "REPLICATION" IN DK DATABASE



Bedson J et al. Eur J Pain 2012

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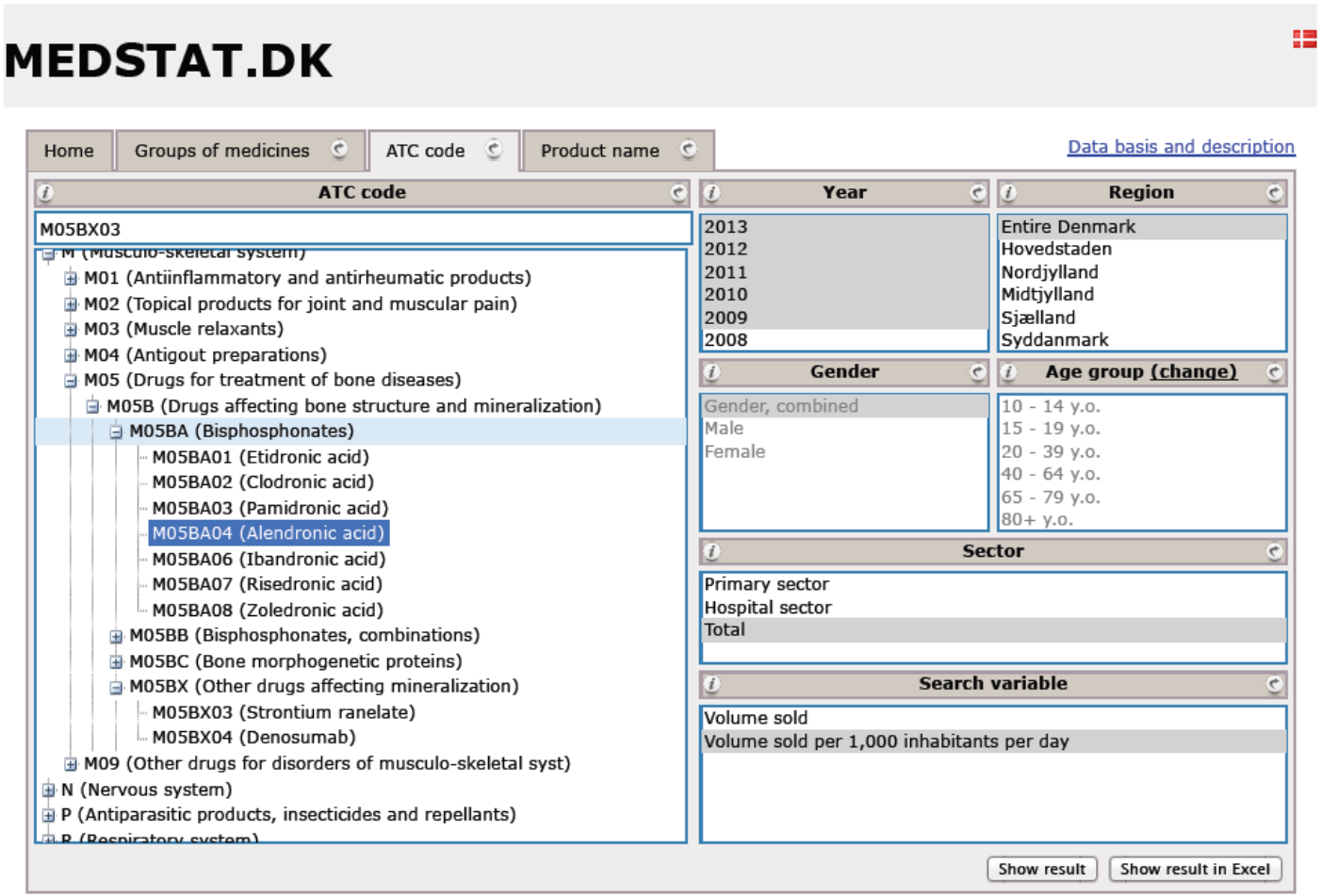
DANISH MEDSTAT: SEARCHING FOR ALENDRONATE USE (DDDs/1,000/day)



-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

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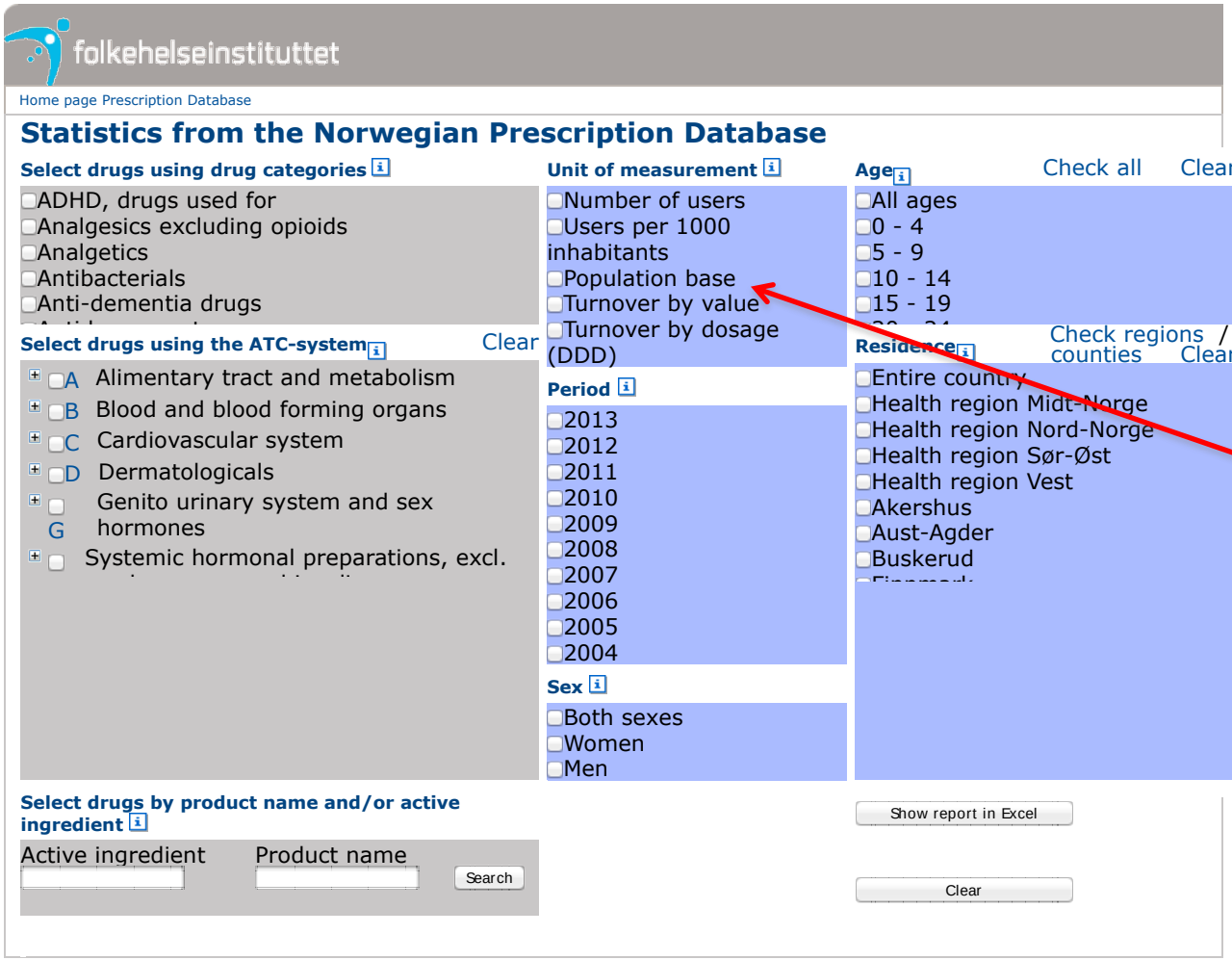
Note: THESE DATA ARE NOT CHECKED FOR SCIENTIFIC CONTENT, AND SHOULD ONLY BE USED FOR TRAINING PURPOSES

NORWEGIAN PRESCRIPTION DATABASE

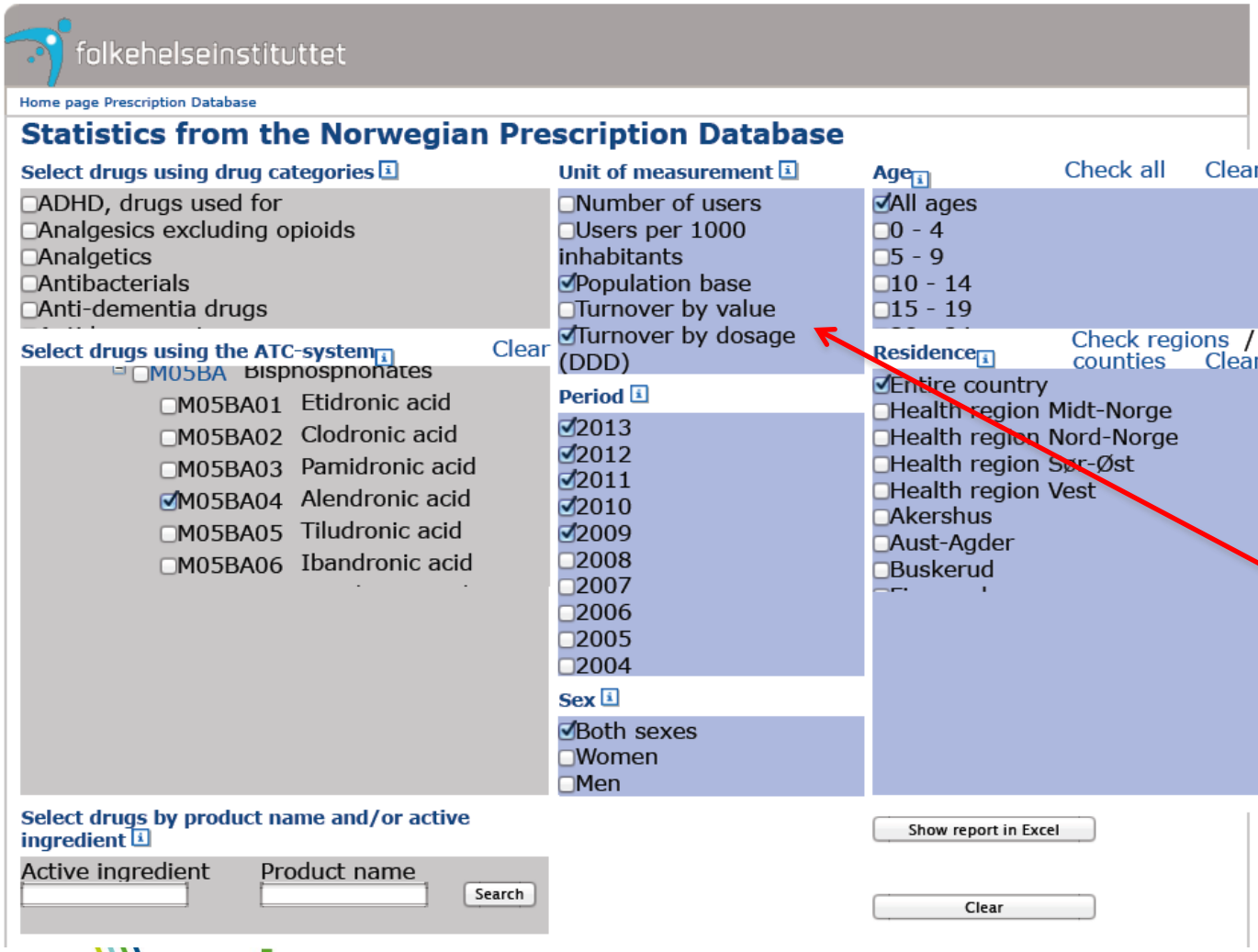


DDDs per 1000/day is not one of the units available..

REMEMBER …

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

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



-M05BA04

-2009-13

-40-64y

-Turnover by dosage (DDD)

-Population base

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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

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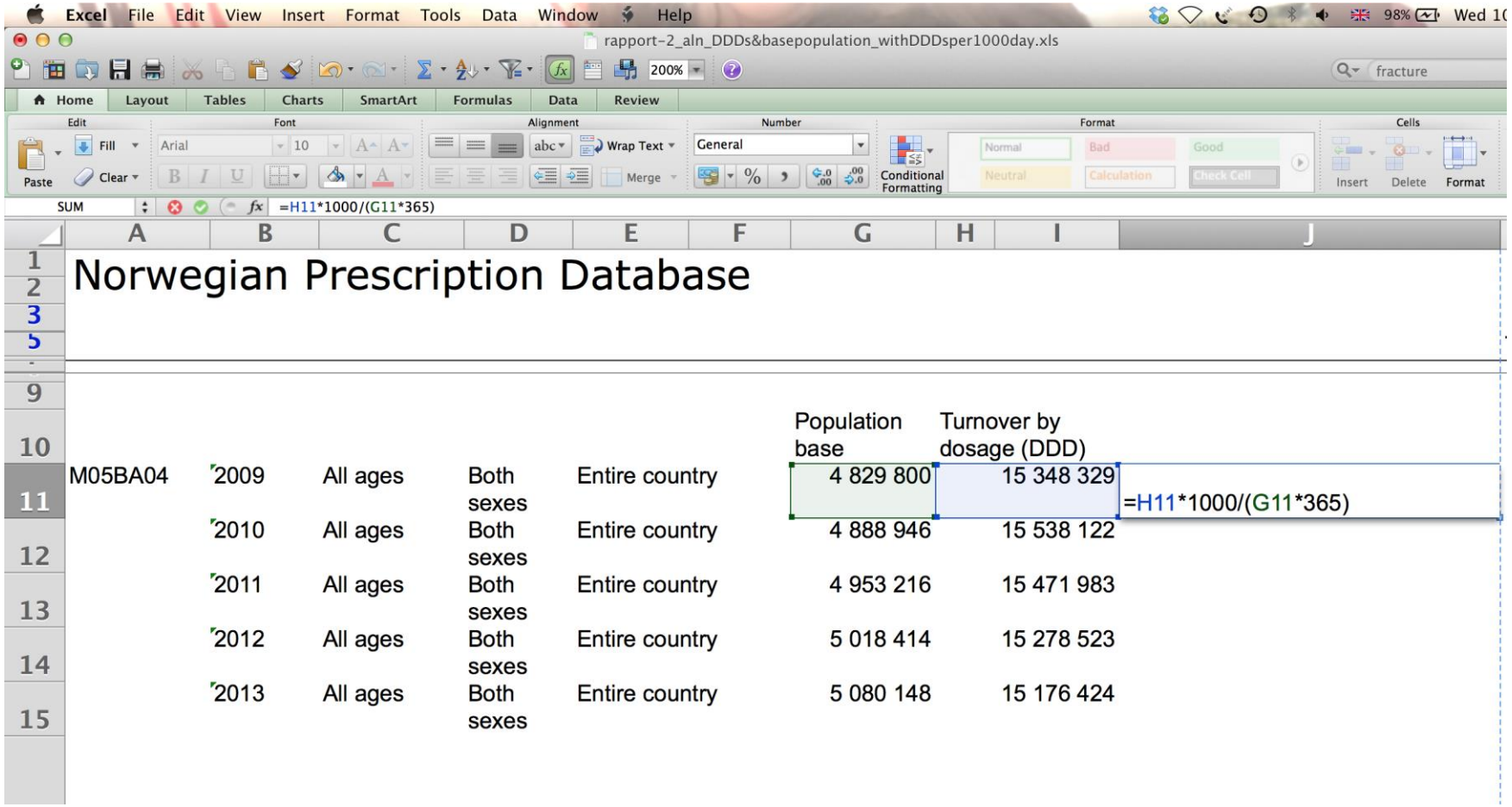
NORPD: ESTIMATING ALENDRONATE USE (DDDs/1,000/day) (3)



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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

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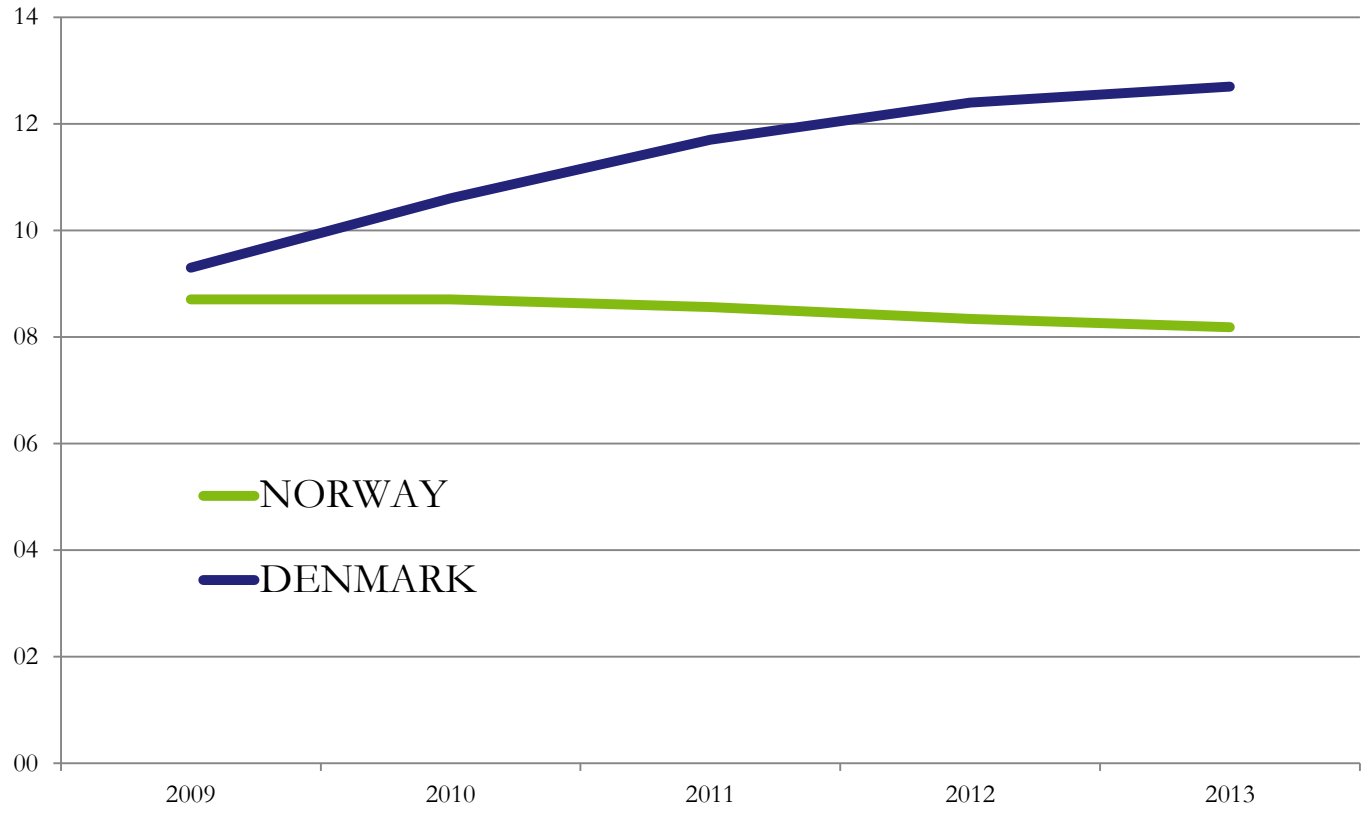
TRENDS OF USE OF ALN IN DK AND NOR IN THE YEARS 2009-2013



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Drug utilisation data sources in the EU.