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Literature Review

Cross-national comparison of DU activities

Anna Gillström & Björn Wettermark

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*Björn Wettermark (Se), Morten Andersen (Dk), Alison Bourke (UK), Monique Elseviers (Be), Brian Godman (UK), Flora Haaijer-Ruskamp (NI), Aukje Mantel-Teeuwisse (NI), Frank May (Australia), Elisabetta Poluzzi (It), Gisbert Selke (De), Hanne Strøm (No), Robert Vander Stichele (Be), Vera Vlahović-Palčevski (Hr)

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Introduction

From the very beginning of Drug Utilisation Research (DUR) in early 1960s the importance of cross national comparisons (CNC) of drug use has been recognized. The pioneering European drug utilization studies focused on differences in the utilization of drugs between countries or regions (1-10). The studies revealed substantial differences between countries, e.g., in the utilization of antidiabetic agents, antihypertensives and psychotropics. Over the years, a number of methodological innovations have been made to facilitate such comparisons, such as the development of the international classification system for medicines (the Anatomical Therapeutic Chemical Classification System) and the development of the standardized measures of units of use (the Defined Daily Dose) (11,12).

Further CNC studies were undertaken during the 80ies and 90ies involving an increasing number of countries in Europe and other continents. The most comprehensive initiative was taken in the early 2000s with the foundation of the European Surveillance of Antimicrobial Consumption (ESAC), a retrospective survey with antimicrobial use data collected from various sources from 31 European countries. The aim of the study was to collect publicly available comparable and reliable data on antibiotic use across Europe. This showed, however, to be a great challenge and it was emphasized that methodological rigour is needed to assure the validity of data and to ensure reliable cross-national comparisons (13).

Similar experiences were made by the EuroMedstat-project (14). Walley and colleagues compared data on statin utilization and expenditure across Europe from routine administrative databases (reimbursement data) with those from a commercial source (IMS). There were substantial differences between data from different sources and it was concluded that standards for data collection from administrative databases were urgently needed (14). The importance of checking whether the ATC/DDD methodology is applied similarly in all countries has also been emphasized (15).

International comparisons may also be based on other data sources such as prescribing records, disease based registries or questionnaires to physicians or patients. However, such studies may be even more difficult to perform since healthcare systems vary widely between countries.

On the 24th ICPE in Copenhagen 2008, a structured CNC poster session was held presenting available data from more than 20 countries. This was followed up in 2010, on the 26th ICPE in Brighton, UK on which a workshop was arranged with the aim to explore and analyse various methodological issues in performing cross national comparisons of drug utilization. The discussions focused on database content and validity, classification and measurement units of utilization, measurements units of expenditures, and prescribing quality indicators in CNC.

Now in the era of globalization the significance of CNC in DUR has grown even more. However, from the international perspective, little is known on the current state and what is actually published in the area. This systematic literature search was made to analyze the content in scientific articles comparing drug utilization across different (European) countries published in recent years.

Method

Literature search

A literature search was performed on Medline for all articles published from January 1, 2000 to June 30, 2011 on cross national comparisons of drug utilization. The search was performed using either of the terms cross national, international, cross country or countries in combination with either one of the following terms: drug utilization, drug register, prescribing, drug consumption or medicine consumption, European. Further references known by the scientific committee of the conference were added to the inventory, and the reference lists of all relevant studies were explored for further references.

Relevant studies were initially selected from the titles and abstracts of all the retrieved references. Full texts of the remaining articles were then evaluated and irrelevant studies excluded. If essential information could not be obtained, the study was excluded from further analysis.

Inclusion criteria:

- studies showing drug utilization data in volume or expenditure
- at least two countries out of which one is European
- using a methodology facilitating cross national comparison
- published in a peer review journal including accepted available on Internet
- published in English
- published between Jan 2001 and June 2011

Exclusion criteria:

- studies with data from only drug use in individual hospitals
- studies only focusing on drug use in nursing homes

Analysis

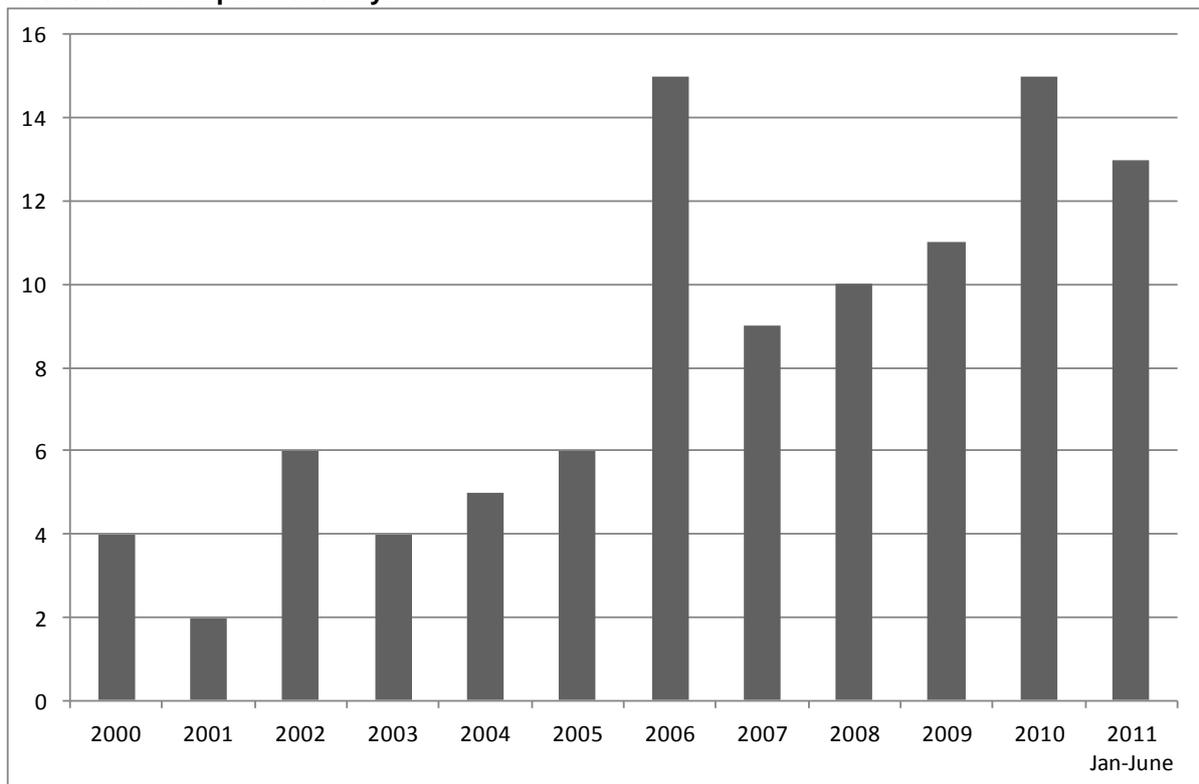
The analyses focused on publishing year of study, countries included in the study, data source, data type, therapeutic area, study population, type of study, measurement unit and region(s) in which the study was done.

Results

The initial search resulted in 15,208 articles. However, most of these were not relevant not fulfilling the criteria of the study. The remaining articles included in the review was 100 including papers added through identification from reference lists and added by members of the scientific committee.

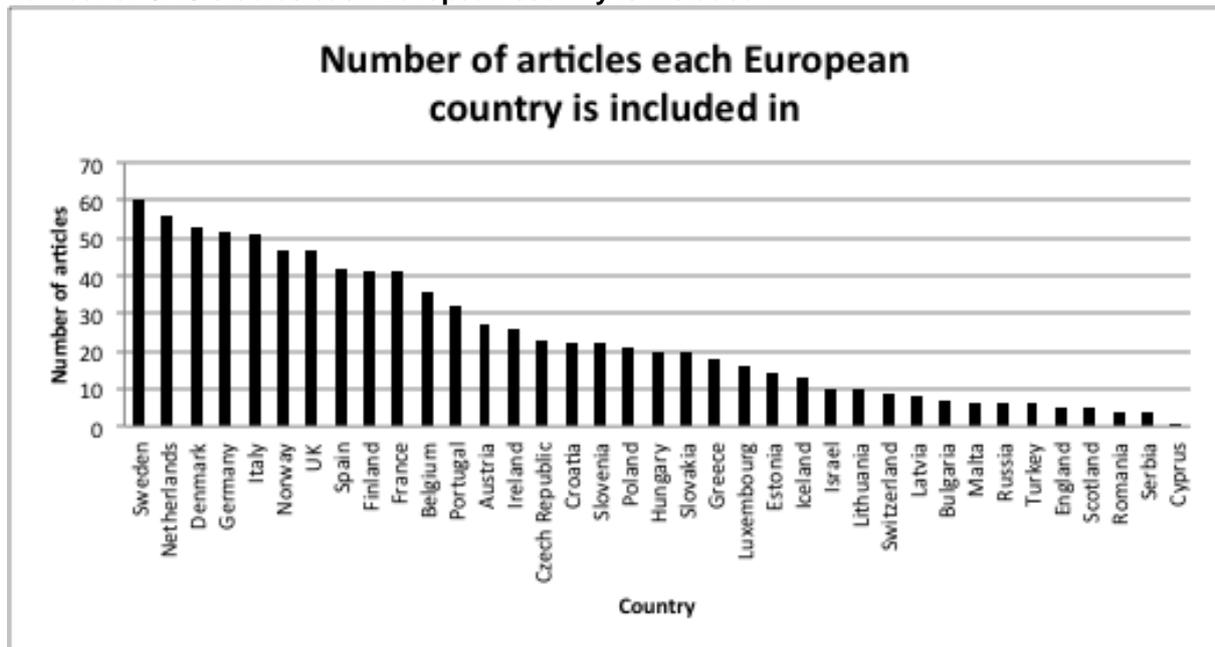
The number of published articles increased over time (Figure 1). An exceptionally high number of papers were published in 2006, partly due to the large number of publications from the ESAC project.

Figure 2: Number of scientific publications with cross national comparisons per year including at least one European country.



A total of 37 different European countries had participated in at least one study (Figure 2). The country most frequently participating in CNC was Sweden followed by the Netherlands, Denmark, Germany and Italy, all included in more than half of all CNC studies.

Figure 2:
Number of CNC studies each European country is included in.



Countries outside Europe included in the CNC studies were the United States (included in 10 studies), Australia (9), Canada (9), New Zealand (3), Japan (1) and South Africa (1).

A variety of datasources were used from administrative databases on reimbursement for drugs dispensed in ambulatory care to disease based registries and questionnaires to physicians and patients. Some studies were based on sales data collected from IMS.

The most commonly studied therapeutic area was antibiotics followed by cardiovascular drugs. Most studies included the general population in each country but some studies were restricted to, e.g. children and restricted populations.

In 60 studies, it was clearly presented that the ATC-system was used for drug classification. Most studies focused on volumes with DDD or DDD/TID being used in approximately half of all studies. Prevalence in terms of number of patients was only used in four studies. Expenditures were presented in 9 studies.

The complete reference list of all studies included in the review is presented by year in Appendix 1 and the abstracts from all articles in Appendix 2..

References

1. Bergman U, Elmes P, Halse M, Halvorsen T, Hood M, Lunde PKM, Sjöqvist F, Wade OL, Westerholm B. The measurement of drug consumption. Drugs for diabetes in Northern Ireland, Norway and Sweden. *Eur J Clin Pharmacol* 1975;8:83-9
2. Engel A, Siderius P. The consumption of drugs. Report on a study, 1966-1967. WHO Regional Office for Europe, Copenhagen 1968 (EURO 3101)
3. Sjöqvist F. Drug utilization. In: Mattils MJ (ed). Proceedings of the Sixth International Congress of Pharmacology, Vol 5 (Clinical Pharmacology). Helsinki, Finnish Pharmacological Society, 1975, pp. 39-50
4. Grimsson A, Idänpään Heikkilä J, Lunde PKM, Olafsson O, Westerholm B. The utilization of psychotropic drugs in Finland, Iceland, Norway and Sweden. Studies in drug utilization. WHO Regional Publications. European Series No 8. World Health Organization. Regional Office for Europe. Copenhagen 1979
5. Stika L. Patterns in drug utilization – national and international aspects: Antidiabetic drugs. *Acta Med Scand* 1983;105 (suppl 683):53-7
6. WHO Drug Utilization Research Group (DURG). Griffiths K, McDevitt DG, Andrew M, Baksaas I, Lunde PK, Bergman U, Wessling A, Sjöqvist F. Validation of observed differences in the utilization of antihypertensive and antidiabetic drugs in Northern Ireland, Norway and Sweden. *Eur J Clin Pharmacol* 1985;29:1-8
7. WHO Drug Utilization Research Group (DURG). Griffiths K, McDevitt DG, Andrew M, Baksaas I, Helgeland A, Jervell J, Lunde PK, Oydvin K, Agenas I, Bergman U, et al. Therapeutic traditions in Northern Ireland, Norway and Sweden: I. Diabetes. *Eur J Clin Pharmacol* 1986;30:513-9 (a)
8. WHO Drug Utilization Research Group (DURG). Griffiths K, McDevitt DG, Andrew M, Baksaas I, Helgeland A, Jervell J, Lunde PK, Oydvin K, Agenas I, Bergman U, et al. Therapeutic traditions in Northern Ireland, Norway and Sweden: II. Hypertension. *Eur J Clin Pharmacol* 1986;30:521-5 (b)
9. Westerholm B. Therapeutic auditing at the national and international level. *Br J Clin Pharmacol* 1986;22:55S-59S
10. World Health Organization (WHO). Consumption of drugs: report on a symposium. Copenhagen, WHO regional Office for Europe, 1970 (EURO 3102)
11. Baksaas Aasen I, Lunde PKM, Halse M, Halvorsen IK, Skobba TJ, Strömned B. Drug dose statistics, list of defined daily doses for drugs registered in Norway. Norsk Medicinal Depot, Oslo, 1975
12. Bergman U, Grimsson A, Wahba A, Westerholm B (eds) (1979) Studies in drug utilization – methods and applications. World Health Organization Regional Publications, Copenhagen (a)

13. Vander Stichele RH, Elseviers MM, Ferech M, Blot S, Goossens H; ESAC Project Group. European surveillance of antimicrobial consumption (ESAC): data collection performance and methodological approach. *Br J Clin Pharmacol*. 2004 Oct;58(4):419-28
14. The EURO-MED-STAT Group. EURO-MED-STAT: monitoring expenditure and utilisation of medicinal products in the European Union countries. A public health approach. *Eur J Pub Health* 2003;13:95–100
15. Walley T, Folino-Gallo P, Schwabe U, Van Ganse E, Stephens P; EuroMedStat Group. Comparison of national administrative and commercial databases to monitor expenditure and costs of statins across Europe. *Eur J Clin Pharmacol* 2004; 60:503-11
16. Ronning M et al. Different versions of the anatomical therapeutic chemical classification system and the defined daily dose - are drug utilization data comparable? *European Journal of Clinical Pharmacology*, 2000, 56:723-727.

Appendix 1. Studies included in the review

Id	Article (Full reference)	PMID	Year	Nr of countries Total	Countries outside Europé	Countries in Europe
1	Bergman U, Andersen M, Vaccheri A, Bjerrum L, Wettermark B, Montanaro N. Deviations from evidence-based prescribing of non-steroidal anti-inflammatory drugs in three European regions. <i>Eur J Clin Pharmacol.</i> 2000 Jun;56(3):269-72.	10952484	2000	3		Italy, Denmark, Sweden
2	Jepson G, Butler T, Gregory D, Jones K. Prescribing patterns for asthma by general practitioners in six European countries. <i>Respir Med.</i> 2000 Jun;94(6):578-83.	10921763	2000	6		Belgium, Ireland, Italy, Portugal, UK, Spain
3	Lagerløv P, Veninga CC, Muskova M, Hummers-Pradier E, Stålsby Lundborg C, Andrew M, Haaijer-Ruskamp FM. Asthma management in five European countries: doctors' knowledge, attitudes and prescribing behaviour. Drug Education Project (DEP) group. <i>Eur Respir J.</i> 2000 Jan;15(1):25-9.	10678616	2000	5		Sweden, Germany, Netherlands, Norway, Slovenia
4	Veninga C.C.M., Stålsby Lundborg, C., Lagerhov, P., Hummers-Pradier, E., Denig, P., Haaijer-Ruskamp, F.M. Treatment of uncomplicated urinary tract infections: exploring differences in adherence to guidelines between three European countries. <i>The Annals of Pharmacotherapy,</i> (2000) 34, 19-26,	10669181	2000	3		Sweden, Netherlands, Norway
5	Bergan T., Antibiotic usage in Nordic countries. <i>Intl J Antimicrob Agents</i> 18 (2001) 279–282.	11673043	2001	5		Sweden, Norway, Denmark, Iceland, Finland
6	Cars O, Mölsted S, Melander A. Variation in antibiotic use in the European Union. <i>Lancet.</i> 2001 Jun 9;357(9271):1851-3.	11410197	2001	15		France, Spain, Portugal, Belgium, Luxembourg, Italy, Greece, Finland, Ireland, UK, Austria, Germany, Sweden, Denmark, Netherlands
7	De Ponti F, Poluzzi E, Vaccheri A, Bergman U, Bjerrum L, Ferguson J, Frenz KJ, McManus P, Schubert I, Selke G, Terzis-Vaslamatzis G, Montanaro N. Non-antiarrhythmic drugs prolonging the QT interval: considerable use in seven countries. <i>Br J Clin Pharmacol.</i> 2002 Aug;54(2):171-7.	12207637	2002	7	Australia	Denamrk, England, Germany, Greece, Italy, Sweden
8	Deschepper R, Vander Stichele RH, Haaijer-Ruskamp FM. Cross-cultural differences in lay attitudes and utilisation of antibiotics in a Belgian and a Dutch city. <i>Patient Educ Couns.</i> 2002 Oct -Nov;48(2):161-9.	12401419	2002	2		Belgium, Netherlands

9	Dolezal T, Nemecek K, Krsiak M. Trends in consumption of calcium channel blockers in the Czech Republic during 1993–1999 and comparison with selected countries: drug utilization study. <i>Eur J Clin Pharmacol.</i> 2002 Oct;58(7):477-8. Epub 2002 Aug 27.	12389070	2002	5	Australia	Germany, Czech, Norway, Finland
10	Mölstad S, Lundborg CS, Karlsson AK, Cars O. Antibiotic Prescription Rates Vary Markedly Between 13 European Countries. <i>Scand J Infect Dis.</i> 2002;34(5):366-71.	12069022	2002	13		Greece, Spain, Belgium, France, Portugal, Italy, Finland, UK, Germany, Denmark, Austria, Sweden, Netherlands
11	Wahlström, R., Hummers-Pradier, E., Stålsby Lunborg, C., Muskova M, Lagerlov, P., Denig, P. Variations in asthma treatment in five European countries – judgement analysis of case simulations. <i>Family Practice</i> , (2002) 19, 452-460.	12356693	2002	5		Sweden, Norway, Germany, Netherlands, Slovakia
12	Vlahovic-Palcevski V, Wettermark B, Bergman U. Quality of non-steroidal anti-inflammatory drug prescribing in Croatia (Rijeka) and Sweden (Stockholm). <i>Eur J Clin Pharmacol.</i> 2002 Jun;58(3):209-14. Epub 2002 Apr 26.	12107607	2002	2		Sweden, Croatia
13	Fürst J, Kocmur M. Use of psychiatric drugs in Slovenia in comparison to Scandinavian countries. <i>Pharmacoepidemiol Drug Saf.</i> 2003 Jul-Aug;12(5):399-403.	12899115	2003	4		Slovenia, Sweden, Norway, Denmark
14	Melander E, Nissen A, Henricson K, Merlo J, Mölstad S, Kampmann JP, Lithman T, Hansen EH, Melander A. Utilisation of antibiotics in young children: opposite relationships to adult educational levels in Danish and Swedish counties. <i>Eur J Clin Pharmacol.</i> 2003 Aug;59(4):331-5. Epub 2003 Jul 15.	12856093	2003	2		Sweden, Denmark
15	Rouland JF, Le Pen C, Gouveia Pinto C, Berto P, Berdeaux G. Cost-Minimisation Study of Dorzolamide versus Brinzolamide in the Treatment of Ocular Hypertension and Primary Open-Angle Glaucoma In Four European Countries. <i>Pharmacoeconomics.</i> 2003;21(3):201-13.	12558470	2003	4		France, Italy, Portugal, Spain
16	The Euro-Med-Stat Group. EURO-MED-STAT Monitoring expenditure and utilization of medicinal products in the European Union countries: a Public Health approach. <i>Eur J Public Health</i> 2003; 13 (3 Supplement) 95-100.	14533757	2003	15		Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, UK
17	Adams JR, Elting LS, Lyman GH, George JN, Lembersky BC, Armitage JO, Demetri GD, Bennett CL. Use of Erythropoietin in Cancer Patients: Assessment of Oncologists' Practice Patterns in the United States and Other Countries. <i>Am J Med.</i> 2004 Jan 1;116(1):28-34.	14706663	2004	20	-	-

18	Schirm E, Pedersen L, Tobi H, Nielsen GL, Sørensen HT, de Jong-van den Berg LT. Drug use among fathers around time of conception: two register based surveys from Denmark and The Netherlands. <i>Pharmacoepidemiol Drug Saf.</i> 2004 Sep;13(9):609-13.	15362083	2004	2		Denmark, Netherlands
19	Vander Stichele R. H., Elseviers M. M., Ferech M., Blot S., Goossens H. & the ESAC Project Group. European Surveillance of Antimicrobial Consumption (ESAC): Data Collection Performance and Methodological Approach. <i>Br J Clin Pharmacol.</i> 2004 Oct;58(4):419-28.	15373935	2004	28		Austria, Belgium, Bulgaria, Croatia, Czech, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Turkey, UK
20	Walley T, Folino-Gallo P, Schwabe U, Van Ganse E, Stephens P; EuroMedStat Group. Comparison of national administrative and commercial databases to monitor expenditure and costs of statins across Europe. <i>Eur J Clin Pharmacol.</i> 2004 Sep;60(7):503-11.	15316702	2004	14		Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, UK
21	Walley T, Folino-Gallo P, Schwabe U, van Ganse E. Variations and increase in use of statins across Europe: data from administrative databases. <i>BMJ</i> 2004;328:385-386.	14962875	2004	14		Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, UK
22	Fretheim A, Oxman AD. International variation in prescribing antihypertensive drugs: Its extent and possible explanations. <i>BMC Health Serv Res.</i> 2005 Mar 11;5(1):21.	15762983	2005	6	Canada, US	France, Germany, Norway, UK
23	Goossens H, Ferech M, Vander Stichele R, Elseviers M; ESAC Project Group. Outpatient antibiotic use in Europe and association with resistance: a cross-national database study. <i>Lancet.</i> 2005 Feb 12-18;365(9459):579-87.	15708101	2005	26		France, Greece, Luxembourg, Portugal, Italy, Belgium, Slovakia, Croatia, Poland, Iceland, Ireland, Spain, Finland, Bulgaria, Czech, Slovenia, Sweden, Hungary, Norway, UK, Denmark, Germany, Latvia, Austria, Estonia, Netherlands

24	Hjardem E, Hetland ML, Østergaard M, Krogh NS, Kvien TK; Danish Database for Biological Therapies in Rheumatology Study Group. Prescription practice of biological drugs in rheumatoid arthritis during the first 3 years of post-marketing use in Denmark and Norway: criteria are becoming less stringent. <i>Ann Rheum Dis.</i> 2005 Aug;64(8):1220-3. Epub 2005 Jan 7.	15640272	2005	2		Norway, Denmark
25	Sanz EJ, Hernández MA, Ratchina S, Stratchounsky L, Peiré MA, Mestre ML, Horen B, Kriska M, Krajnakova H, Momcheva H, Encheva D, Martínez-Mir I, Palop V. Prescribers' indications for drugs in childhood: A survey of five European countries (Spain, France, Bulgaria, Slovakia, and Russia). <i>Acta Paediatrica</i> , (2005) 94, 1784-1790.	16421040	2005	5		Spain, France, Bulgaria, Slovakia, Russia
26	Sturm HB, van Gilst WH, Swedberg K, Hobbs FD, Haaijer-Ruskamp FM. Heart failure guidelines and prescribing in primary care across Europe. <i>BMC Health Serv Res.</i> 2005 Aug 30;5:57.	16131393	2005	13		Netherlands, France, Hungary, Portugal, UK, Italy, Czech, Germany, Scotland, Sweden, Spain, Russia, Switzerland
27	Walley T, Folino-Gallo P, Stephens P, Van Ganse E. Trends in prescribing and utilization of statins and other lipid lowering drugs across Europe 1997–2003. <i>Br J Clin Pharmacol.</i> 2005 Nov;60(5):543-51.	16236045	2005	13		Netherlands, Norway, Belgium, Sweden, Finland, Germany, Spain, UK, Austria, Denmark, Italy, France, Ireland
28	Coenen S, Ferech M, Dvorakova K, Hendrickx E, Suetens C, Goossens H; ESAC Project Group. European Surveillance of Antimicrobial Consumption (ESAC): outpatient cephalosporin use in Europe. <i>J Antimicrob Chemother.</i> 2006 Aug;58(2):413-7. Epub 2006 May 30.	16735416	2006	25		Portugal, Italy, Belgium, Luxembourg, Spain, France, Greece, Hungary, Croatia, Slovakia, Austria, Slovenia, Poland, Czech, Germany, Sweden, Israel, Finland, Netherlands, Ireland, Iceland, Estonia, UK, Norway, Denmark
29	Ferech M, Coenen S, Dvorakova K, Hendrickx E, Suetens C, Goossens H; ESAC Project Group. European Surveillance of Antimicrobial Consumption (ESAC): outpatient penicillin use in Europe. <i>J Antimicrob Chemother.</i> 2006 Aug;58(2):408-12. Epub 2006 May 30.	16735415	2006	25		Portugal, Italy, Belgium, Luxembourg, Spain, France, Greece, Hungary, Croatia, Slovakia, Austria, Slovenia, Poland, Czech, Germany, Sweden, Israel, Finland, Netherlands, Ireland, Iceland, Estonia, UK, Norway, Denmark

30	Ferech M, Coenen S, Malhotra-Kumar S, Dvorakova K, Hendrickx E, Suetens C, Goossens H; ESAC Project Group. European Surveillance of Antimicrobial Consumption (ESAC): outpatient quinolone use in Europe. J Antimicrob Chemother. 2006 Aug;58(2):423-7. Epub 2006 May 30.	16735418	2006	25		Portugal, Italy, Belgium, Luxembourg, Spain, France, Greece, Hungary, Croatia, Slovakia, Austria, Slovenia, Poland, Czech, Germany, Sweden, Israel, Finland, Netherlands, Ireland, Iceland, Estonia, UK, Norway, Denmark
31	Ferech M., Coenen S., Malhotra-Kumar S., Dvorakova K., Hendrick E., Suetens C., Goossens H. on behalf of the ESAC Project Group. European Surveillance of Antimicrobial Consumption (ESAC): outpatient antibiotic use in Europe. J Antimicrob Chemother (2006) 58, 401-407	16735414	2006	25		Austria, Belgium, Croatia, Czech, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, UK
32	Grigoryan L, Haaijer-Ruskamp FM, Burgerhof JG, Mechtler R, Deschepper R, Tambic-Andrasevic A, Andrajati R, Monnet DL, Cunney R, Di Matteo A, Edelsein H, Valinteliene R, Alkerwi A, Scicluna E, Grzesiowski P, Bara AC, Tesar T, Cizman M, Campos J, Lundborg CS, Birkin J. Self-medication with antimicrobial drugs in Europe. Emerg Infect Dis. 2006 Mar;12(3):452-9.	16704784	2006	19		Austria, Netherlands, Sweden, UK, Ireland, Denmark, Italy, Malta, Luxembourg, Belgium, Spain, Israel, Romania, Czech, Slovakia, Lithuania, Slovenia, Croatia, Poland
33	Wettermark B, Vlahovic-Palcevski V, Laing R, Bergman U. Adherence to WHO's Essential Medicines List in two European countries. WHO Drug Information 2006;20:78-85	Not indexed	2006	2		Sweden, Croatia
34	Vander Stichele RH, Elseviers MM, Ferech M, Blot S, Goossens H; European Surveillance of Antibiotic Consumption (ESAC) Project Group. Hospital consumption of antibiotics in 15 European countries: results of the ESAC Retrospective Data Collection (1997-2002). J Antimicrob Chemother 2006;58:159-67	16698845	2006	15		Belgium, Denmark, Greece, Finland, France, Luxembourg, Sweden, Estonia, Hungary, Malta, Poland, Slovakia, Slovenia, Croatia, Norway
35	Hadjimichael C, Georgiou K, Samoutis G, Demetriades E. Sales of systemic anti-infective agents in Cyprus in comparison with four other European countries. Pharm World Sci. 2006 Jun;28(3):135-9. Epub 2006 Sep 27.	17004026	2006	5		Cyprus, Sweden, Greece, Denmark, Norway
36	Melander A, Folino-Gallo P, Walley T, Schwabe U, Groop PH, Klaukka T, Vallano A, Laporte JR, Gallego MR, Schiappa M, Røder M, Kampmann JP, de Swaef A, Aberg M, Månsson NO, Lindblad U. Utilisation of antihyperglycaemic drugs in ten European countries: different developments and different levels. Diabetologia. 2006 Sep;49(9):2024-9. Epub 2006 Jul 25.	16865360	2006	10		Denmark, Finland, Norway, Sweden, Belgium, England, Germany, Italy, Portugal, Spain

37	Packer C, Simpson S, Stevens A; EuroScan: the European Information Network on New and Changing Health Technologies. International diffusion of new health technologies: A ten-country analysis of six health technologies. <i>Int J Technol Assess Health Care</i> . 2006 Fall;22(4):419-28.	16984674	2006	10	Australia, Canada	Denmark, France, Netherlands, Norway, Spain, Sweden, Switzerland, UK
38	Reseland S, Bray I, Gunnell D. Relationship between antidepressant sales and secular trends in suicide rates in the Nordic countries. <i>Br J Psychiatry</i> . 2006 Apr;188:354-8.	16582062	2006	4		Sweden, Norway, Denmark, Finland
39	Stolk P, Van Wijk BL, Leufkens HG, Heerdink ER. Between-country variation in the utilization of antihypertensive agents: guidelines and clinical practice. <i>J Hum Hypertens</i> . 2006 Dec;20(12):917-22. Epub 2006 Sep 21.	16988753	2006	6		Denamrk, Finland, Sweden, Norway, Germany, Netherlands
40	Sturm HB, Haaijer-Ruskamp FM, Veeger NJ, Baljé-Volkers CP, Swedberg K, van Gilst WH. The relevance of comorbidities for heart failure treatment in primary care: A European survey. <i>Eur J Heart Fail</i> . 2006 Jan;8(1):31-7. Epub 2005 Aug 5.	16084761	2006	14		-
41	Van Ganse E, Antonicelli L, Zhang Q, Laforest L, Yin DD, Nocea G, Sazonov Kocevar V. Asthma-related resource use and cost by GINA classification of severity in three European countries. <i>Respir Med</i> . 2006 Jan;100(1):140-7. Epub 2005 Apr 26.	16338597	2006	3		Spain, Italy, France
42	Zito JM, Tobi H, de Jong-van den Berg LT, Fegert JM, Safer DJ, Janhsen K, Hansen DG, Gardner JF, Glaeske G. Antidepressant prevalence for youths: a multi-national comparison. <i>Pharmacoepidemiol Drug Saf</i> . 2006 Nov;15(11):793-8.	16715536	2006	4	US	Denmark, Germany, Netherlands
43	Elseviers M. M., Ferech M., Vander Stichele R. H., Goossens H., the ESAC project group. Antibiotic use in ambulatory care in Europe (ESAC data 1997–2002): trends, regional differences and seasonal fluctuations. <i>Pharmacoepidem Drug Saf</i> 2007; 16: 115–123.	16700079	2007	24		Norway, Sweden, Denmark, Finland, Ireland, UK, Netherlands, Germany, Austria, Portugal, Spain, Italy, Greece, France, Belgium, Luxembourg, Estonia, Latvia, Poland, Czech, Slovakia, Hungary, Slovenia, Croatia

44	Goossens H, Ferech M, Coenen S, Stephens P; European Surveillance of Antimicrobial Consumption Project Group. Comparison of Outpatient Systemic Antibacterial Use in 2004 in the United States and 27 European Countries. Clin Infect Dis. 2007 Apr 15;44(8):1091-5. Epub 2007 Mar 2.	17366456	2007	28	US	Greece, France, Italy, Luxembourg, Croatia, Portugal, Belgium, Slovakia, Iceland, Poland, Ireland, Israel, Spain, Hungary, Finland, Slovenia, Bulgaria, Norway, Czech, UK, Sweden, Denmark, Austria, Latvia, Germany, Estonia, Netherlands
45	Grigoryan L, Burgerhof JG, Degener JE, Deschepper R, Lundborg CS, Monnet DL, Scicluna EA, Birkin J, Haaijer-Ruskamp FM; SAR consortium. Attitudes, beliefs and knowledge concerning antibiotic use and self-medication: a comparative European study. Pharmacoepidemiol Drug Saf. 2007 Nov;16(11):1234-43.	17879325	2007	12		Austria, Netherlands, Sweden, UK, Belgium, Italy, Malta, Israel, Spain, Czech, Lithuania, Croatia
46	Grigoryan L, Burgerhof JG, Haaijer-Ruskamp FM, Degener JE, Deschepper R, Monnet DL, Di Matteo A, Scicluna EA, Bara AC, Lundborg CS, Birkin J; SAR group. Is self-medication with antibiotics in Europe driven by prescribed use? J Antimicrob Chemother. 2007 Jan;59(1):152-6. Epub 2006 Nov 22.	17124192	2007	19		Austria, Netherlands, Sweden, UK, Ireland, Denmark, Italy, Malta, Luxembourg, Belgium, Spain, Israel, Romania, Czech, Slovakia, Lithuania, Slovenia, Croatia, Poland
47	Hamunen K, Laitinen-Parkkonen P, Paakkari P, Breivik H, Gordh T, Jensen NH, Kalso E. What do different databases tell about the use of opioids in seven European countries in 2002?. Eur J Pain. 2008 Aug;12(6):705-15. Epub 2007 Dec 26.	18162422	2007	7		Sweden, Netherlands, Denmark, Finland, Germany, Iceland, Norway
48	Hutchison A, Farmer R, Verhamme K, Berges R, Navarrete RV. The Efficacy of Drugs for the Treatment of LUTS/BPH, A Study in 6 European Countries. Eur Urol. 2007 Jan;51(1):207-15; discussion 215-6. Epub 2006 Jun 27.	16846678	2007	6		France, Germany, Poland, Italy, Spain, UK
49	Martin M, Quilici S, File T, Garau J, Kureishi A, Kubin M. Cost-effectiveness of empirical prescribing of antimicrobials in community-acquired pneumonia in three countries in the presence of resistance. J Antimicrob Chemother. 2007 May;59(5):977-89. Epub 2007 Mar 29.	17395688	2007	3	US	Germany, France
50	Rosman S, Le Vaillant M, Schellevis F, Clerc P, Verheij R, Pelletier-Fleury N. Prescribing patterns for upper respiratory tract infections in general practice in France and in the Netherlands. Eur J Public Health. 2008 Jun;18(3):312-6. Epub 2007 Dec 26.	18160392	2007	2		France, Netherlands

51	Sturm HB, van Gilst WH, Veeger N, Haaijer-Ruskamp FM. Prescribing for chronic heart failure in Europe: does the country make the difference? A European survey. <i>Pharmacoepidemiol Drug Saf.</i> 2007 Jan;16(1):96-103.	16528759	2007	14		Belgium, Czech, France, Germany, Hungary, Italy, Netherlands, Poland, Russia, Spain, Sweden, Switzerland, Turkey, UK
52	Bauer M, Monz BU, Montejo AL, Quail D, Dantchev N, Demyttenaere K, Garcia-Cebrian A, Grassi L, Perahia DG, Reed C, Tylee A. Prescribing patterns of antidepressants in Europe: Results from the Factors Influencing Depression Endpoints Research (FINDER) study. <i>Eur Psychiatry.</i> 2008 Jan;23(1):66-73.	18164600	2008	12		Austria, Belgium, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Sweden, Switzerland, UK
53	Calleri G, Behrens RH, Bisoffi Z, Bjorkman A, Castelli F, Gascon J, Gobbi F, Grobusch MP, Jelinek T, Schmid ML, Niero M, Caramello P. Variability in Malaria Prophylaxis Prescribing Across Europe: A Delphi Method Analysis. <i>J Travel Med.</i> 2008 Sep-Oct;15(5):294-301.	19006501	2008	15		UK, Ireland, Germany, Belgium, Poland, Italy, Portugal, Sweden, Norway, Denmark, Finland, Switzerland, Czech, Spain, France
54	Demyttenaere K, Bonnewyn A, Bruffaerts R, De Girolamo G, Gasquet I, Kovess V, Haro JM, Alonso J. Clinical factors influencing the prescription of antidepressants and benzodiazepines: Results from the European study of the epidemiology of mental disorders (ESEMED). <i>J Affect Disord.</i> 2008 Sep;110(1-2):84-93. Epub 2008 Mar 10.	18329721	2008	6		Belgium, France, Germany, Italy, Netherlands, Spain
55	Deschepper R, Grigoryan L, Lundborg CS, Hofstede G, Cohen J, Kelen GV, Deliens L, Haaijer-Ruskamp FM. Are cultural dimensions relevant for explaining cross-national differences in antibiotic use in Europe?. <i>BMC Health Serv Res.</i> 2008 Jun 6;8:123.	18538009	2008	27		Sweden, Netherlands, Austria, Denmark, Poland, UK, Belgium, Czech, Lithuania, Luxembourg, Slovenia, Romania, Ireland, Malta, Croatia, Italy, Slovakia, Bulgaria, Estonia, Finland, France, Germany, Greece, Hungary, Norway, Portugal, Spain
56	Grigoryan L, Burgerhof JG, Degener JE, Deschepper R, Lundborg CS, Monnet DL, Scicluna EA, Birkin J, Haaijer-Ruskamp FM. Self-Medication with Antibiotics and Resistance (SAR) Consortium. Determinants of self-medication with antibiotics in Europe: the impact of beliefs, country wealth and the healthcare system. <i>J Antimicrob Chemother.</i> 2008 May;61(5):1172-9. Epub 2008 Feb 22.	18296694	2008	12		Austria, Netherlands, Sweden, UK, Belgium, Italy, Malta, Israel, Spain, Czech, Lithuania, Croatia

57	Jönsson B, Kobelt G, Smolen J. The burden of rheumatoid arthritis and access to treatment: uptake of new therapies. <i>Eur J Health Econ.</i> 2008 Jan;8 Suppl 2:S61-86.	18097697	2008	30	Australia, Canada, South Africa, US	Austria, Belgium, Bulgaria, Croatia, Czech, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, UK
58	Stolk P, Belitser SV, Leufkens HG, Heerdink ER. Variable Access to Clopidogrel in a Harmonized EU Market. <i>Value Health.</i> 2008 Sep-Oct;11(5):989-95. Epub 2008 May 16.	18489520	2008	9		Austria, Belgium, Denmark, Germany, Hungary, Portugal, Slovenia, Netherlands, UK
59	Sturkenboom MC, Verhamme KM, Nicolosi A, Murray ML, Neubert A, Caudri D, Picelli G, Sen EF, Giaquinto C, Cantarutti L, Baiardi P, Felisi MG, Ceci A, Wong IC; TEDDY European Network of Excellence. Drug use in children: cohort study in three European countries. <i>BMJ.</i> 2008 Nov 24;337:a2245. doi: 10.1136/bmj.a2245.	19029175	2008	3		Netherlands, UK, Italy
60	Zito JM, Safer DJ, de Jong-van den Berg LT, Janhsen K, Fegert JM, Gardner JF, Glaeske G, Valluri SC. A three-country comparison of psychotropic medication prevalence in youth. <i>Child Adolesc Psychiatry Ment Health.</i> 2008 Sep 25;2(1):26.	18817536	2008	3	US	Germany, Netherlands
61	Raschi E, Poluzzi E, Zuliani C, Muller A, Goossens H, De Ponti F. Exposure to antibacterial agents with QT liability in 14 European countries: trends over an 8-year period. <i>Br J Clin Pharmacol.</i> 2009 Jan;67(1):88-98. Epub 2008 Nov 17.	19076158	2008	14		Netherlands, Austria, Denmark, Germany, Sweden, UK, Finland, Hungary, Slovenia, Spain, Italy, Luxembourg, Belgium, France
62	Bramness JG, Weitoft GR, Hallas J. Use of lithium in the adult populations of Denmark, Norway and Sweden. <i>J Affect Disord.</i> 2009 Nov;118(1-3):224-8. Epub 2009 Feb 26.	19249102	2009	3		Sweden, Norway, Denmark
63	Eurap Study Group. Utilization of antiepileptic drugs during pregnancy: Comparative patterns in 38 countries based on data from the EURAP registry. <i>Epilepsia.</i> 2009 Oct;50(10):2305-9. Epub 2009 May 12.	19453723	2009	38		
64	Furu K, Wettermark B, Andersen M, Martikainen JE, Almarsdottir AB, Sørensen HT. The Nordic Countries as a Cohort for Pharmacoepidemiological Research. <i>Basic Clin Pharmacol Toxicol.</i> 2010 Feb;106(2):86-94. Epub 2009 Dec 4.	19961477	2009	5		Sweden, Denmark, Norway, Iceland, Finland

65	Galvez R. Variable Use of Opioid Pharmacotherapy for Chronic Noncancer Pain in Europe: Causes and Consequences. <i>J Pain Palliat Care Pharmacother.</i> 2009 Dec;23(4):346-56.	19947833	2009	16		UK, Spain, Denmark, Ireland, France, Germany, Poland, Netherlands, Switzerland, Sweden, Belgium, Austria, Italy, Finland, Israel, Norway
66	Hamunen K, Paakkari P, Kalso E. Trends in opioid consumption in the Nordic countries 2002–2006. <i>Eur J Pain.</i> 2009 Oct;13(9):954-62. Epub 2008 Dec 16.	19091608	2009	5		Sweden, Norway, Denmark, Finland, Iceland
67	Heider D, Bernert S, König HH, Matschinger H, Hogh T, Brugha TS, Bebbington PE, Azorin M, Angermeyer MC, Toumi M. Direct medical mental health care costs of schizophrenia in France, Germany and the United Kingdom - Findings from the European Schizophrenia Cohort (EuroSC). <i>Eur Psychiatry.</i> 2009 May;24(4):216-24. Epub 2009 Mar 28.	19328658	2009	3		France, UK, Germany
68	Obradovic M, Mrhar A, Kos M. Market Uptake of Biologic and Small-Molecule–Targeted Oncology Drugs in Europe. <i>Clin Ther.</i> 2009 Dec;31(12):2940-52.	20110034	2009	8		Austria, Croatia, France, Germany, Hungary, Italy, Slovenia, UK
69	Paradis PE, Latrémouille-Viau D, Moore Y, Mishagina N, Lafeuille MH, Lefebvre P, Gaudig M, Duh MS. Projected economic impact of clinical findings of generic entry of topiramate on G4 European countries. <i>Curr Med Res Opin.</i> 2009 Jul;25(7):1793-805.	19505202	2009	5	Canada	France, Germany, Italy, UK
70	Ravera S, Hummel SA, Stolk P, Heerdink RE, de Jong-van den Berg LT, de Gier JJ. The use of driving impairing medicines: a European survey. <i>Eur J Clin Pharmacol.</i> 2009 Nov;65(11):1139-47. Epub 2009 Jul 21.	19621220	2009	12		Bulgaria, Denmark, Finland, Germany, Hungary, Iceland, Netherlands, Norway, Portugal, Serbia, Slovenia, Sweden
71	Staatz CE, Smith AJ, Tett SE. A comparison of mycophenolate use in Australia and Northern Europe, and the impact on the pharmaceutical benefits scheme. <i>Pharmacoepidemiol Drug Saf.</i> 2009 May;18(5):386-92.	19253908	2009	4	Australia	Denmark, Finland, Netherlands
72	Stolk P, Heemstra HE, Leufkens HG, Bloechl-Daum B, Heerdink ER. No difference in between-country variability in use of newly approved orphan and non- orphan medicinal products - a pilot study. <i>Orphanet J Rare Dis.</i> 2009 Dec 14;4:27.	20003427	2009	6		Austria, Portugal, Sweden, Denmark, Finland, Netherlands
73	Adriaenssens N, Coenen S, Muller A, Vankerckhoven V, Goossens H; ESAC Project Group. European Surveillance of Antimicrobial Consumption (ESAC): outpatient systemic antimycotic and antifungal use in Europe. <i>J Antimicrob Chemother.</i> 2010 Apr;65(4):769-74. Epub 2010 Feb 8.	20142264	2010	12		Belgium, Denmark, Finland, Italy, Luxembourg, Netherlands, Portugal, Croatia, Hungary, Latvia, Sweden, Slovakia

74	Bianchi M, Clavenna A, Bonati M. Inter-country variations in anti-asthmatic drug prescriptions for children. Systematic review of studies published during the 2000–2009 period. <i>Eur J Clin Pharmacol.</i> 2010 Sep;66(9):929-36. Epub 2010 Jun 9.	20533030	2010	6	US, Canada	Norway, Netherlands, Denmark, Italy
75	Bischoff HG, van den Borne B, Pimentel FL, Arellano J, Langer F, Leschinger MI, Thatcher N. Observation of the treatment and outcomes of patients receiving chemotherapy for advanced NSCLC in Europe (ACTION study). <i>Curr Med Res Opin.</i> 2010 Jun;26(6):1461-70.	20394472	2010	5		Finland, Netherlands, Germany, Portugal, UK
76	Godman B, Shrank W, Andersen M, Berg C, Bishop I, Burkhardt T, Garuoliene K, Herholz H, Joppi R, Kalaba M, Laius O, McGinn D, Samaluk V, Sermet C, Schwabe U, Teixeira I, Tilson L, Tulunay FC, Vlahović-Palčevski V, Wondykowska K, Wettermark B, Zara C, Gustafsson LL. Comparing policies to enhance prescribing efficiency in Europe through increasing generic utilization: changes seen and global implications. <i>Expert Rev Pharmacoecon Outcomes Res.</i> 2010 Dec;10(6):707-22.	21155704	2010	18		Austria, Croatia, Estonia, France, Germany, Italy, Lithuania, Norway, Portugal, Poland, Ireland, Serbia, Slovenia, Spain, Sweden, Turkey, England, Scotland
77	Grigoryan L, Monnet DL, Haaijer-Ruskamp FM, Bonten MJ, Lundborg S, Verheij TJ. Self-medication with antibiotics in Europe: a case for action. <i>Curr Drug Saf.</i> 2010 Oct;5(4):329-32. Review. PubMed PMID: 20615180	20615180	2010			
78	Hsia Y, Neubert A, Sturkenboom MC, Murray ML, Verhamme KM, Sen F, Giaquinto C, Ceci A, Wong IC; TEDDY Network of Excellence. Comparison of antiepileptic drug prescribing in children in three European countries. <i>Epilepsia.</i> 2010 May;51(5):789-96. Epub 2009 Oct 8.	19817815	2010	3		Italy, UK, Netherlands
79	Inotai A, Hankó B, Mészáros A. Trends in the non-steroidal anti-inflammatory drug market in six Central–Eastern European countries based on retail information. <i>Pharmacoepidemiol Drug Saf.</i> 2010 Feb;19(2):183-90.	20014174	2010	6		Czech, Hungary, Latvia, Lithuania, Poland, Slovakia
80	McFarlane PA, Pisoni RL, Eichleay MA, Wald R, Port FK, Mendelssohn D. International trends in erythropoietin use and hemoglobin levels in hemodialysis patients. <i>Kidney Int.</i> 2010 Jul;78(2):215-23. Epub 2010 Apr 28.	20428102	2010	11	Australia, New Zealand, Canada, Japan, US	Belgium, France, Germany, Italy, Spain, Sweden, UK
81	Neubert A, Verhamme K, Murray ML, Picelli G, Hsia Y, Sen FE, Giaquinto C, Ceci A, Sturkenboom M, Wong IC; TEDDY Network of Excellence. The prescribing of analgesics and non-steroidal anti-inflammatory drugs in paediatric primary care in the UK, Italy and the Netherlands. <i>Pharmacol Res.</i> 2010 Sep;62(3):243-8. Epub 2010 May 6.	20451614	2010	3		UK, Italy, Netherlands
82	Peuskens J, Olivares JM, Pecena J, Tuma I, Bij de Weg H, Eriksson L, Ressler S, Akhras K, Jacobs A. Treatment retention with risperidone long-acting injection: 24-month results from the Electronic Schizophrenia Treatment Adherence Registry (e-STAR) in six countries. <i>Curr Med Res Opin.</i> 2010 Mar;26(3):501-9.	20014981	2010	6		Belgium, Czech, Netherlands, Sweden, Slovakia, Spain

83	Renard E. Insulin Pump Use in Europe. <i>Diabetes Technol Ther.</i> 2010 Jun;12 Suppl 1:S29-32.	20515303	2010	21		Norway, Austria, Netherlands, Switzerland, Germany, France, Sweden, Italy, Denmark, Ireland, Czech, Belgium, Greece, Slovakia, Poland, Hungary, Spain, UK, Finland, Portugal, Russia
84	Rosa MM, Ferreira JJ, Coelho M, Freire R, Sampaio C. Prescribing Patterns of Antiparkinsonian Agents in Europe. <i>Mov Disord.</i> 2010 Jun 15;25(8):1053-60.	20222132	2010	26		Greece, France, Luxembourg, Spain, Portugal, Germany, Belgium, Sweden, Austria, Hungary, Italy, Switzerland, Lithuania, Slovenia, Slovakia, Finland, UK, Estonia, Czech, Latvia, Denmark, Ireland, Netherlands, Poland, Norway, Turkey
85	Strang J, Hall W, Hickman M, Bird SM. Impact of supervision of methadone consumption on deaths related to methadone overdose (1993-2008): analyses using OD4 index in England and Scotland. <i>BMJ.</i> 2010 Sep 16;341:c4851. doi: 10.1136/bmj.c4851.	20847018	2010	2		England, Scotland
86	Zahl PH, De Leo D, Ekeberg Ø, Hjelmeland H, Dieserud G. The relationship between sales of SSRI, TCA and suicide rates in the Nordic countries. <i>BMC Psychiatry.</i> 2010 Aug 6;10:62.	20691035	2010	4		Sweden, Norway, Denmark, Finland
87	Kemp A, Roughead E, Preen D, Glover J, Semmens J. Determinants of self-reported medicine underuse due to cost: a comparison of seven countries. <i>J Health Serv Res Policy.</i> 2010 Apr;15(2):106-14. Epub 2010 Mar 4. PubMed PMID:20203082.	20203082	2010	7	Canada, US, Australia, New Zealand	UK, Netherlands, Germany
88	Adriaenssens N, Coenen S, Kroes AC, Versporten A, Vankerckhoven V, Muller A, Blix HS, Goossens H; on behalf of the ESAC Project Group. European Surveillance of Antimicrobial Consumption (ESAC): systemic antiviral use in Europe. <i>J Antimicrob Chemother.</i> 2011 Aug;66(8):1897-1905. Epub 2011 May 27.	21622674	2011	16		Belgium, Croatia, Denmark, Estonia, Finland, France, Hungary, Italy, Luxembourg, Russia, Slovenia, Sweden, Austria, Netherlands, Portugal, Norway
89	De Natale R, Le Pen C, Berdeaux G. Efficiency of Glaucoma Drug Regulation in 5 European Countries: A 1995-2006 Longitudinal Prescription Analysis. <i>J Glaucoma.</i> 2011 Apr-May;20(4):234-9.	21682002	2011	5		France, Germany, Italy, Spain, UK

90	Fix BV, Hyland A, Rivard C, McNeill A, Fong GT, Borland R, Hammond D, Cummings KM. Usage Patterns of Stop Smoking Medications in Australia, Canada, the United Kingdom, and the United States: Findings from the 2006_2008 International Tobacco Control (ITC) Four Country Survey. <i>Int J Environ Res Public Health</i> . 2011 Jan;8(1):222-33. Epub 2011 Jan 20.	21318025	2011	4	US, Canada, Australia	UK
91	Floud S, Vigna-Taglianti F, Hansell A, Blangiardo M, Houthuijs D, Breugelmans O, Cadum E, Babisch W, Selander J, Pershagen G, Antonioti MC, Pisani S, Dimakopoulou K, Haralabidis AS, Velonakis V, Jarup L; HYENA Study Team. Medication use in relation to noise from aircraft and road traffic in six European countries: results of the HYENA study. <i>Occup Environ Med</i> . 2011 Jul;68(7):518-24. Epub 2010 Nov 16.	21084328	2011	6		UK, Germany, Netherlands, Sweden, Italy, Greece
92	Godman B, Shrank W, Andersen M, Berg C, Bishop I, Burkhardt T, Garuoliene K, Herholz H, Joppi R, Kalaba M, Laius O, Lonsdale J, Malmstrom RE, Martikainen JE, Samaluk V, Sermet C, Schwabe U, Teixeira I, Tilson L, Tulunay FC, Vlahovic-Palcevski V, Wendykowska K, Wettermark B, Zara C, Gustafsson LL. Policies to enhance prescribing efficiency in Europe: findings and future implications. <i>Front Pharmacol</i> . 2010;1:141. Epub 2011 Jan 7.	21833180	2011	19		Austria, Germany, Estonia, Spain, Finland, France, England, Scotland, Croatia, Ireland, Italy, Lithuania, Norway, Poland, Portugal, Serbia, Sweden, Slovenia, Turkey
93	Hoebert J.M., Mantel-Teeuwisse A.K., van Dijk L., Laing R.O., Leufkens H.G.M. Quality and completeness of utilisation data on biological agents across European countries: tumour necrosis factor alpha inhibitors as a case study. <i>Pharmacoepidem drug saf</i> (2011) 20: 265–271	21351308	2011	6		Denmark, Finland, Ireland, Netherlands, Norway, Portugal
94	Hudec R, Božeková L, Tisoňová J. Consumption of three most widely used analgesics in six European countries. <i>J Clin Pharm Ther</i> . 2011 Apr 6. doi: 10.1111/j.1365-2710.2011.01256.x. [Epub ahead of print]	21466569	2011	6		Denmark, Norway, Finland, Czech, Estonia, Slovakia
95	Montes JM. Use of ziprasidone in patients with schizophrenia in four European countries. <i>Eur Psychiatry</i> . 2011 Mar;26 Suppl 1:29-37.	21440221	2011	4		Germany, Italy, Greece, Spain

96	Neubert A, Hsia Y, de Jong-van den Berg LT, Janhsen K, Glaeske G, Furu K, Kieler H, Nørgaard M, Clavenna A, Wong IC. Comparison of anti-diabetic drug prescribing in children and adolescents in seven European countries. <i>Br J Clin Pharmacol</i> . 2011 Jun 20. doi: 10.1111/j.1365-2125.2011.04045.x. [Epub ahead of print]	21689139	2011	7		UK, Netherlands, Germany, Sweden, Norway, Denmark, Italy
97	Sabo A, Tomić Z, Stilinović N, Milijašević B, Mikov M, Vukmirović S, Horvat O. Consumption of serum lipid-reducing drugs in Serbia compared with Scandinavian countries: a population-based study, 2004–2008. <i>Pharmacoepidemiol Drug Saf</i> . 2011 Jan;20(1):45-9.	20938914	2011	4		Serbia, Norway, Finland, Denmark
98	Voncina L, Strizrep T, Godman B, Bennie M, Bishop I, Campbell S, Vlahovic-Palcevski V, Gustafsson LL. Influence on demand-side measures to enhance renin-angiotensin prescribing efficiency in Europe: implications for the future. <i>Expert Rev Pharmacoeconomics Outcomes Res</i> . 2011 11(4) 471-xxx.	21831028	2011	6		Austria, Croatia, Portugal, Scotland, Spain, Sweden
99	Zoëga H, Furu K, Halldórsson M, Thomsen PH, Sourander A, Martikainen JE. Use of ADHD drugs in the Nordic countries: a population-based comparison study. <i>Acta Psychiatr Scand</i> . 2011 May;123(5):360-7. doi: 10.1111/j.1600-0447.2010.01607.x. Epub 2010 Sep 23.	20860726	2011	5		Sweden, Norway, Denmark, Finland, Iceland
100	Lu CY, Roughead E. Determinants of patient-reported medication errors: a comparison among seven countries. <i>Int J Clin Pract</i> . 2011 Jul;65(7):733-40. doi:10.1111/j.1742-1241.2011.02671.x. Epub 2011 Apr 6. PubMed PMID: 21470350.	21470350	2011	7	US, Canada, Australia, New Zealand	Germany, Netherlands, UK

Appendix 2. Abstracts of all included articles

[Eur J Clin Pharmacol](#). 2000 Jun;56(3):269-72.

1. Deviations from evidence-based prescribing of non-steroidal anti-inflammatory drugs in three European regions.

[Bergman U](#), [Andersen M](#), [Vaccheri A](#), [Bjerrum L](#), [Wettermark B](#), [Montanaro N](#).

Division of Clinical Pharmacology, Karolinska Institutet, Huddinge University Hospital, Stockholm, Sweden.
Ulf.Bergman@pharmlab.hs.sll.se

Abstract

OBJECTIVE:

We examined to what extent the evidence of the relative gastrointestinal toxicity with non-steroidal anti-inflammatory drugs (NSAIDs) was implemented in clinical practice in Bologna, Italy, Funen, Denmark, and Stockholm, Sweden, areas with accurate computerised information on prescriptions purchased by defined populations.

METHODS:

We ranked each NSAID by purchased volume in defined daily doses during September 1996 and compared it with the ranking of gastrointestinal complications from a meta-analysis of controlled epidemiological studies published between 1986 and 1994. We restricted our comparison to those NSAIDs that accounted for 90% of the use and within this DU90% segment we determined the proportion of "high risk" (azapropazone, ketoprofen, piroxicam) and "low risk" (ibuprofen, diclofenac) drugs with respect to gastrointestinal toxicity.

RESULTS:

In Funen, Denmark, we found the best NSAID profile (63% low risk/11% high risk) while Bologna, Italy, had the other extreme (26% low risk/38% high risk), with Stockholm, Sweden, in between (43% low risk/20% high risk).

CONCLUSION:

Our study suggests that factors other than evidence-based medicine had a dominating impact on the use of prescription NSAIDs in 1996.

PMID:

10952484

[PubMed - indexed for MEDLINE]

2. Prescribing patterns for asthma by general practitioners in six European countries.

[Jepson G](#), [Butler T](#), [Gregory D](#), [Jones K](#).

Source

Department of Primary Health Care, The Medical School, Newcastle upon Tyne, UK.

Abstract

To assess the level of concordance with international consensus on asthma management, we compared primary care prescribing patterns for asthma in different European countries. A prospective study of prescription items with an associated diagnostic label of asthma in patient consultations with a total of 235 general practitioners (GPs) from Belgium, England, Ireland, Italy, Northern Ireland, Portugal, Scotland and Spain was performed. A total of 101,544 consecutive consultations were recorded in autumns 1994 and 1995 of which 3595 (3.5%) were for patients with asthma and 3243 (3.2%) were for patients receiving a prescription for asthma. Overall, asthma consultations varied from 1.8% in Italy to 5.8% in Ireland (mean 3.4%, SD 1.6). Prescribed inhaled medications for children varied from 72% of the total asthma prescriptions in Ireland and Portugal to 82% in Northern Ireland (mean 79%, SD 8.1) and for adults 55% in Italy to 85% in Spain (mean 70%, SD 10). Inhaled corticosteroid usage for adults varied from 14% in Italy to 31% in Northern Ireland (mean 24%, SD 6.4). For children, beta2-agonist use varied from 24% in Italy to 67% in Spain (mean 45%, SD 13). Despite publication of international guidelines for the management of asthma, inter-country prescribing practices vary considerably and could be improved. The frequency of use of asthma as a diagnostic label also varies markedly.

PMID:

10921763

[PubMed - indexed for MEDLINE]

[Eur Respir J](#). 2000 Jan;15(1):25-9.

3. Asthma management in five European countries: doctors' knowledge, attitudes and prescribing behaviour. Drug Education Project (DEP) group.

[Lagerløv P](#), [Veninga CC](#), [Muskova M](#), [Hummers-Pradier E](#), [Stålsby Lundborg C](#), [Andrew M](#), [Haaijer-Ruskamp FM](#).

Source

Dept of Pharmacotherapeutics, University of Oslo, Norway.

Abstract

The aim of the study was to examine the relationship between guideline recommendations on asthma management, and the performance of doctors in five different European health care contexts. Knowledge, attitudes and prescribing behaviour of doctors recruited to an educational project was investigated. A total of 698 general practitioners from Germany, The Netherlands, Norway and Sweden, and 94 specialists from the Slovak Republic participated. A questionnaire was used to assess their knowledge and attitudes. Antiasthmatic drugs dispensed to their patients reflected their prescribing behaviour. In response to questions on how to treat chronic asthma, most doctors were in agreement with guideline recommendations. In practice, however, the proportion of asthma patients receiving inhaled steroids varied almost twofold, ranging 31% in Germany to 58% in The Netherlands. On questions related to exacerbation of asthma, German and Slovakian doctors often preferred treatment with antibiotics to steroids. They also more often associated yellow-green sputum with bacterial infection. In conclusion, although many doctors in different health care contexts have accepted the recommendations given in guidelines, the proportion of their patients treated accordingly differed. German and Slovakian doctors seem to attach less importance to the inflammatory features of asthma than the doctors from the other three European countries.

PMID:

10678616

[PubMed - indexed for MEDLINE]

4. Treatment of uncomplicated urinary tract infections: exploring differences in adherence to guidelines between three European countries. Drug Education Project Group.

[Veninga CC](#), [Lundborg CS](#), [Lagerlöv P](#), [Hummers-Pradier E](#), [Denig P](#), [Haaijer-Ruskamp FM](#).

Source

Northern Centre for Healthcare Research, University of Groningen, The Netherlands.

Abstract

OBJECTIVE:

To evaluate adherence of general practitioners to treatment guidelines regarding urinary tract infections in three European countries and to investigate whether differences in adherence at the prescribing level within and between countries could be explained by general practitioners' knowledge and attitudes, characteristics, or national setting.

DESIGN:

Prescribing data collected in 1994-1995 were analyzed regarding use of first-choice drugs and duration of treatment, knowledge and attitudes were assessed with a questionnaire, and multiple regression analysis was used to explain differences in prescribing behavior within and between countries.

RESULTS:

Our study is based on data from 85.6% of the 584 general practitioners who were scheduled to participate in a continuing education program. The mean proportion of responses in agreement with the guidelines regarding first-choice drugs was 0.69 in Sweden, 0.78 in the Netherlands, and 0.79 in Norway; regarding duration of treatment, the mean proportion was 0.56 in Sweden, 0.67 in the Netherlands, and 0.59 in Norway. The proportion of first-choice drugs prescribed for women (18-75 y) was 0.55 in Sweden, 0.83 in the Netherlands, and 1.00 in Norway (patients >16 y). The duration of treatment was 7.6 defined daily doses per prescription in Sweden, 5.9 in the Netherlands, and 6.6 in Norway. Knowledge and attitudes explained 0-17% of the variation in prescribing. Years in practice explained 0-11%, and the general practitioners' gender had no explanatory value. The national setting explained most of the variation between countries.

CONCLUSIONS:

Differences in prescribing behavior can be explained only to a small extent by deviations from the guidelines in terms of knowledge and attitudes. Between countries, differences in regulation, marketing, and distribution of drugs seem to be of much greater importance.

PMID:

10669181

[PubMed - indexed for MEDLINE]

5. Antibiotic usage in Nordic countries.

[Bergan T.](#)

Source

Institute of Medical Microbiology, Kaptein W. Wilhelmsen of Frues, University of Oslo, Rikshospitalet, Oslo 0027, Norway. tom.bergan@labmed.uio.no

Abstract

The consumption of antibacterials has remained relatively stable in Scandinavia and is low compared with most other countries. Measured as "Defined Daily Doses" (DDD), the highest consumption is found in Iceland and Finland, and the lowest in Denmark and Norway. The consumption in Iceland, Finland and Sweden is about twice that in Norway. The distribution of different classes of antimicrobials shows striking differences. Phenoxymethyl and benzylpenicillin make up about 55% of the DDDs in Sweden and 40% of the DDDs in Denmark and Norway, whereas the narrow-spectrum penicillins represent 20% of the DDDs in Iceland. Fluoroquinolones are little used except in Sweden where they account for about 10% of DDDs. The use of cephalosporins ranges from 1% (in Denmark) to 15% (in Finland) and between 3 and 5% in the other countries. The policy that narrow-spectrum penicillins may be used when necessary but broad-spectrum compounds should be avoided has the positive effect that there is greater susceptibility in the Nordic countries to these antibiotics than elsewhere.

PMID:

11673043

[PubMed - indexed for MEDLINE]

[Lancet](#). 2001 Jun 9;357(9271):1851-3.

6. Variation in antibiotic use in the European Union.

[Cars O](#), [Mölstad S](#), [Melander A](#).

Abstract

Data on antibiotic use are not publicly available in most European Union countries. We obtained data for non-hospital antibiotic sales for 1997 from the 15 member states and analysed these according to the Anatomic Therapeutic Chemical classification system, and expressed them as defined daily doses per 1000 people per day. Sales of antibiotics varied more than four-fold: France (36.5), Spain (32.4), Portugal (28.8), and Belgium (26.7) had the highest sales, whereas the Netherlands (8.9), Denmark (11.3), Sweden (13.5), and Germany (13.6) had the lowest. There was also profound variation in use of different classes of antibiotics. Detailed knowledge of antibiotic use is necessary to implement national strategies for optimum antibiotic use, and to address the threat posed by resistant microorganisms

PMID:

11410197

[PubMed - indexed for MEDLINE]

7. Non-antiarrhythmic drugs prolonging the QT interval: considerable use in seven countries.

[De Ponti F](#), [Poluzzi E](#), [Vaccheri A](#), [Bergman U](#), [Bjerrum L](#), [Ferguson J](#), [Frenz KJ](#), [McManus P](#), [Schubert I](#), [Selke G](#), [Terzis-Vaslamatzis G](#), [Montanaro N](#).

Source

Department of Pharmacology, University of Bologna, Bologna, Italy. deponi@biocfarm.unibo.it

Abstract

AIMS:

Many drugs belonging to different therapeutic classes appear to share a potentially fatal side-effect: ventricular tachyarrhythmias associated with QT prolongation. The aim of this study was to assess the relevance and the magnitude of the problem in seven countries by grouping all nonantiarrhythmic drugs according to the type of evidence on QT prolongation and analysing their sales data.

METHODS:

We divided all nonantiarrhythmic QT-prolonging agents into the following categories (in increasing order of clinical relevance): group A, drugs with published clinical or preclinical evidence on QT prolongation or with relevant official warnings; group B, drugs with published clinical or preclinical evidence; group C, drugs with published clinical evidence; group D, drug with published clinical evidence on torsades de pointes or ventricular arrhythmias associated with QT prolongation; group E, drugs belonging to group D with official warnings. We retrieved 1998 sales data from community pharmacies in seven countries (Australia, Denmark, England, Germany, Greece, Italy and Sweden). Data for individual agents were expressed as defined daily doses per 1000 inhabitants per day (DDD/1000/day). Overall use in each country was calculated for each drug group. Groups D and E were considered as the most clinically relevant.

RESULTS:

Among the 102 nonantiarrhythmic agents meeting at least one of the inclusion criteria, 33 drugs had sales data $>$ or $=1$ DDD/1000/day and 71 drugs had a use $>$ or $=0.1$ DDD/1000/day in at least one country. Among the 37 nonantiarrhythmic agents with published reports of ventricular arrhythmias associated with QT prolongation, 12 compounds had sales data $>$ or $=1$ DDD/1000/day. Total consumption in each country ranged: from 51.9 to 94.7 DDD/1000/day for group A; from 51.6 to 92.7 DDD/1000/day for group B; from 37.1 to 76.6 DDD/1000/day for group C; from 12.9 to 29.1 DDD/1000/day for group D; and from 5.8 to 15.3 DDD/1000/day for group E.

CONCLUSIONS:

In spite of wide variations in the sales of individual agents, the overall extent of use of nonantiarrhythmic QT-prolonging drugs was of the same order of magnitude in all countries. The significant use of drugs belonging to categories D and E should prompt careful risk/benefit assessment of each agent.

PMID:

12207637

[PubMed - indexed for MEDLINE]

PMCID: PMC1874396

[Patient Educ Couns.](#) 2002 Oct -Nov;48(2):161-9.

8. Cross-cultural differences in lay attitudes and utilisation of antibiotics in a Belgian and a Dutch city.

[Deschepper R](#), [Vander Stichele RH](#), [Haaijer-Ruskamp FM](#).

Source

Department of Comparative Study of Culture, Ghent University, Ghent, Belgium. reginald.deschepper@rug.ac.be

Abstract

Cultural differences are probably an important factor in the considerable variation in antibiotic use between countries. The objective of this study was to explore local cultural differences in the lay perspective on coping with URTD and using antibiotics. We interviewed 30 persons in a Dutch and a Belgian city. Twenty-one were interviewed a second time after 3 months. Between the first and second interview, they noted in a diary all URTD episodes experienced by themselves and their family members (N=69) and how they coped with them. The Dutch participants labelled most URTD episodes as "common cold" or "flu". The Flemish participants labelled most of their URTD episodes as "bronchitis" and used more antibiotics. Four categories of antibiotic users could be distinguished. Participants with a Protestant background were more sceptical about medicines than those with a Catholic background. A thorough understanding of the cultural context is necessary to design effective campaigns to promote rational antibiotic use.

PMID:

12401419

[PubMed - indexed for MEDLINE]

9. Trends in consumption of calcium channel blockers in the Czech Republic during 1993-1999 and comparison with selected countries: drug utilization study.

[Dolezal T](#), [Nemecek K](#), [Krsiak M](#).

Source

Department of Pharmacology, 3rd Faculty of Medicine, Charles University, Ruska 87, Prague 10, 100 34, Czech Republic. tomas.dolezal@lf3.cuni.cz

Abstract

OBJECTIVE:

To determine the patterns of consumption in calcium channel blockers (CCB) groups in the Czech Republic between 1992 and 1999 and make a comparison with selected countries.

METHODS:

This was part of a drug utilization study using WHO methodology [Anatomical Therapeutic Chemical classification/defined daily doses (ATC/DDD)]. The wholesale data collected by drug distributors were used. Utilization was calculated as the DDDs for 1000 inhabitants per day. In focus was the consumption of short-acting nifedipine. Comparison with wholesale data from Finland, Norway, Germany and Australia was made.

RESULTS:

There was a decreasing tendency to use short-acting nifedipine in the Czech Republic over the period 1993-1999. Four years after publication of warning evidence, short-acting nifedipine still accounted for 23% of all calcium channel blockers in our country. The abundance of second-generation CCBs increased from less than 1% in 1993 to 43% in 1999. The consumption of short-acting nifedipine in the Czech Republic and Germany is probably three times more frequent than in Nordic countries and Australia.

CONCLUSIONS:

Consumption of short-acting nifedipine in the Czech Republic 4 years after recognition of its risks still remains very high. This suggests that implementation of clinical trial results to clinical practice is very slow and ineffective.

Comment in

- [Eur J Clin Pharmacol.](#) 2003 Apr;58(12):851-2.

PMID:

12389070

10. Antibiotic prescription rates vary markedly between 13 European countries.

[Mölstad S](#), [Lundborg CS](#), [Karlsson AK](#), [Cars O](#).

Source

Unit of Research and Development in Primary Care, Jönköping, Sweden. sigvard.molstad@ltjkpg.se

Abstract

There is a lack of data on antibiotic utilization in most European countries. In this study, information about the number of antibiotic prescriptions was obtained for Austria, Belgium, Finland, France, Germany, Greece, Italy, The Netherlands, Portugal, Spain and the UK from the Institute for Medical Statistics Health Global Services in the UK. For Denmark and Sweden the information was obtained from the Danish Medicines Agency (Laegemiddelstyrelsen) and the National Corporation of Swedish Pharmacies (Apoteket AB), respectively. Between 1994 and 1997 the number of prescriptions per 1,000 inhabitants increased in France and Greece whilst Portugal, Spain and Sweden reported a decrease. In 1997, Greece (1,350), Spain (1,320) and Belgium (1,070) had the highest numbers of antibiotic prescriptions per 1,000 inhabitants in the Anatomical Therapeutic Chemical classification system for drugs group J01 while The Netherlands (390), Sweden (460) and Austria (480) had the lowest. The most common antibiotic drug was extended-spectrum penicillin in 6/13 countries, macrolides in Austria, Finland, Germany and Italy, phenoxymethylpenicillin in Denmark and Sweden and cephalosporins in Greece. The variation in the number of antibiotic prescriptions per 1,000 inhabitants between the 13 European countries was substantial in terms of both total use and use of different antibiotics.

PMID:

12069022

[PubMed - indexed for MEDLINE]

11. Variations in asthma treatment in five European countries-- judgement analysis of case simulations.

[Wahlström R](#), [Hummers-Pradier E](#), [Lundborg CS](#), [Muskova M](#), [Lagerløv P](#), [Denig P](#), [Oke T](#), [de Saintonge DM](#); [Drug Education Project Group](#).

Source

Division of International Health (IHCAR), Department of Public Health Sciences, Karolinska Institutet, SE-171 76 Stockholm, Sweden. rolf.wahlstrom@phs.ki.se

Abstract

OBJECTIVE:

The aim of this study was to explore and compare treatment decisions and the influence of specific patient characteristics on asthma management in five European countries, and to relate this to existing guidelines.

METHODS:

Using the technique of clinical judgement analysis, doctors in The Netherlands, Norway, Germany, Sweden and the Slovak Republic (40-100 doctors per country) were presented with sets of written simulated cases on asthma treatment. Patient characteristics were varied to determine their influence on the doctors' decisions. Decisions indicating over- and under-prescribing in relation to a gold standard derived from guidelines were also determined.

RESULTS:

Doctors in The Netherlands prescribed more oral steroid courses and fewer antibiotics than doctors in Norway and Sweden, whereas doctors in Germany and the Slovak Republic prescribed the least oral steroids and the most antibiotics. Partially, this variation could be explained by differences in the underlying propensity to prescribe, but differences in the use of patient characteristics also contributed to the variation. Norwegian doctors were most inclined to increase the maintenance treatment of inhaled corticosteroids, which could best be explained by their relatively high focus on the patient's peak expiratory flow value. Compared with the gold standard, there was 25-56% under-prescribing of oral steroids, and 21-45% over-prescribing of antibiotics.

CONCLUSIONS:

The variation in treatment of asthma patients between doctors in different countries may, in part, be attributed to variations in the underlying propensity to prescribe, and in part to different use of clinical patient characteristics. These findings can be used in tailoring educational programmes to improve treatment practices.

PMID:

12356693

[PubMed - indexed for MEDLINE]

12. Quality of non-steroidal anti-inflammatory drug prescribing in Croatia (Rijeka) and Sweden (Stockholm).

[Vlahovic-Palcevski V](#), [Wettermark B](#), [Bergman U](#).

University Hospital Center Rijeka, P.O. Box 292, Kresimirova 42, 51000 Rijeka, Croatia. vvlahovic@inet.hr

Abstract

OBJECTIVE:

We compared the utilisation pattern and cost of non-steroidal anti-inflammatory drugs (NSAIDs) in Rijeka, Croatia and in Stockholm, Sweden using a newly introduced method for assessing the quality of drug use, i.e. to determine the number of drugs that account for 90% of the use and the adherence to evidence-based recommendations within this segment (the DU90% methodology).

METHODS:

We analysed prescription NSAIDs dispensed during the first 6 months of 2000 in Rijeka and in Stockholm and recorded number of prescriptions, number of defined daily doses (DDDs), number of DDDs/1000 inhabitants per day and percentages and determined the DU90% segment by substance and brand name. Within the DU90% segment we determined the proportion of NSAIDs associated with high (ketoprofen, piroxicam) and low (ibuprofen, diclofenac) risk for gastrointestinal (GI) toxicity according to a meta-analysis of controlled epidemiological studies. We also compared the cost for NSAIDs in both regions as well as the cost for each NSAID expressed in Euros.

RESULTS:

In Stockholm the utilisation of NSAIDs was twofold greater than in Rijeka (28.6 DDDs/1000 inhabitants/day vs 14.2 DDDs/1000 inhabitants/day). Within the DU90% segment we found four NSAIDs (of nine) in Rijeka and 16 (of 37) in Stockholm. In both regions diclofenac was the most commonly prescribed substance (55% in Rijeka and 25% in Stockholm). Diclofenac was also the cheapest drug in Rijeka. In Stockholm, the most commonly prescribed single brand drug was rofecoxib, a cyclooxygenase-2 inhibitor with a price far above the old NSAIDs. A significant proportion of "high GI risk" NSAIDs was found within the DU90% segment both in Rijeka (piroxicam, 23%) and in Stockholm (ketoprofen, 14%). Although the gross national product was five times higher in Sweden than in Croatia during 2000, on average, NSAIDs were three times more expensive in Sweden than in Croatia (0.52 Euros/DDD vs 0.18 Euros/DDD). Ibuprofen (DDD 1200 mg), the safest drug regarding GI toxicity, was not the most prescribed in either region.

CONCLUSION:

Our study suggests that evidence-based medicine was not the leading impact factor in prescribing NSAIDs during 2000. A proportionally higher use of ibuprofen (at a daily dose of 1200 mg) and a reduced use of either piroxicam or ketoprofen would improve the NSAID GI safety profile in both countries. As previously shown for Sweden and some other countries, the DU90% methodology was found to be a useful method for assessing the general quality of NSAID prescribing in Croatia.

PMID:

12107607

[PubMed - indexed for MEDLINE]

13. Use of psychiatric drugs in Slovenia in comparison to Scandinavian countries.

[Fürst J, Kocmur M.](#)

Source

Department of Drugs, Health Insurance Institute of Slovenia, Ljubljana, Slovenia. jurij.furst@zzzs.s1

Abstract

PURPOSE:

To find out the consumption of psychotropic drugs in Slovenia and the extent to which Slovenian consumption correlates to Scandinavian countries.

METHODS:

Data of ambulatory prescribing of psychiatric drugs in Slovenia for the years 1999 and 2000 and data for Norway, Sweden and Denmark are shown. All data are expressed in defined daily doses per thousand inhabitants per day (DDD's).

RESULTS:

The use of all neuroleptics in Slovenia is lower (5.3 vs 6.1-7.6 DDD's), however the share of atypicals (34%) is comparable to Scandinavian countries. Use of anticholinergics is up to five times greater (1.6 vs 0.3-0.5 DDD's). The use of lithium is five times lower (0.2 vs 1.1-1.4). Regarding the use of antidepressants, Slovenia is behind Scandinavia (12.2 vs 30-47 DDD's), whereas the share of SSRIs (73%) is at the same level. The use of anxiolytics is higher (25.4 vs 16-22.4 DDD's) and ratio with antidepressants is also unfavourable. The use of hypnotics and sedatives is favourably low (10.7 vs 31.8-44.6 DDD's).

CONCLUSIONS:

Low use of hypnotics and sedatives is favourable. The share of new neuroleptics and antidepressants is comparable. The use of antidepressants is probably too low. However, prescribing guidelines for anxiolytics, anticholinergics (too high use of both group) and lithium (too low use) should be introduced in Slovenia.

PMID:

12899115

[PubMed - indexed for MEDLINE]

14. Utilisation of antibiotics in young children: opposite relationships to adult educational levels in Danish and Swedish counties.

[Melander E](#), [Nissen A](#), [Henricson K](#), [Merlo J](#), [Mölstad S](#), [Kampmann JP](#), [Lithman T](#), [Hansen EH](#), [Melander A](#).

Source

Department of Clinical Microbiology and Immunology, Lund University Hospital, 221 85, Lund, Sweden.
eva.z.melander@skane.se

Abstract

BACKGROUND:

Antibiotic utilisation varies profoundly among and within countries, and the extent of antibiotic utilisation correlates with the frequency of bacterial resistance, particularly among children. Hence, it is important to assess which factors may influence prescribing. In addition to variations in morbidity, health-care organisation, drug regulatory and supply systems, prescriber's attitudes, parents' behaviour, attitudes and socio-economic positions seem important. We compared socio-economic position (educational level of adults) and antibiotic utilisation in children in the municipalities within a Danish and a Swedish county which are geographically close, have similar social and economic development, and similar drug regulatory and supply systems.

METHODS:

Data on antibiotic utilisation (1998), expressed in defined daily doses per 1000 inhabitants per day (DDD/TID), were obtained from the Copenhagen County Health Insurance register and from the National Corporation of Swedish Pharmacies. Data on municipal educational levels were obtained from Statistics Denmark and Statistics Sweden.

RESULTS:

The utilisation of antibiotics in 0- to 6-year-old children was higher in the Swedish than in the Danish county but varied between the municipalities within both the Swedish (9.6-17.7 DDD/TID) and the Danish (8.0-12.9 DDD/TID) counties. Most notably, utilisation rates correlated negatively with the education levels in the Danish ($r=-0.539$, $P=0.021$) but positively in the Swedish ($r=+0.390$, $P=0.025$) municipalities.

CONCLUSION:

The observed variations in antibiotic prescribing may reflect different parental and/or prescriber attitudes towards use of antibiotics and they emphasise that antibiotic prescribing is influenced by factors other than the prevalence of bacterial infections. Relationships between socio-economic position (educational level) and drug utilisation should not be generalised from one area to another.

PMID:

12856093

[PubMed - indexed for MEDLINE]

15. Cost-minimisation study of dorzolamide versus brinzolamide in the treatment of ocular hypertension and primary open-angle glaucoma: in four European countries.

[Rouland JF](#), [Le Pen C](#), [Gouveia Pinto C](#), [Berto P](#), [Berdeaux G](#).

Source

Hôpital Huriez, Service d'Ophtalmologie, Lille Cedex, France.

Abstract

OBJECTIVE:

Cost is an issue when prescribing two drugs with equivalent efficacy. We compared the direct medical costs of topical brinzolamide 1% (twice a day or three times daily) with topical dorzolamide 2% (twice a day or three times daily) in France, Italy, Portugal and Spain in patients with ocular hypertension or primary open-angle glaucoma.

DESIGN AND SETTING:

Three double-blind, controlled, randomised trials (with a study duration of 3 months) compared the response rate of brinzolamide twice a day or three times daily versus dorzolamide three times daily, and the response rate of brinzolamide-timolol twice a day versus a dorzolamide-timolol combination twice a day. A fourth double-blind randomised trial (with a duration of 12 months) compared brinzolamide twice a day and three times daily with timolol monotherapy. Local tolerance was compared in two dedicated studies. Rates of switching to a new medication regimen were evaluated through a US health maintenance organisation database. In case of treatment failure, the patients were treated with latanoprost. A model was developed to value direct medical costs over 3 months. The economic perspective was that of the third-party payer and the patient, and included direct medical costs (reimbursed part plus co-payment).

PATIENTS:

Patients with ocular hypertension and/or primary open-angle glaucoma who had not responded to or could not tolerate beta-blocker therapy.

OUTCOME MEASURE:

The daily direct medical costs of therapy with the two drugs.

RESULTS:

As monotherapy, brinzolamide twice daily and three times daily was found to be as efficacious as dorzolamide three times a day. Brinzolamide twice daily plus timolol was also as efficacious as a combination of dorzolamide and timolol twice a day. Stinging of the eye upon instillation with brinzolamide was experienced by fewer patients than with dorzolamide ($p < 0.0001$). The likelihood of patients treated with dorzolamide changing therapy was 1.28 times greater than that for those treated with brinzolamide. The size of the brinzolamide drop is 18.7% smaller than that of dorzolamide allowing seven more therapy days per bottle with brinzolamide twice daily than with dorzolamide monotherapy, and five more days when brinzolamide is used three times a day. The direct medical costs for patients treated with brinzolamide were lower in all four European countries when drop size was taken into account than for those treated with dorzolamide. Sensitivity analyses confirmed the robustness of our findings.

CONCLUSION:

Because brinzolamide can be prescribed twice daily in monotherapy and because fewer patients treated with brinzolamide switch therapy due to local intolerance, our model suggests that brinzolamide is a cost-saving alternative to dorzolamide.

PMID:

12558470

[PubMed - indexed for MEDLINE]

16. EURO-MED-STAT: monitoring expenditure and utilization of medicinal products in the European Union countries: a public health approach.

[EURO-MED STAT Group](#).

Abstract

BACKGROUND:

There is uncertainty about the level of utilization and expenditure for medicines in the European Union (EU), making assessment of their impact on public health difficult. Our aim is to develop indicators to monitor price, expenditure and utilization of medicinal products in the EU, so as to facilitate comparisons.

METHODS:

There are four major tasks. Task 1: To catalogue data sources and available data in each EU Member State. Task 2: To assess the reliability and comparability of data among the EU Member States by ATC/DDD on country coverage, reimbursement, prescriptions, price category (e.g. wholesale, hospital, retail) and private versus public spending. Task 3: To develop Standard Operating Procedures for data management and to define clearly the proposed indicators in terms of objective, definition, description, rationale, and data collection. Task 4: To pool, compare and report the validated data according to the established indicators, using cardiovascular medicines as an example.

RESULTS:

Preliminary results from Tasks 1 and 2 are available and demonstrate the methodological difficulties in comparing data from different countries. Multiple data sources must be used. These cover different populations, and refer to different prices or costs. Nevertheless, useful data can be derived, illustrated by the example of lipid lowering medicines. The data shows that only five products are commonly available in all countries. Even when a medicine is available in all countries, there may be substantial differences in packages, which can hinder comparison. Data on utilization of statins shows high usage in Scandinavian countries and least in Italy.

CONCLUSION:

The preliminary results of EURO-MED-STAT show wide differences in availability, and use of medicines across Europe that may have substantial implications for public health.

PMID:

14533757

[PubMed - indexed for MEDLINE]

17. Use of erythropoietin in cancer patients: assessment of oncologists' practice patterns in the United States and other countries.

[Adams JR](#), [Elting LS](#), [Lyman GH](#), [George JN](#), [Lembersky BC](#), [Armitage JO](#), [Demetri GD](#), [Bennett CL](#).

Source

Department of Veterans Affairs, the MidWest Center for Health Services and Policy Research and the Veterans Affairs Chicago Healthcare System/Lakeside Division, Chicago, Illinois, USA.

Abstract

PURPOSE:

To assess physician use of erythropoietin in cancer patients before publication of the American Society of Clinical Oncology/American Society of Hematology guidelines.

METHODS:

Questionnaires about erythropoietin use in practice and 12 hypothetical clinical scenarios involving patients with cancer were mailed to 2000 oncologists/hematologists in the United States and 19 other countries. Response rates were 30% in the United States and 25% internationally. Data on erythropoietin use for ovarian cancer were obtained from one clinical trial. Multivariate regression models assessed predictors of erythropoietin prescription.

RESULTS:

Most physicians selected a hemoglobin level $< \text{or } = 10$ g/dL as an upper threshold for erythropoietin use (36% to 51% of U.S. physicians and 21% to 32% of foreign physicians). Frequent erythropoietin use (defined as use in at least 10% of cancer patients) was higher in the United States than elsewhere (adjusted odds ratio [OR] = 5.8; 95% confidence interval [CI]: 2.5 to 13.4). Among U.S. physicians, those who said they used erythropoietin frequently were more likely to be in fee-for-service than managed care settings (OR = 2.2; 95% CI: 1.3 to 3.7). Those who reported never using erythropoietin practiced in countries that had lower annual per capita health care expenditures, lower proportions of privately funded health care, and a national health service ($P < 0.05$ for all comparisons). Of 235 ovarian cancer patients who received topotecan, 38% (45/118) of U.S. patients and 2% (2/117) of European patients who developed grade 1 anemia (hemoglobin level between 10 and 12 g/dL) were treated with erythropoietin ($P < 0.01$).

CONCLUSION:

Financial considerations and a hemoglobin level < 10 g/dL appear to influence erythropoietin use in the United States, whereas financial considerations alone determine erythropoietin use abroad.

PMID:

14706663

[PubMed - indexed for MEDLINE]

18. Drug use among fathers around time of conception: two register based surveys from Denmark and The Netherlands.

[Schirm E](#), [Pedersen L](#), [Tobi H](#), [Nielsen GL](#), [Sørensen HT](#), [de Jong-van den Berg LT](#).

Source

Department of Social Pharmacy, Pharmacoepidemiology and Pharmacotherapy, Groningen University Institute for Drug Exploration (GUIDE), University of Groningen, Groningen, The Netherlands.

Abstract

STUDY OBJECTIVE:

Despite the increasing attention for the role of paternal exposures around the period of conception, there is no factual information about drug utilisation of fathers. Therefore, the aim of this study was to describe the drugs dispensed to fathers around conception, using pharmacy dispensing data of community pharmacies in Denmark and The Netherlands.

DESIGN AND SETTING:

Using pharmacy dispensing data from the Pharmaco-epidemiological Prescription Database of North Jutland in Denmark and the InterAction database in The Netherlands, we examined the prescriptions reimbursed in the half year before conception of 56,735 Danish fathers from 1991 to 2000, and 5859 Dutch fathers from 1995 to 2000.

MAIN RESULTS:

One third of all fathers had taken up prescriptions for at least one drug in the half year before conception, both in Denmark and in The Netherlands. In the majority of fathers only one type of drug was dispensed, but in both countries at least 5% of all fathers had redeemed three or more types of drugs. The main drugs purchased by fathers in Denmark and The Netherlands were antibiotics (14.3 and 6.3% of all fathers, respectively), analgesics (6.1 and 7.6%), antihistamines (2.0 and 2.0%) and anti-ulcer drugs (1.6 and 2.5%).

CONCLUSION:

A large proportion of fathers used drugs around the time of conception. This finding emphasises the importance of safety information on therapeutic drugs with respect to potential paternal teratogenicity.

PMID:

15362083
[PubMed - indexed for MEDLINE]

19. European surveillance of antimicrobial consumption (ESAC): data collection performance and methodological approach.

[Vander Stichele RH](#), [Elseviers MM](#), [Ferech M](#), [Blot S](#), [Goossens H](#); [ESAC Project Group](#).

Source

ESAC Management Team, Department of Microbiology, University of Antwerp, Antwerp, Belgium.
robert.vanderstichele@ugent.be

Abstract

BACKGROUND:

Europe is a continent with strong public healthcare systems, but diverging antibiotic policies and resistance patterns.

AIMS:

To describe the performance and methodological approach in a retrospective data collection effort (1997-2001), through an international network of surveillance systems, aiming to collect publicly available, comparable and reliable data on antibiotic use in Europe.

METHODS:

A central multidisciplinary management team co-ordinated a network of national representatives, liaising with national data providers and bodies responsible for antibiotic policy. The data collected were screened for bias, using a checklist. We focused on detection bias in sample and census data; errors in assigning medicinal product packages to the Anatomical Therapeutic Chemical Classification (ATC); errors in calculations of defined daily doses (DDD) per package; bias by over-the-counter sales and parallel trade; and bias in ambulatory care (AC)/hospital care (HC) mix. Datasets were corrected after national feedback, and classified as valid; valid but with minor bias; not valid.

RESULTS:

Of the 31 participating countries, 21 countries delivered AC data suitable for cross-national comparison (14 for all 5 years). Of these, 17 countries provided data on a quarterly basis for at least 1 year. For HC, 14 countries were able to deliver valid data (nine for all 5 years). A valid estimate of the total exposure of national populations to human antibiotic consumption could be made in 17 countries.

CONCLUSION:

In cross-national comparisons of antibiotic consumption in Europe, methodological rigour in correcting for various sources of bias and checking the validity of ATC/DDD assignment is needed.

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PMID:

15373935

[PubMed - indexed for MEDLINE]

PMCID: PMC1884596

20. Comparison of national administrative and commercial databases to monitor expenditure and costs of statins across Europe.

[Walley T](#), [Folino-Gallo P](#), [Schwabe U](#), [Van Ganse E](#), [Stephens P](#); [EuroMedStat Group](#).

Source

Department of Pharmacology and Therapeutics, University of Liverpool, 70 Pembroke Place, Liverpool, L69 3GF, UK. twalley@liv.ac.uk

Abstract

OBJECTIVES:

To compare data on statin utilisation and costs across Europe from routine administrative databases with those from a commercial source.

METHODS:

Observational study in European Union member states and Norway. Comparison of data collected from national administrative databases used to reimburse pharmacists and data from a standard commercial source (Intercontinental Marketing Services Health): detailed data by drug for the year 2000.

RESULTS:

There were differences among the data from administrative databases and those from the commercial source; these differences were of a consistent pattern in each country. In general, the commercial data recorded greater utilisation (reflecting both public and private use, range from 0 to +55%, median +15%), lower cost per defined daily doses (as commercial data sources used ex-factory price rather than expenditure to the state used in administrative databases, range from -70% to -6%, median -39%) and similar utilisation per 1000 head of population per day (range from -15 to +47%, median -1%).

CONCLUSIONS:

Administrative databases can give useful utilisation data, which are broadly comparable with those from commercial sources. Cost data differ more, and the figures for each may be useful in different settings. Standards for data collection from the administrative databases are required.

PMID:

15316702

[PubMed - indexed for MEDLINE]

[BMJ](#). 2004 Feb 14;328(7436):385-6.

21. Variations and increase in use of statins across Europe: data from administrative databases.

[Walley T](#), [Folino-Gallo P](#), [Schwabe U](#), [van Ganse E](#); [EuroMedStat group](#).

Source

Department of Pharmacology and Therapeutics, University of Liverpool, Liverpool L69 3GF. twalley@liv.ac.uk

Erratum in

- [BMJ](#). 2004 Aug 7;329(7461):323.

PMID:

14962875

[PubMed - indexed for MEDLINE]

PMCID: PMC341388

22. International variation in prescribing antihypertensive drugs: its extent and possible explanations.

[Fretheim A](#), [Oxman AD](#).

Source

Informed Choice Research Department, Norwegian Health Services Research Centre, P.O. Box 7004, St. Olavs plass, Oslo, Norway. atle.fretheim@nhsrc.no

Abstract

BACKGROUND:

Inexpensive antihypertensive drugs are at least as effective and safe as more expensive drugs. Overuse of newer, more expensive antihypertensive drugs is a poor use of resources. The potential savings are substantial, but vary across countries, in large part due to differences in prescribing patterns. We wanted to describe prescribing patterns of antihypertensive drugs in ten countries and explore possible reasons for inter-country variation.

METHODS:

National prescribing profiles were determined based on information on sales and indications for prescribing. We sent a questionnaire to academics and drug regulatory agencies in Canada, France, Germany, UK, US and the Nordic countries, asking about explanations for differences in prescribing patterns in their country compared with the other countries. We also conducted telephone interviews with medical directors of drug companies in the UK and Norway, the countries with the largest differences in prescribing patterns.

RESULTS:

There is considerable variation in prescribing patterns. In the UK thiazides account for 25% of consumption, while the corresponding figure for Norway is 6%. In Norway alpha-blocking agents account for 8% of consumption, which is more than twice the percentage found in any of the other countries. Suggested factors to explain inter-country variation included reimbursement policies, traditions, opinion leaders with conflicts of interests, domestic pharmaceutical production, and clinical practice guidelines. The medical directors also suggested hypotheses that: Norwegian physicians are early adopters of new interventions while the British are more conservative; there are many clinical trials conducted in Norway involving many general practitioners; there is higher cost-awareness among physicians in the UK, in part due to fund holding; and there are publicly funded pharmaceutical advisors in the UK.

CONCLUSION:

Two compelling explanations the variation in prescribing that warrant further investigation are the promotion of less-expensive drugs by pharmaceutical advisors in UK and the promotion of more expensive drugs through "seeding trials" in Norway.

PMID:

15762983

[PubMed - indexed for MEDLINE]

PMCID: PMC1079831

[Lancet](#). 2005 Feb 12-18;365(9459):579-87.

23. Outpatient antibiotic use in Europe and association with resistance: a cross-national database study.

[Goossens H](#), [Ferech M](#), [Vander Stichele R](#), [Elseviers M](#); [ESAC Project Group](#).

Source

ESAC Management Team, Department of Microbiology, University of Antwerp, B-2610 Antwerp, Belgium.
Herman.Goossens@uza.be

Abstract

BACKGROUND:

Resistance to antibiotics is a major public-health problem and antibiotic use is being increasingly recognised as the main selective pressure driving this resistance. Our aim was to assess outpatient use of antibiotics and the association with resistance.

METHODS:

We investigated outpatient antibiotic use in 26 countries in Europe that provided internationally comparable distribution or reimbursement data, between Jan 1, 1997, and Dec 31, 2002, by calculating the number of defined daily doses (DDD) per 1000 inhabitants per day, according to WHO anatomic therapeutic chemical classification and DDD measurement methodology. We assessed the ecological association between antibiotic use and antibiotic resistance rates using Spearman's correlation coefficients.

FINDINGS:

Prescription of antibiotics in primary care in Europe varied greatly; the highest rate was in France (32.2 DDD per 1000 inhabitants daily) and the lowest was in the Netherlands (10.0 DDD per 1000 inhabitants daily). We noted a shift from the old narrow-spectrum antibiotics to the new broad-spectrum antibiotics. We also recorded striking seasonal fluctuations with heightened winter peaks in countries with high yearly use of antibiotics. We showed higher rates of antibiotic resistance in high consuming countries, probably related to the higher consumption in southern and eastern Europe than in northern Europe.

INTERPRETATION:

These data might provide a useful method for assessing public-health strategies that aim to reduce antibiotic use and resistance levels.

Comment in

- [Lancet](#). 2005 Feb 12-18;365(9459):548-9.

PMID:

15708101

[PubMed - indexed for MEDLINE]

24. Prescription practice of biological drugs in rheumatoid arthritis during the first 3 years of post-marketing use in Denmark and Norway: criteria are becoming less stringent.

[Hjardem E](#), [Hetland ML](#), [Østergaard M](#), [Krogh NS](#), [Kvien TK](#); [Danish Database for Biological Therapies in Rheumatology Study Group](#).

Source

Copenhagen University Hospital at Hvidovre, Department of Rheumatology 232, Kettegård Alle 30, DK 2650 Hvidovre, Denmark.

Abstract

BACKGROUND:

The study was based on the Danish DANBIO and the Norwegian NOR-DMARD databases.

OBJECTIVE:

To investigate changes in prescription practice during the first 3 years of post-marketing use of biological drugs, and to determine the proportion of patients who would not have received tumour necrosis factor (TNF) blocking agents if the prescription guidelines of the UK and the Netherlands had been applied.

METHODS:

Patients with rheumatoid arthritis (RA) receiving TNF blocking agents from Denmark (n = 823, median age 56.0, 72.2% women) and Norway (n = 371, median age 52.5, 75.4% women) were studied. Prescription guidelines in the UK and the Netherlands were applied to the data.

RESULTS:

Baseline disease activity and number of previous DMARDs declined significantly during the 3 years (median baseline DAS28 decreased from 5.8 to 5.2 in Denmark ($p < 0.001$) and from 6.0 to 5.6 in Norway ($p < 0.01$)). 47.9% and 41.3% of the Norwegian and Danish patients, respectively, did not meet the UK criteria for using TNF blocking agents, and 10.5% and 5.7% did not meet the Dutch criteria.

CONCLUSION:

Danish and Norwegian prescription practices of biological treatments in RA were similar, and became less stringent from 2000 to 2003. Prescriptions agreed well with the Dutch guidelines, but almost half the patients did not meet the UK guidelines.

PMID:

15640272

[PubMed - indexed for MEDLINE]

PMCID: PMC1755604

25. Prescribers' indications for drugs in childhood: a survey of five European countries (Spain, France, Bulgaria, Slovakia and Russia).

[Sanz EJ](#), [Hernández MA](#), [Ratchina S](#), [Stratchounsky L](#), [Peiré MA](#), [Mestre ML](#), [Horen B](#), [Kriska M](#), [Krajnakova H](#), [Momcheva H](#), [Encheva D](#), [Martínez-Mir I](#), [Palop V](#).

Source

Department of Clinical Pharmacology, School of Medicine, University of La Laguna, La Laguna, Tenerife, Spain.
esanz@ull.es

Abstract

BACKGROUND:

Indication-based, in comparison to diagnoses-based, drug utilization studies in children are scarce in the literature.

AIM:

To determine the adequacy of the prescriber's indications for specific drug treatments compared to the current literature in five different European countries; and to show the possibilities of performing indication-based drug utilization studies.

DESIGN:

a descriptive, cross-sectional, international study.

PATIENTS AND METHODS:

Randomly selected sample of 12,264 paediatric outpatients seen in consultation rooms attended by paediatricians or general practitioners. Data on patient demographics, diagnoses, and pharmacological treatment, with therapeutic indications for each drug, were collected in pre-designed forms. Diagnoses and indications were coded using the ICD-9 and drugs according to the ATC classifications.

RESULTS:

Indications were registered for every drug prescribed in all locations. Antibiotic indications considered incorrect (common cold, upper respiratory tract infections, viral infections, general symptoms or "not specified") accounted from 24.1% of the total antibiotics prescribed in Tenerife to 67.4% in Slovakia. Incorrect indication of first-choice antibiotics prescribed in acute otitis media and tonsillitis ranged from 28.9% of total antibiotics use in Russia to 75.4% in Tenerife. Correct antibiotic indications ranged from 23.4% of total antibiotics used in Slovakia to 65.7% in Tenerife. Aspirin use in febrile viral conditions was detected mainly in Toulouse and Russia.

CONCLUSION:

The main areas for improvement detected were high use of mucolytics, prescription of aspirin in potential or established viral infections, overuse of antibiotics and identification of specific patterns of incorrect antibiotic prescription and clinical entities associated with each location.

PMID:

16421040

[PubMed - indexed for MEDLINE]

26. Heart failure guidelines and prescribing in primary care across Europe.

[Sturm HB](#), [van Gilst WH](#), [Swedberg K](#), [Hobbs FD](#), [Haaijer-Ruskamp FM](#).

Source

Department of Clinical Pharmacology, University Medical Center Groningen, Antonius Deusinglaan 1, 9713 AV Groningen, The Netherlands. h.sturm@med.umcg.nl

Abstract

BACKGROUND:

Major international differences in heart failure treatment have been repeatedly described, but the reasons for these differences remain unclear. National guideline recommendations might be a relevant factor. This study, therefore, explored variation of heart failure guideline recommendations in Europe.

METHODS:

Treatment recommendations of 14 national guidelines published after 1994 were analyzed in relation to the heart failure treatment guideline of the European Society of Cardiology. To test potential relations between recommendations and prescribing, national prescribing patterns as obtained by a European study in primary care (IMPROVEMENT-HF) were related to selected recommendations in those countries.

RESULTS:

Besides the 14 national guidelines used by primary care physicians in the countries contacted, the European guideline was used in four countries, and separate guidelines for specialists and primary care were available in another four countries. Two countries indicated that no guideline was used up to 2000. Comprehensiveness of the guidelines varied with respect to length, literature included and evidence ratings. Relevant differences in treatment recommendations were seen only in drug classes where evidence had changed recently (beta-blockers and spironolactone). The relation between recommendation and prescribing for selected recommendations was inconsistent among countries.

CONCLUSION:

Differences in guideline recommendations are not sufficient to explain variation of prescribing among countries, thus other factors must be considered.

PMID:

16131393

[PubMed - indexed for MEDLINE]

PMCID: PMC1236923

27. Trends in prescribing and utilization of statins and other lipid lowering drugs across Europe 1997-2003.

[Walley T](#), [Folino-Gallo P](#), [Stephens P](#), [Van Ganse E](#).

Source

Department of Pharmacology and Therapeutics, University of Liverpool, 70 Pembroke Place, Liverpool L69 3GF, UK. twalley@liv.ac.uk

Abstract

AIMS:

To describe trends in utilization and prescribing of statins and other lipid lowering drugs across Europe from data in routine administrative databases.

METHODS:

Observational study in EU member states and Norway. Comparison of annual utilization data for lipid lowering agents by class and drug from national administrative databases for reimbursement over the period 1997-2003, measured in DDDs per 1000 inhabitants/day. Prescribed daily doses (PDD) of statins obtained from a commercial database (IMS Health) for 2000 and 2003, and used to calculate numbers of "patient treatment days" (PTD) in each country in each year. Analysis of PTD to explain increased utilization of statins.

RESULTS:

Use of lipid lowering agents varied among countries (in 2003, highest in Ireland and Norway, and lowest in Italy), but increased in all countries studied (between 2000 and 2003 by 274% in Ireland and by 56% in France). This increase was entirely due to increases in statin use. Prescribed daily doses of statins increased in all countries for which data was available between 2000 and 2003, but still usually fell below the doses used in the major trials of statins. As a result, the numbers of PTDs increased to a lesser extent than suggested by utilization (e.g. by 192% in Ireland and by 35% in France). One-third of the total rise in utilization was explained by increased PDD, and two-thirds by an increase in numbers of PTDs. Statins dominated the markets in all countries, although fibrates remained strong in France and Belgium (approximately 25% of all lipid lowering agents) and to a lesser extent Germany (10%).

CONCLUSIONS:

Use of statins across Europe has increased hugely over the study period. Some of the increase in use is due to higher prescribed daily doses, but two-thirds is due to increases in numbers of patient days of treatment, either due to more patients treated or less likely to better compliance.

Comment in

- [Br J Clin Pharmacol. 2005 Nov;60\(5\):457-8.](#)

PMID:

16236045

[PubMed - indexed for MEDLINE]

PMCID: PMC1884951

28. European Surveillance of Antimicrobial Consumption (ESAC): outpatient cephalosporin use in Europe.

[Coenen S](#), [Ferech M](#), [Dvorakova K](#), [Hendrickx E](#), [Suetens C](#), [Goossens H](#); [ESAC Project Group](#).

Source

Department of General Practice, University of Antwerp Antwerp, Belgium. samuel.coenen@ua.ac.be

Abstract

BACKGROUND:

Data on outpatient cephalosporin use in Europe were collected from 25 countries within the ESAC project, funded by DG SANCO of the European Commission, using the WHO ATC/DDD methodology.

METHODS:

For the period 1997-2003, data on outpatient use of systemic cephalosporins aggregated at the level of the active substance were collected and expressed in DDD (WHO, version 2004) per 1000 inhabitants per day (DID). Use was analysed in detail, using the new ATC codes J01DB, J01DC, J01DD and J01DE, introduced in the 2005 issue of the WHO ATC index and assigned to the four cephalosporin generations.

RESULTS:

Total outpatient cephalosporin use in 2003 varied by a factor of 270 between the country with the highest (6.18 DID in Greece) and lowest (0.02 DID in Denmark) use. First-, second- and third-generation cephalosporins were used most in 6, 16 and 3 countries, respectively. We observed fourth-generation use (mainly cefepime) in ambulatory care in 11 countries. From 1997 to 2003 cephalosporin use decreased in 13 countries, in France by more than 1 DID. A relative increase of second-generation (mainly cefuroxime) or third-generation use (mainly cefpodoxime or cefixime) by more than 10% in 12 countries coincided with an equally large decrease of first-generation use in eight countries (mainly cefadroxil, cefalexin or cefatrizine). In six countries, first-generation use increased, second-generation use decreased or both occurred.

CONCLUSION:

The new ATC codes allow a more detailed description of outpatient cephalosporin use. The variation in antibiotic use in Europe is most extreme for this class of antibiotics, suggesting that in many countries in Europe these antibiotics are prescribed inappropriately.

PMID:

16735416

[PubMed - indexed for MEDLINE]

29. European Surveillance of Antimicrobial Consumption (ESAC): outpatient penicillin use in Europe.

[Ferech M](#), [Coenen S](#), [Dvorakova K](#), [Hendrickx E](#), [Suetens C](#), [Goossens H](#); [ESAC Project Group](#).

Source

Laboratory of Microbiology, University of Antwerp Antwerp, Belgium. matus.ferech@ua.ac.be

Abstract

BACKGROUND:

Data on outpatient penicillin use in Europe were collected from 25 countries within the ESAC project, funded by DG SANCO of the European Commission, using the WHO ATC/DDD methodology.

METHODS:

For the period 1997-2003, data on outpatient use of systemic penicillins aggregated at the level of the active substance were collected and expressed in DDD (WHO, version 2004) per 1000 inhabitants per day (DID). Of the 'Penicillins' (J01C), outpatient use of narrow-spectrum penicillins (J01CE), broad-spectrum penicillins (J01CA), penicillinase-resistant penicillins (J01CF) and combinations with beta-lactamase inhibitors (J01CR) in 25 European countries was analysed in detail.

RESULTS:

Total outpatient penicillin use in 2003 varied by a factor of 4 between the country with the highest (15.27 DID in Slovakia) and lowest use (3.86 DID in the Netherlands). Narrow-spectrum penicillins, broad-spectrum penicillins and combinations with beta-lactamase inhibitors were used most in 4, 12 and 9 countries, respectively. Penicillin use increased by more than 1 DID in nine countries, whereas it decreased by more than 1 DID in two countries (Czech Republic, France). An increase of the use of combinations with beta-lactamase inhibitors by more than 10% in 10 countries coincided with an equal decrease of broad-spectrum penicillins in seven countries and narrow-spectrum penicillins in three countries.

CONCLUSION:

Penicillins represent the most widely used antibiotic class in all 25 participating countries; albeit with considerable variation of their use patterns. A distinct shift from narrow-spectrum penicillins to broad-spectrum penicillins, and specifically their combinations with beta-lactamase inhibitors, was observed during the period 1997-2003.

PMID:

16735415

[PubMed - indexed for MEDLINE]

30. European Surveillance of Antimicrobial Consumption (ESAC): outpatient quinolone use in Europe.

[Ferech M](#), [Coenen S](#), [Malhotra-Kumar S](#), [Dvorakova K](#), [Hendrickx E](#), [Suetens C](#), [Goossens H](#); [ESAC Project Group](#).

Source

Laboratory of Microbiology, University of Antwerp Antwerp, Belgium. matus.ferech@ua.ac.be

Abstract

BACKGROUND:

Data on outpatient quinolone use in Europe were collected from 25 countries within the ESAC project, funded by DG SANCO of the European Commission, using the WHO ATC/DDD methodology.

METHODS:

For the period 1997-2003, data on outpatient use of systemic quinolones aggregated at the level of the active substance were collected and expressed in DDD (WHO, version 2004) per 1000 inhabitants per day (DID). Because a new DDD for levofloxacin was published in the ATC 2004 index (0.5 g instead of 0.25 g) all data were recalculated accordingly. Quinolone use was analysed in detail, using a classification into three generations based on their pharmacokinetic and in vitro potency profiles, which determines the area of clinical use.

RESULTS:

Total outpatient quinolone use in 2003 varied by a factor of 12 between the country with the highest (3.10 DID in Portugal) and lowest (0.25 DID in Denmark) quinolone use. The second-generation quinolones represented more than 50% of the quinolone use (mainly ciprofloxacin) except for Croatia, where the first-generation was used most (mainly norfloxacin). In 22 countries, the use of second and/or third-generation quinolones increased at the expense of the use of first-generation quinolones. The new so-called respiratory quinolones (levofloxacin and moxifloxacin) represented more than 10% of quinolone use in 12 countries, with extreme seasonal variation in all these countries except for one.

CONCLUSION:

There has been a substantial change in the use pattern of quinolones between 1997 and 2003, since the introduction of quinolones that are effective for the treatment of respiratory tract infections. These quinolones are not the first-line antibiotics for this indication and therefore quinolone use should in general still be limited and not show substantial seasonal variation.

PMID:

16735418

[PubMed - indexed for MEDLINE]

31. European Surveillance of Antimicrobial Consumption (ESAC): outpatient antibiotic use in Europe.

[Ferech M](#), [Coenen S](#), [Malhotra-Kumar S](#), [Dvorakova K](#), [Hendrickx E](#), [Suetens C](#), [Goossens H](#); [ESAC Project Group](#).

Source

Laboratory of Microbiology, Department of General Practice, University of Antwerp Antwerp, Belgium.
matus.ferech@ua.ac.be

Abstract

BACKGROUND:

The ESAC project, granted by DG SANCO of the European Commission, is an international network of surveillance systems, aiming to collect comparable and reliable data on antibiotic use in Europe. Data on outpatient antibiotic use were collected from 34 countries using the ATC/DDD methodology.

METHODS:

For the period 1997-2003, data on outpatient use of systemic antibiotics aggregated at the level of the active substance were collected and expressed in DDD (WHO, version 2004) per 1000 inhabitants per day (DID). Outpatient antibiotic (ATC J01) use in 25 European countries, able to deliver valid data, was analysed.

RESULTS:

Total outpatient antibiotic use in 2003 varied by a factor of 3 between the country with the highest (31.4 DID in Greece) and the country with the lowest (9.8 DID in the Netherlands) use. General use patterns in individual countries as well as trends during the period 1997-2003 are described in this paper, while major antibiotic classes (penicillins, cephalosporins, macrolides/lincosamides/streptogramins and quinolones) will be analysed in detail in separate papers.

CONCLUSION:

The ESAC project established for the first time a credible alternative to industry sources for the collection of internationally comparable data on antibiotic use in Europe, based on cooperation between regulatory authorities, scientific societies, health insurers and professional organizations. These data provide a tool for assessing public health strategies aiming to optimize antibiotic prescribing.

PMID:

16735414

[PubMed - indexed for MEDLINE]

32. Self-medication with antimicrobial drugs in Europe.

[Grigoryan L](#), [Haaijer-Ruskamp FM](#), [Burgerhof JG](#), [Mechtler R](#), [Deschepper R](#), [Tambic-Andrasevic A](#), [Andrajati R](#), [Monnet DL](#), [Cunney R](#), [Di Matteo A](#), [Edelsein H](#), [Valinteliene R](#), [Alkerwi A](#), [Scicluna E](#), [Grzesiowski P](#), [Bara AC](#), [Tesar T](#), [Cizman M](#), [Campos J](#), [Lundborg CS](#), [Birkin J](#).

Source

Department of Clinical Pharmacology, University Medical Center Groningen, Groningen, the Netherlands.
l.grigoryan@med.umcg.nl

Abstract

We surveyed the populations of 19 European countries to compare the prevalence of antimicrobial drug self-medication in the previous 12 months and intended self-medication and storage and to identify the associated demographic characteristics. By using a multistage sampling design, 1,000-3,000 adults in each country were randomly selected. The prevalence of actual self-medication varied from 1 to 210 per 1,000 and intended self-medication from 73 to 449 per 1,000; both rates were high in eastern and southern Europe and low in northern and western Europe. The most common reasons for self-medication were throat symptoms (e.g., dry, inflamed, red, or sore throat, inflamed tonsils, tonsil pain). The main medication sources were pharmacies and medication leftover from previous prescriptions. Younger age, higher education, and presence of a chronic disease were associated with higher rates of self-medication. Attempts to reduce inappropriate self-medication should target prescribers, pharmacists, and the general public.

PMID:

16704784

[PubMed - indexed for MEDLINE]

33. Adherence to WHO's Model List of Essential Medicines in two European countries

[Wettermark B](#), [Vlahovic-Palcevski V](#), [Laing R](#), [Bergman U](#)

Source

Department of Clinical Pharmacology, Karolinska Institute, WHO Collaborating Centre for Drug Utilization Research and Clinical Pharmacological Services, Stockholm, Sweden; Vera Vlahovic-Palcevski,, Department of Clinical Pharmacology, University Hospital Rijeka, Croatia; Dr Richard Laing, Department of Medicines Policy and Standards, World Health Organization, Geneva, Switzerland; Ulf Bergman, Department of Clinical Pharmacology, Karolinska Institute, WHO Collaborating Centre for Drug Utilization Research and Clinical Pharmacological Services, Stockholm, Sweden. C

Abstract

The concept of Essential Medicines is one of the most important tools available for improving public health in developing countries and key elements include the WHO Model List of Essential Medicines (1, 2). It has been proposed that developed countries could also make use of the Model List to a greater extent, in particular to promote better quality of care and control drug expenditure (2). However, the applicability of the Essential Medicines concept for industrialized countries has been questioned and there is a lack of studies analysing the use of the Model List in this context (3).

In this article, adherence to the 2003 WHO Model List of Essential Medicines (EML) was analysed through an observational study of medicines use in outpatient care in two European countries — Croatia and Sweden. Data on dispensed prescriptions and over-the-counter (OTC) drugs were collected from wholesalers in Croatia and pharmacies in Sweden. WHO Collaborating Centres in Norway and Sweden have developed and apply several methodologies to evaluate drug use and quality of drug utilization patterns. In the study, analyses focused on medicines accounting for 90% of use in Defined Daily Doses (DU90%). DU90% profiles provide a quick method to overview and evaluate potential for improvement while offering a reflection on the relevance and appropriateness of the WHO Model List of Essential Medicines.

PMID:

Not Indexed

34. Hospital consumption of antibiotics in 15 European countries: results of the ESAC Retrospective Data Collection (1997-2002).

[Vander Stichele RH](#), [Elseviers MM](#), [Ferech M](#), [Blot S](#), [Goossens H](#); [European Surveillance of Antibiotic Consumption \(ESAC\) Project Group](#).

Source

ESAC Management Team, Laboratory of Medical Microbiology, University of Antwerp, Universiteitsplein 1 B-2610 Antwerp, Belgium.

Abstract

OBJECTIVES:

To collect reliable, comparable and publicly available data on hospital use of antibiotics in Europe aggregated at the national level (1997-2002).

METHODS:

Consumption data of systemic antibiotics in Anatomical Therapeutic Chemical (ATC) class J01 were collected and expressed in defined daily doses (DDD) per 1000 inhabitants per day. Valid data for 2002 were available for 15 countries, and 6 year trends for 10 countries. Comparison with ambulatory care (AC) consumption data was possible in 14 countries.

RESULTS:

In 2002, median national hospital antibiotic consumption in Europe was 2.1 DDD/1000 inhabitants/day in Europe, ranging from 3.9 in Finland and France to 1.3 in Norway and Sweden. Hospital care (HC) consumption as a proportion of total antibiotic consumption ranged from 17.8% to 6.4%. The consumption of hospital-specific antibiotics ranged from 0.43 DDD/1000 inhabitants/day in Greece and 0.08 in Sweden. Six-year trends in consumption were stable, except for rising co-amoxiclav exposure and more rapid market penetration of new antibiotics (e.g. levofloxacin) in some countries. There was a strong, positive correlation between the extent of antibiotic use in AC and in HC (Spearman coefficient 0.745; $P = 0.002$), both for overall use and for use of five main classes (not macrolides and 'others'). In contrast to AC consumption no substantial seasonal variation in consumption was observed.

CONCLUSIONS:

It was cumbersome but feasible to collect ecological data on hospital antibiotic consumption in a set of 15 European countries on a retrospective basis, illustrating substantial cross-national variations in the extent and distribution of exposure to antibiotics in hospital care.

Comment in

- [J Antimicrob Chemother.](#) 2007 Jan;59(1):162-3.
- [J Antimicrob Chemother.](#) 2006 Oct;58(4):900-1; author reply 901-2.

PMID:

16698845

[PubMed - indexed for MEDLINE]

35. Sales of systemic anti-infective agents in Cyprus in comparison with four other European countries.

[Hadjimichael C](#), [Georgiou K](#), [Samoutis G](#), [Demetriades E](#).

Source

Department of Medical Representatives, KES College, 12 Danais str Engomi, Nicosia 2408, Cyprus.
hadjimichael.chr.@cytanet.com.cy

Abstract

OBJECTIVE:

To determine the pattern of systemic antibiotic sales in Cyprus during the years 1990-1993 and 1996 and make a comparison with other four European countries.

METHOD:

The Anatomical Therapeutic Chemical (ATC) classification and the Defined Daily Dose (DDD) methodology according to the WHO (World Health Organization) guidelines were employed and data in wholesales were used. The results were presented as DDD/1000 inhabitants/day and were compared with similar results from Sweden, Norway, Denmark and Greece. Data from two independent surveys (1990 and 2001/2002), which covered a total sample of 166,979 persons regarding medicine taking in Cyprus were also used.

RESULTS:

The overall sales of systemic anti-infective agents in Cyprus were 22.1, 20.6, 24.5 and 24.2 DDD/1000 inhabitants/day for 1990, 1991, 1992 and 1993 respectively. The sales number increased to 30.2 by 1996. Penicillins, cephalosporins and tetracyclines had the greatest share. The above numbers were higher than the respective ones in the reference countries. The first independent survey conducted in 1990 showed that 4.2% of the population reported to take antibiotics without prescription. The second survey provided evidence about the kind of antibiotics taken by the sample (mainly amoxicillin and ciprofloxacin).

CONCLUSION:

These data reveal that the sales of antibiotics in Cyprus are higher than in Sweden, Norway, Denmark and Greece. The broad-spectrum antibiotics in Cyprus have higher sales than the other antibiotics. This study describes for the first time the pattern of systemic anti-infective agent sales in Cyprus. Further investigations are needed in order to determine the possible factors that might be implicated or explain the high antibiotic sales in Cyprus.

PMID:

17004026
[PubMed - indexed for MEDLINE]

36. Utilisation of antihyperglycaemic drugs in ten European countries: different developments and different levels.

[Melander A](#), [Folino-Gallo P](#), [Walley T](#), [Schwabe U](#), [Groop PH](#), [Klaukka T](#), [Vallano A](#), [Laporte JR](#), [Gallego MR](#), [Schiappa M](#), [Røder M](#), [Kampmann JP](#), [de Swaef A](#), [Aberg M](#), [Månsson NO](#), [Lindblad U](#).

Source

The NEPI Foundation, Department of Clinical Sciences, Malmö University Hospital, S-205 02, Malmö, Sweden.
arne.melander@nepi.net

Abstract

AIMS/HYPOTHESIS:

The aim of this study was to compare developments in the utilisation of antihyperglycaemic drugs (AHGDs) in ten European countries.

SUBJECTS AND METHODS:

Data on the yearly utilisation of insulin and oral AHGDs were collected from public registers in Denmark, Finland, Norway, Sweden, Belgium, England, Germany, Italy, Portugal and Spain, and were expressed as defined daily doses per 1,000 inhabitants per day.

RESULTS:

Total AHGD utilisation increased everywhere, but at different rates and levels. Insulin utilisation doubled in England and Germany, but hardly changed in Belgium, Portugal or Italy. Sulfonylurea utilisation doubled in Spain, England and Denmark but was reduced in Germany and Sweden. Metformin utilisation increased greatly everywhere. There were two- to three-fold differences in AHGD utilisation even between neighbouring countries. In Finland, there were more users of both insulin (+120%) and oral AHGDs (+80%) than in Denmark, and the daily oral AHGD doses were higher. In Denmark and Sweden, AHGD utilisation was equal in subjects aged <45 years, but in those ≥45 years of age, both insulin and oral AHGD utilisation were twice as high in Sweden.

CONCLUSIONS/INTERPRETATION:

The ubiquitous increase in AHGD utilisation, particularly metformin, seems logical, considering the increasing prevalence of type 2 diabetes and the results of the UK Prospective Diabetes Study. However, the large differences even between neighbouring countries are more difficult to explain, and suggest different habits and attitudes in terms of screening and management of type 2 diabetes.

PMID:

16865360

[PubMed - indexed for MEDLINE]

37. International diffusion of new health technologies: a ten-country analysis of six health technologies.

[Packer C](#), [Simpson S](#), [Stevens A](#); [EuroScan: the European Information Network on New and Changing Health Technologies](#).

Source

University of Birmingham, Edgbaston, UK. c.packer@bham.ac.uk

Abstract

OBJECTIVES:

The objective of this study was to examine and explain the differential international diffusion of six health innovations.

METHODS:

A retrospective diffusion study was undertaken of sildenafil, cyclooxygenase-II (COX II) inhibitors, beta interferon, verteporfin, deep brain stimulators, and drug-eluting coronary stents in ten countries-Australia, Canada, Denmark, France, The Netherlands, Norway, Spain, Sweden, Switzerland, and the United Kingdom. We plotted diffusion curves of daily defined doses per quarter, vials or implants per million population, and examined the association between diffusion and five key variables.

RESULTS:

Canada, Switzerland, and Sweden are generally high users of new technologies; Spain, Denmark, and particularly the United Kingdom are low users. Almost all countries experienced rapid adoption of sildenafil with diffusion to a similar level; there was variable adoption and diffusion of COX II inhibitors, verteporfin, and interferon beta; drug-eluting stents penetrated the market in a similar way in all but one country; and two countries had very different adoption patterns for deep brain stimulators. Above average health spending and the presence of health technology assessment (HTA) or other guidance reports are consistently associated with increased diffusion. Early warning activity and a national coverage decision being taken are more likely to be associated with a reduced diffusion.

CONCLUSIONS:

The significant differences in diffusion between different countries are not consistent with a neat evidence-based world. The tools available to policy makers to control diffusion (early warning systems, HTA, and a fourth hurdle) play some part in influencing diffusion but need close scrutiny of how successfully they operate.

PMID:

16984674

[PubMed - indexed for MEDLINE]

[Br J Psychiatry.](#) 2006 Apr;188:354-8.

38. Relationship between antidepressant sales and secular trends in suicide rates in the Nordic countries.

[Reseland S](#), [Bray I](#), [Gunnell D](#).

Source

KD-G Consulting, Hosletoppen 56, 1362 Hosle, Norway. sreselan@online.no

Abstract

BACKGROUND:

The effect of recent increases in antidepressant prescribing on population suicide rates is uncertain.

AIMS:

To investigate the relationship between antidepressant sales and trends in suicide rates.

METHOD:

Graphical and quantitative assessment of trends in suicide and antidepressant sales in Norway, Sweden, Denmark and Finland.

RESULTS:

Suicide rates declined in all four countries during the 1990 s, whereas antidepressant sales increased by 3- to 4-fold. Decreasing suicide rates in Sweden and Denmark preceded the rise in antidepressant sales by over 10 years, although the reductions accelerated between 1988 and 1990. In Norway, a modest but short-lived decline in suicide rates began around the time of the increase in antidepressant sales. In Finland, decreases in male suicide rates and to a lesser extent in female suicide rates began around the time of increased antidepressant sales. In all four countries decreases in suicide rates appeared to precede the widespread use of SSRIs.

CONCLUSIONS:

We found mixed evidence that increases in antidepressant sales have coincided with a reduction in the number of suicides in Nordic countries.

Comment in

- [Br J Psychiatry.](#) 2007 Jan;190:79; author reply 79-80.

PMID:

16582062

[PubMed - indexed for MEDLINE]

39. Between-country variation in the utilization of antihypertensive agents: Guidelines and clinical practice.

[Stolk P](#), [Van Wijk BL](#), [Leufkens HG](#), [Heerdink ER](#).

Source

Division of Pharmacoepidemiology and Pharmacotherapy, Utrecht Institute for Pharmaceutical Sciences, Utrecht, The Netherlands. p.stolk@pharm.uu.nl

Abstract

Variation in antihypertensive drug utilization and guideline preferences between six European countries (Denmark, Finland, Germany, Norway, Sweden, the Netherlands) was investigated. Our objectives were to compare between-country variability in utilization per class of antihypertensive agents and to assess guideline preferences in relation to actual use. Antihypertensive consumption data (2003) was retrieved. We classified antihypertensive agents using ATC-codes: C02CA - alpha-blockers (AB), C03A - thiazide diuretics (TD), C07AB - beta-blockers (BB), C08CA - dihydropyridine calcium antagonists (CA), C09A/C09BA/C09BB - ACE-inhibitors+combinations (AI) and C09C/C09D - angiotensin II receptor blockers+combinations (AT2). For each class, DDDs/1000 persons/day and share (%) of total antihypertensive utilization was calculated. Per class, relative standard deviations (RSD) across countries were computed. Current hypertension guidelines were requested from national medical associations. Total antihypertensive utilization varied considerably, ranging from 152.4 (Netherlands) to 246.9 (Germany) DDDs/1000 persons/day. RSD was highest for TD (106.2%) and AB (93.6%). Where guidelines advocated TDs (Norway and Netherlands), TD utilization was below (Norway) or just above (Netherlands) median TD use. Guidelines recommended TD (Norway and Netherlands), TD/BB/AI (Finland, German Physicians Association) or TD/BB/CA/AI/AT2 (Denmark, German Hypertension Society), Sweden had no recent national guideline. In conclusion, antihypertensive utilization patterns varied largely across these six countries, in absolute and relative terms. Furthermore, guidelines seem disconnected from clinical practice in some countries, and none of the guidelines discuss current utilization. Whether this reflects a need for change in prescribing or re-evaluation of guidelines warrants further research.

PMID:

16988753

[PubMed - indexed for MEDLINE]

40. The relevance of comorbidities for heart failure treatment in primary care: A European survey.

[Sturm HB](#), [Haaijer-Ruskamp FM](#), [Veeger NJ](#), [Baljé-Volkers CP](#), [Swedberg K](#), [van Gilst WH](#).

Source

Department of Clinical Pharmacology, University Medical Center Groningen, Antonius Deusinglaan 1, 9713 AV Groningen, The Netherlands. h.sturm@med.umcg.nl

Abstract

AIM:

To assess the impact of comorbidities on chronic heart failure (CHF) therapy.

METHODS:

The IMPROVEMENT-HF survey included 11,062 patients from 100 primary care practices in 14 European countries. The influence of patient characteristics on drug regimes was assessed with multinomial logistical regression.

RESULTS:

Combined drug regimes were given to 48% of CHF patients, consisting of 2.2 drugs on average. Patient characteristics accounted for 35%, 42% and 10% of the variance in one-, two- and three-drug regimes, respectively. Myocardial infarction (MI), atrial fibrillation (AF), diabetes, hypertension, and lung disease influenced prescribing most. AF made all combinations containing beta-blockers more likely. Thus for single drug regimes, MI increased the likelihood for non-recommended beta-blocker monotherapy (OR 1.3; 95% CI 1.2-1.4), while for combination therapy recommended regimes were most likely. For both hypertension and diabetes, ACE-inhibitors were the most likely single drug, while the most likely second drugs were beta-blockers in hypertension and digoxin in diabetes.

CONCLUSIONS:

Patient characteristics have a clear impact on prescribing in European primary care. Up to 56% of drug regimes were rational taking patient characteristics into account. Situations of insufficient prescribing, such as patients post MI, need to be addressed specifically.

PMID:

16084761

[PubMed - indexed for MEDLINE]

41. Asthma-related resource use and cost by GINA classification of severity in three European countries.

[Van Ganse E](#), [Antonicelli L](#), [Zhang Q](#), [Laforest L](#), [Yin DD](#), [Nocea G](#), [Sazonov Kocevar V](#).

Source

Pharmacoepidmiology Unit EA 3091, Centre Hospitalier Lyon-Sud, Sainte Eugenié (bat 5F), 69495 Pierre-Bénite, Cedex, France.

Abstract

BACKGROUND:

This study assessed the relationship between asthma burden and asthma severity in France, Italy, and Spain.

METHODS:

Adult asthmatics, 18-55 years of age, completed a questionnaire while visiting a respiratory physician in 1998 and 1999. Asthma severity was categorized by physicians as intermittent, mild persistent, moderate persistent, or severe persistent according to Global Initiative for Asthma (GINA) guidelines.

RESULTS:

Totals of 282 patients in France, 500 in Italy, and 296 in Spain entered the study. There were few differences between the three countries in the asthma symptom burden. Most patients with persistent asthma had used inhaled corticosteroids in the previous 14 days. Unexpectedly, 35% (Italy) to 83% (Spain) of patients with intermittent asthma also had used inhaled corticosteroids. In Spain, visits to the emergency department were more frequent (OR 7.0, 95% CI 4.9-10.0 with Italy as reference) and the costs of emergency care in all asthma severity categories were up to 10 times higher than in Italy and France. The frequency of hospitalizations did not differ systematically between the three countries.

CONCLUSIONS:

Inadequate control of asthma symptoms among patients with severe persistent asthma could not be entirely explained by under-prescribing of asthma medications. The use of inhaled corticosteroids by patients with intermittent asthma might reflect misclassification of asthma severity, possibly due to difficulty in interpreting the GINA guidelines. The relatively high cost of emergency care in Spain does not appear to be related to greater asthma severity or poorer symptom control, but may be a feature of the Spanish health care system.

PMID:

16338597

[PubMed - indexed for MEDLINE]

42. Antidepressant prevalence for youths: a multi-national comparison.

[Zito JM](#), [Tobi H](#), [de Jong-van den Berg LT](#), [Fegert JM](#), [Safer DJ](#), [Janhsen K](#), [Hansen DG](#), [Gardner JF](#), [Glaeske G](#).

Source

University of Maryland, Baltimore, MD 21201, USA. jzito@rx.umaryland.edu

Abstract

OBJECTIVE:

To compare antidepressant prevalence data in youths across three western European countries (Denmark, Germany, and the Netherlands) with US regional data in terms of age and gender and to show proportional subclass antidepressant (ATD) use.

METHOD:

A population-based analysis of administrative claims data for the year 2000 was undertaken in 0 to 19-year-old enrollees who were part of the insured populations from four countries having a total of from 72,570 to 480,680 members.

RESULTS:

ATD medication utilization in the US dataset (1.63%) exceeded that of three Western European countries (prevalence ranged from 0.11 to 0.54%) by at least 3-fold. There were major variations in the use of subclasses: tricyclic antidepressants (TCAs) predominated in Germany while selective serotonin reuptake inhibitors (SSRIs) predominated in the US, Denmark and the Netherlands.

CONCLUSIONS:

Cross-national variations should be further explored to understand the factors related to these differences and how prevalence differences relate to effectiveness and safety. Community-based cohorts should be followed to establish outcomes in the usual practice setting.

PMID:

16715536

[PubMed - indexed for MEDLINE]

43. Antibiotic use in ambulatory care in Europe (ESAC data 1997-2002): trends, regional differences and seasonal fluctuations.

[Elseviers MM](#), [Ferech M](#), [Vander Stichele RH](#), [Goossens H](#); [ESAC project group](#).

Source

Faculty of Medicine, Division of Nursing and Midwifery, University of Antwerp, Antwerp, Belgium.

Abstract

PURPOSE:

The ESAC project (European Study on Antibiotic Consumption) aims to collect antibiotic-use data through a European network of national surveillance systems. This paper reports on the retrospective data collection in ambulatory care for the period 1997-2002.

METHODS:

Valid data of antibiotic consumption of 24 European countries for 2002 and of 18 countries for the entire 6-year period was classified according to the Anatomical Therapeutic Chemical Classification (ATC) and expressed in defined daily dose (DDD) per 1000 inhabitants per day (DID). Overall and subgroup comparison of antibiotic consumption over time as well as between geographical clusters was performed.

RESULTS:

Total use of antibiotics in Europe remained at a median level of 20 DID in the period 1997-2002 with a wide variation between countries ranging from 9.8 DID in The Netherlands to 32.2 DID in France. A substantial increase in subclass consumption of co-amoxiclav and fluoroquinolones was noted while the use of narrow-spectrum penicillins, erythromycin, quinolones and sulfonamides decreased. Total consumption as well as seasonal fluctuations showed remarkable geographical clustering with low consumption and low variation between summer and winter in the North, high consumption patterns in the South and a mixed model in the East.

CONCLUSIONS:

Within the ESAC project, valid time series of antibiotic-use data are publicly available now, enabling to improve the study of determinants of use, the evaluation of governmental antibiotic consumption policies and the investigation of the associated emergence of antibiotic resistance.

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PMID:

16700079

[PubMed - indexed for MEDLINE]

[Clin Infect Dis.](#) 2007 Apr 15;44(8):1091-5. Epub 2007 Mar 2.

44. Comparison of outpatient systemic antibacterial use in 2004 in the United States and 27 European countries.

[Goossens H](#), [Ferech M](#), [Coenen S](#), [Stephens P](#); [European Surveillance of Antimicrobial Consumption Project Group](#).

Source

University of Antwerp, Antwerp, Belgium. Herman.Goossens@uza.be

Erratum in

- [Clin Infect Dis.](#) 2007 May 1;44(9):1259.

Abstract

The European Surveillance of Antimicrobial Consumption (ESAC) project collects data on antibacterial use in Europe, applying the Anatomic Therapeutic Chemical classification system and defined daily dose methodology, as recommended by the World Health Organization. Comparable data for the United States have been collected from IMS Health. The IMS Health sales data, processed according to ESAC methodology, suggest that outpatient antibacterial use in the United States is high (only 3 of 27 European countries used more) and is mainly characterized by a shift towards newer antibiotics.

PMID:

17366456

[PubMed - indexed for MEDLINE]

45. Attitudes, beliefs and knowledge concerning antibiotic use and self-medication: a comparative European study.

[Grigoryan L](#), [Burgerhof JG](#), [Degener JE](#), [Deschepper R](#), [Lundborg CS](#), [Monnet DL](#), [Sciicluna EA](#), [Birkin J](#), [Haaijer-Ruskamp FM](#); [SAR consortium](#).

Source

Department of Clinical Pharmacology, University Medical Center Groningen, University of Groningen, Antonius Deusinglaan 1, AV Groningen, The Netherlands. l.grigoryan@umcutrecht.nl

Abstract

PURPOSE:

Although the relevance of cultural factors for antibiotic use has been recognized, few studies exist in Europe. We compared public attitudes, beliefs and knowledge concerning antibiotic use and self-medication between 11 European countries.

METHODS:

In total, 1101 respondents were interviewed on their attitudes towards appropriateness of self-medication with antibiotics and situational use of antibiotics, beliefs about antibiotics for minor ailments, knowledge about the effectiveness of antibiotics on viruses and bacteria and awareness about antibiotic resistance. To deal with the possible confounding effect of both use of self-medication and education we performed stratified analyses, i.e. separate analyses for users and non-users of self-medication, and for respondents with high and low education. The differences between countries were considered relevant when regression coefficients were significant in all stratum-specific analyses.

RESULTS:

Respondents from the UK, Malta, Italy, Czech Republic, Croatia, Israel and Lithuania had significantly less appropriate attitudes, beliefs or knowledge for at least one of the dimensions compared with Swedish respondents. The Dutch, Austrian and Belgian respondents did not differ from Swedish for any dimension.

CONCLUSIONS:

The most pronounced differences were for awareness about resistance, followed by attitudes towards situational use of antibiotics. Awareness about antibiotic resistance was the lowest in countries with higher prevalence of resistance.

PMID:

17879325

46. Is self-medication with antibiotics in Europe driven by prescribed use?

[Grigoryan L](#), [Burgerhof JG](#), [Haaijer-Ruskamp FM](#), [Degener JE](#), [Deschepper R](#), [Monnet DL](#), [Di Matteo A](#), [Sciicluna EA](#), [Bara AC](#), [Lundborg CS](#), [Birkin J](#); [SAR group](#).

Source

Department of Clinical Pharmacology, University Medical Center Groningen, University of Groningen, Antonius Deusinglaan 1, 9713 AV Groningen, The Netherlands. l.grigoryan@med.umcg.nl

Abstract

BACKGROUND:

Self-medication with antibiotics may increase the risk of inappropriate use and the selection of resistant bacteria. One of the triggers for using self-medication may be past experience with antibiotics prescribed by health professionals. We examined the association between prescribed use and self-medication with antibiotics.

METHODS:

A population survey was conducted in 19 European countries, covering 15,548 respondents. Multinomial logistic regression analysis was used to study the relationship between prescribed use and self-medication for all symptoms/diseases and for upper respiratory tract infections (URTIs).

RESULTS:

The association between prescribed use and self-medication was modified by source of self-medication, region in Europe and education. This association was consistently stronger for self-medication from leftovers than from other sources, primarily directly from a pharmacy. It was stronger also for respondents from Northern/Western Europe than respondents from Eastern Europe and Southern Europe and those with low education. Prescribed use for URTIs (minor ailments such as throat symptom, influenza, etc.) increased the likelihood of self-medication with leftover antibiotics for these symptoms/diseases in all European regions.

CONCLUSIONS:

Our study shows consistent associations between prescribed use and self-medication with antibiotics from leftovers, but has not been able to support the hypothesis that self-medication from other sources than leftovers is triggered by earlier prescribed use. Preventing leftovers may be one effective way of preventing self-medication. This can be achieved by ensuring that the amount dispensed corresponds to the amount prescribed, by educating patients and by making doctors aware that prescribing for minor ailments may increase the risk of self-medication for such ailments.

PMID:

17124192

[PubMed - indexed for MEDLINE]

47. What do different databases tell about the use of opioids in seven European countries in 2002?

[Hamunen K](#), [Laitinen-Parkkonen P](#), [Paakkari P](#), [Breivik H](#), [Gordh T](#), [Jensen NH](#), [Kalso E](#).

Source

Pain Clinic, Department of Anaesthesiology and Intensive Care Medicine, Helsinki University Central Hospital, P.O. Box 140, FIN-00029 HUS, Finland. Katri.Hamunen@fimnet.fi

Abstract

OBJECTIVE:

The objective of this paper was to analyse opioid consumption in a number European countries using different sources of data.

METHODS:

Data were extracted from the United Nations' International Narcotics Control Board Report (INCB) 2003 and from the registers of the national health authorities in seven countries where data were available for 2002. The amount of opioid used was calculated as daily defined doses per 1000 inhabitants per day (DDD/1000/day). Danish Register of Medicinal Products Statistics was further explored for characteristics of opioid consumption (age, gender, type of opioids consumed) by patients in primary care. Total opioid consumption and consumption of 11 selected opioids (7 strong and 4 weak) were analysed. The amount of opioids consumed by outpatients was also examined.

RESULTS:

There were considerable differences in the number of opioids reported and significant discrepancies in the amounts of opioids consumed between the national data and the INCB report. The source of data for the national registers on drug consumption varied (pharmacies or wholesale). The INCB data provide information on opioid import and estimated need rather than on medical consumption.

CONCLUSIONS:

Caution is required when interpreting the data on opioid consumption between countries because of differences in the collection and reporting of data. Better recording of opioid consumption is needed for meaningful analysis of opioid consumption and its possible effect on pain management in different countries. Data on opioids consumed for cancer-related pain in comparison with chronic non-malignant pain are needed. A uniform method of collection of data on analgesic consumption should be established for all European countries.

PMID:

18162422

48. The efficacy of drugs for the treatment of LUTS/BPH, a study in 6 European countries.

[Hutchison A](#), [Farmer R](#), [Verhamme K](#), [Berges R](#), [Navarrete RV](#).

Source

Postgraduate Medical School, University of Surrey, Guildford, UK. a.hutchison@surrey.ac.uk

Abstract

OBJECTIVES:

This paper profiles the usage and effectiveness of various LUTS/BPH drugs in real-life practice.

METHOD:

The TRIUMPH study recorded the treatment and outcomes of 2351 newly-presenting LUTS/BPH patients in 6 European countries over a 1-year follow-up period. At each visit the clinician recorded the treatment, co-morbidities, complications and drugs prescribed, and the patient completed an IPSS questionnaire. The results were analysed using change in IPSS as the primary outcome measure.

RESULTS:

Over the study period 74.9% of patients were prescribed medication, the majority (83% of those medicated) were prescribed only a single drug. Tamsulosin was the most commonly prescribed drug in all countries (38% of medicated cases), although with national variation from 24% in Poland to 70% in Italy. The alpha-blockers were the most effective, with a mean reduction of 6.3 IPSS points. Finasteride was slightly less effective (4.1 points). Significant improvements were seen in 43% of patients on phytotherapy with *Serenoa repens* or *Pygeum africanum* compared to 57% of those on finasteride and 68% on alpha-blockers. The only combination therapy found to produce a statistically significant improvement over the use of individual drugs was finasteride+tamsulosin (8.1 points compared to 6.7 for tamsulosin alone and 4.2 for finasteride alone).

CONCLUSIONS:

All drug treatments showed some improvement over watchful-waiting for most patients over the study period: the alpha-blockers were found to be the most effective. There were marked national differences in prescribing patterns, both in individual drug choice and in the use of combination therapies.

PMID:

16846678

49. Cost-effectiveness of empirical prescribing of antimicrobials in community-acquired pneumonia in three countries in the presence of resistance.

[Martin M](#), [Quilici S](#), [File T](#), [Garau J](#), [Kureishi A](#), [Kubin M](#).

Source

i3 Innovus, Beaufort House, Cricket Field Road, Uxbridge UB8 1QG, UK. mmartin@innovus.com

Abstract

OBJECTIVES:

To assess the cost-effectiveness of empirical outpatient treatment options for community-acquired pneumonia (CAP) in France, the USA and Germany, representing high, moderate and low antimicrobial resistance prevalence, respectively.

METHODS:

A decision analytic model was developed for mild-to-moderate CAP outpatient treatment. Treatment algorithms incorporated follow-up after treatment failure due to resistance or other reasons. First-line treatment included moxifloxacin, beta-lactams, macrolides or doxycycline; second-line treatment used a different antimicrobial class. Country-specific resistance and co-resistance prevalences to first- and second-line therapy for the major CAP pathogens were derived from surveillance studies. Clinical failure rates due to antimicrobial-susceptible and -resistant pathogens were obtained from the literature or estimated. Total costs were estimated using standard sources and a third-party payer perspective. Outcome measures included first-line clinical failures avoided, second-line treatments avoided and hospitalizations avoided. Incremental cost-effectiveness ratios (ICERs) were calculated.

RESULTS:

First-line moxifloxacin treatment followed by co-amoxiclav dominated all other treatments in France, the USA and in Germany for all outcome measures. Sensitivity analyses maintained moxifloxacin dominance in France and the USA but affected ICERs in some cases in Germany.

CONCLUSIONS:

Antimicrobial resistance/spectrum have a significant impact on outcomes and costs in empirical outpatient CAP treatment. Despite low acquisition costs for generic antibiotics, first-line treatment effective against the major CAP pathogens, including strains resistant to other antimicrobials, resulted in better clinical outcomes in all countries and lower treatment costs for all.

PMID:

17395688

[PubMed - indexed for MEDLINE]

50. Prescribing patterns for upper respiratory tract infections in general practice in France and in the Netherlands.

[Rosman S](#), [Le Vaillant M](#), [Schellevis F](#), [Clerc P](#), [Verheij R](#), [Pelletier-Fleury N](#).

Source

Centre de Recherche Médecine, Science, Santé et Société (CERMES), Institut National de la Santé et de la Recherche Médicale (INSERM), France. rosman@vjf.cnrs.fr

Abstract

BACKGROUND:

France and the Netherlands are often presented as two contrasting countries with regard to drug prescriptions and consumption. This study aimed to analyse general practitioners' (GP's) prescription patterns for upper respiratory tract infections (URTI).

METHODS:

Data on diagnoses and prescriptions were derived from two databases recording daily electronic medical patient files: the 'Société Française de Médecine Générale' database (SFMG-DB) and the Dutch Landelijk Informatie Netwerk Huisartsenzorg database (LINH-DB). Logit regression models were developed to estimate and compare prescription patterns in both countries. We carried out a study including all the patients consulting for URTI in 2003.

RESULTS:

French GPs had more URTI patients than their Dutch counterparts (372.1 URTI patients/GP versus 181.3). They prescribed higher volumes of URTI medications (3.55 per patient/year versus 0.82). Striking differences were observed in analgesic and symptomatic prescriptions (0.84 per patient/year versus 0.12 and 1.01 per patient/year versus 0.21, respectively). We did not observe important discrepancies in volume of antibiotic prescriptions (0.29 per patient/year in France versus 0.32). After adjustment for patient characteristics, the logit model showed that prescription patterns for antibiotic were quite similar and associated with a diagnosis of acute tonsillitis.

CONCLUSION:

The analysis per consultation in this study did not highlight important differences in antibiotic prescribing volumes and patterns. But symptomatic and analgesic prescriptions were significantly higher in the French database. This can be explained by differences in help-seeking behaviour, medication perception, status of OTC medications and remuneration system.

PMID:

18160392

51. Prescribing for chronic heart failure in Europe: does the country make the difference? A European survey.

[Sturm HB](#), [van Gilst WH](#), [Veeger N](#), [Haaijer-Ruskamp FM](#).

Source

Department of Clinical Pharmacology, University Medical Center Groningen, Groningen, The Netherlands.
h.sturm@umcg.rug.nl

Abstract

PURPOSE:

International differences in prescribing patterns for chronic heart failure (CHF) have been demonstrated repeatedly. It is not clear whether these differences arise entirely from patient characteristics or factors related to the country itself, such as health care systems or culture. We aim to assess the role of countries in this international variation, aside from the role of patient characteristics.

METHODS:

In this European primary care practice survey (from 1999/2000) 11062 CHF patients from 14 countries were included. The influence of country (corrected for patient characteristics) on prescribed drug regimes was assessed by multinomial logistical regression.

RESULTS:

Prescribing of guideline-recommended drug regimes ranged from 28.1% in Turkey to 61.8% in Hungary. Including additional regimes justifiable by patients' co-morbidities, increased overall 'rational' prescribing by 11%, but differences among countries remained similar. Multivariate analysis for one-drug and two-drug regimes explained between 35% and 42% of the total variance, country contributed 7%-8% ($p < 0.005$). Countries determined the number of drugs used and the likelihood of individual drug regimes. For example, in Czech Republic digoxin alone was more likely to be given than the recommended ACE-inhibitors (OR: 3.45; 95%CI: 2.56-4.64), while the combination of digoxin with ACE-inhibitors was as likely as the recommended combination of ACE-inhibitors and beta-blockers (OR: 1.17; 95%CI: 0.88-1.55).

CONCLUSION:

Country of residence clearly influenced prescribed drug volume and choice of drug regimes. Therefore, optimal CHF management cannot be achieved without considering country specific factors. It remains to be established which factors within health-care systems are responsible for these effects.

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PMID:

16528759

[PubMed - indexed for MEDLINE]

52. Prescribing patterns of antidepressants in Europe: results from the Factors Influencing Depression Endpoints Research (FINDER) study.

[Bauer M](#), [Monz BU](#), [Montejo AL](#), [Quail D](#), [Dantchev N](#), [Demyttenaere K](#), [Garcia-Cebrian A](#), [Grassi L](#), [Perahia DG](#), [Reed C](#), [Tylee A](#).

Source

Department of Psychiatry and Psychotherapy, University Hospital Carl Gustav Carus, Technische Universität Dresden, Fetscherstrasse 74, D-01307 Dresden, Germany. michael.bauer@uniklinikum-dresden.de

Abstract

Antidepressant prescribing patterns and factors influencing the choice of antidepressant for the treatment of depression were examined in the Factors Influencing Depression Endpoints Research (FINDER) study, a prospective, observational study in 12 European countries of 3468 adults about to start antidepressant medication for their first episode of depression or a new episode of recurrent depression. Selective serotonin reuptake inhibitors (SSRIs) were the most commonly prescribed antidepressant (63.3% patients), followed by serotonin-norepinephrine reuptake inhibitors (SNRIs, 13.6%), but there was considerable variation across countries. Notably, tricyclic and tetracyclic antidepressants (TCAs) were prescribed for 26.5% patients in Germany. The choice of the antidepressant prescribed was strongly influenced by the previous use of antidepressants, which was significantly associated with the prescription of a SSRI (OR 0.64; 95% CI 0.54, 0.76), a SNRI (OR 1.49; 95% CI 1.18, 1.88) or a combination of antidepressants (OR 2.78; 95% CI 1.96, 3.96). Physician factors (age, gender, speciality) and patient factors (severity of depression, age, education, smoking, number of current physical conditions and functional syndromes) were associated with initial antidepressant choice in some models. In conclusion, the prescribing of antidepressants varies by country, and the type of antidepressant chosen is influenced by physician- as well as patient-related factors.

PMID:

18164600

53. Variability in malaria prophylaxis prescribing across Europe: a Delphi method analysis.

[Calleri G](#), [Behrens RH](#), [Bisoffi Z](#), [Bjorkman A](#), [Castelli F](#), [Gascon J](#), [Gobbi F](#), [Grobusch MP](#), [Jelinek T](#), [Schmid ML](#), [Niero M](#), [Caramello P](#).

Source

Department of Infectious Diseases, Travel Medicine Unit, Amedeo di Savoia Hospital, Torino, Italy.
calleri@asl3.to.it

Abstract

BACKGROUND:

The indications for prescribing malaria chemoprophylaxis lack a solid evidence base that results in subjectivity and wide variation of practice across countries and among professionals.

METHODS:

European experts in travel medicine, who are members of TropNetEurop, participated in a survey conducted using the Delphi method. This technique aims at evaluating and developing a consensus through iterations of questionnaires, controlled feedback, and statistical group responses.

RESULTS:

A first questionnaire, including questions about controversial issues in prescribing malaria prophylaxis, required responses on a visual scale between 1 and 10. The questionnaire included issues on problematic prescribing, characteristics of drugs, relevance of geography, and importance of insect bite prevention. The repeat questionnaire with the group response from the first round revealed an increasing consensus on most issues. A second survey considered 14 practical scenarios (including two internal standards) and investigated preferred choice of prophylaxis. A significant consensus was noted in 8 of 14 scenarios, which did not increase after a second round. The analysis revealed a wide variation in prescribing choices with preferences grouped by region of practice, and a greater willingness to prescribe in northern and southern Europe than in central Europe. The second round showed a 9.5% change of opinion.

CONCLUSIONS:

The study shows that improving the evidence base on efficacy and tolerability and risk of malaria for prescribing chemoprophylaxis is needed as is further discussion across Europe to achieve harmonization of prescribing practice.

PMID:

19006501

54. Clinical factors influencing the prescription of antidepressants and benzodiazepines: results from the European study of the epidemiology of mental disorders (ESEMeD).

[Demyttenaere K](#), [Bonnewyn A](#), [Bruffaerts R](#), [De Girolamo G](#), [Gasquet I](#), [Kovess V](#), [Haro JM](#), [Alonso J](#).

Source

Department of Psychiatry, University Hospital Gasthuisberg, Leuven, Belgium.
koen.demyttenaere@med.kuleuven.be

Abstract

OBJECTIVE:

To examine factors associated with the use of antidepressants (AD) and benzodiazepines (BZD) in 6 European countries.

METHODS:

A cross-sectional, population-based study was conducted in: Belgium, France, Germany, Italy, the Netherlands and Spain. 21,425 non-institutionalized individuals aged 18 years and over were interviewed using the third version of the Composite International Interview (CIDI-3.0). Respondents were asked about AD and BZD use, and whether they consulted formal health services for emotional problems in the previous year. Sociodemographic variables, presence of mood/anxiety disorders and of painful physical symptoms were collected.

RESULTS:

34.38% and 9.17% of the sample reported the use of AD and BZD respectively in the previous 12 months. Only 29.95% of subjects with a 12-month prevalence of major depressive episode (MDE) had been taking antidepressants. After controlling for several clinical and non-clinical factors, help seeking for emotional problems was the most important independent predictor for the use of AD or BZD (OR: 13.58 and 5.17, respectively). Higher age was the second important predictor (OR: 6.52 and 4.86, respectively). A 12-month or lifetime prevalence of MDE or an anxiety disorder were also predictors for AD or BZD use (OR for MDE: 5.00 and 2.82, OR for anxiety disorders: 2.13 and 1.85). Finally, the presence of painful physical symptoms also predicted the use of AD and BZD, while female gender, lower education and higher age predicted only the use of BZD.

CONCLUSION:

Less than one third of subjects with a 12-month prevalence of MDE had been taking antidepressants. But seeking help for emotional problems was a more important predictor of the use of ADs or BZDs than a formal (DSM-IV) psychiatric diagnosis, suggesting that usage of ADs is not always according to the licensed DSM-IV indication.

PMID:

18329721

55. Are cultural dimensions relevant for explaining cross-national differences in antibiotic use in Europe?

[Deschepper R](#), [Grigoryan L](#), [Lundborg CS](#), [Hofstede G](#), [Cohen J](#), [Kelen GV](#), [Deliens L](#), [Haaijer-Ruskamp FM](#).

Source

Department of Medical Sociology and Health Sciences, Vrije Universiteit Brussel, Brussels, Belgium.
reginald.deschepper@vub.ac.be

Abstract

BACKGROUND:

Antibiotics are widely-used medicines for which a more prudent use has been advocated to minimize development of resistance. There are considerable cross-national differences that can only partially be explained by epidemiological difference and variations in health care structure. The aim of this study was to explore whether cross-national differences in use of antibiotics (prescribed and non-prescribed) are associated with differences between national cultures as described in Hofstede's model of cultural dimensions (Power Distance, Individualism, Masculinity, Uncertainty Avoidance and Long-Term Orientation).

METHODS:

Country-level data of prescribed antibiotic use and self-medication with antibiotics were correlated to country-specific scores of cultural dimensions obtained from Hofstede. Data on use of antibiotics were provided by three European studies, based on different methods and/or countries: Self-medication with Antibiotics and Resistance in Europe (SAR), based on a survey in 2003 on reported use of antibiotics in 19 countries, the European Surveillance on Antimicrobial Consumption, based on distribution and reimbursement of antibiotics in ambulatory care (1997-2002), and the 2002 interview-based Eurobarometer study, asking whether respondents had taken antibiotics in the previous 12 months. These studies provided data on antibiotics use for 27 European countries in total, for which scores of cultural dimensions were also available. The SAR-study differentiated between prescribed antibiotics and self-medication with antibiotics.

RESULTS:

Significant positive correlations were found for Power Distance Index with use of prescribed antibiotics in the three studies (rho between 0.59 and 0.62) and with self-medication (rho = 0.54) in the SAR study. Positive significant correlations were found for the Uncertainty Avoidance Index with the use of antibiotics as reported in two studies (rho between 0.57 and 0.59; for the SAR study the correlations were insignificant). Masculinity was not significantly correlated, except in one study after controlling for GDP ($r = 0.81$). For Individualism and Long-Term Orientation no significant correlations were found.

CONCLUSION:

Power Distance is a cultural aspect associated with antibiotic use, suggesting that the culture-specific way people deal with authority is an important factor in explaining cross-national differences in antibiotic use. There are indications that Uncertainty Avoidance also plays a role but further research is needed to better understand the complex effect of cultural dimensions.

PMID:

18538009

[PubMed - indexed for MEDLINE]

PMCID: PMC2430199

56. Determinants of self-medication with antibiotics in Europe: the impact of beliefs, country wealth and the healthcare system.

[Grigoryan L](#), [Burgerhof JG](#), [Degener JE](#), [Deschepper R](#), [Lundborg CS](#), [Monnet DL](#), [Scicluna EA](#), [Birkin J](#), [Haaijer-Ruskamp FM](#); [Self-Medication with Antibiotics and Resistance \(SAR\) Consortium](#).
[Di Matteo A](#), [Tambic-Andrasevic A](#), [Andrajati R](#), [Edelstein H](#), [Valinteliene R](#), [Mechtler R](#), [Deliens L](#), [Van der Kelen G](#).

Source

Department of Clinical Pharmacology, University Medical Center Groningen, University of Groningen, Antonius Deusinglaan 1, 9713 AV Groningen, The Netherlands. l.grigoryan@umcutrecht.nl

Abstract

BACKGROUND:

Self-medication with antibiotics occurs among the population in Europe, particularly in southern and eastern countries. We studied the impact of predisposing factors (e.g. attitudes and knowledge concerning antibiotic use and self-medication) and enabling factors (country wealth and healthcare system factors) on self-medication with antibiotics in Europe.

METHODS:

In this follow-up of a previous European survey, we interviewed a subsample of 1101 respondents. A multilevel analysis with two levels (respondent and country) was performed. Variables that were statistically significantly different between users and non-users of self-medication were considered for inclusion into the multilevel regression analyses.

RESULTS:

Predisposing factors included individual-level characteristics. High perceived appropriateness of self-medication with antibiotics for bronchitis and an attitude favouring antibiotic use for minor ailments were related to a higher likelihood of self-medication. Enabling factors included individual and country data. At the individual level, perceived availability of antibiotics without a prescription was related to increased probability of self-medication. At the country level, higher gross domestic product (wealth) and exact dispensation of prescribed tablet quantities by pharmacies were independently associated with lower likelihood of self-medication.

CONCLUSIONS:

Interventions aimed at preventing self-medication should include public education, enforcing regulations regarding the sale of antibiotics, and implementing laws for dispensing exact prescribed tablet quantities in pharmacies. With the included determinants, we explained almost all the variance at the country level, but not at the individual level. Future studies to increase our understanding of determinants of self-medication with antibiotics should focus on individual-level factors such as doctor-patient relationships and patient satisfaction.

PMID:

18296694

[PubMed - indexed for MEDLINE]

Free full text

57. The burden of rheumatoid arthritis and access to treatment: uptake of new therapies.

[Jönsson B](#), [Kobelt G](#), [Smolen J](#).

Source

Department of Economics, Stockholm School of Economics, Stockholm, Sweden. hebj@hhs.se

Abstract

This paper presents data on international differences in use of TNF inhibitors. It is part of a study on burden and cost of RA, access to new therapies and the role of HTA in determining access and cost-effectiveness. United States has the fastest most extensive use of the new drugs, about three times the average in the western European countries and Canada. Eastern and central European countries as well as Australia, South Africa and Turkey lag far behind. However, some smaller European countries, most notably Norway and Sweden have use of the new drugs not far behind the United States. While the income level of the country, and thus the health care expenditures per capita is a major factor for determining use in low and middle income countries, there are still considerable differences among countries with similar high total health care expenditures. Differences in prices are considerable between the US and Europe due to the changes in exchange rates between the US dollar and the Euro, but high and low use is not systematically related to differences in price.

PMID:

18097697

58. Variable access to clopidogrel in a harmonized EU market.

[Stolk P](#), [Belitser SV](#), [Leufkens HG](#), [Heerdink ER](#).

Source

Utrecht Institute for Pharmaceutical Sciences, Utrecht, The Netherlands.

Abstract

OBJECTIVES:

This study focuses on the different national coverage and reimbursement strategies and their consequences for access to clopidogrel, a drug with a central European Union (EU) registration. Our objectives are 1) to assess whether changes in reimbursement policies in EU member states influenced clopidogrel prescribing; and 2) to determine whether clopidogrel-specific policy characteristics, general characteristics of the health system, or indicators for the amount of cardiovascular care delivered were associated with the level of clopidogrel prescribing.

METHODS:

Data were collected in Austria, Belgium, Denmark, Germany, Hungary, Portugal, Slovenia, The Netherlands, and the United Kingdom (England). Utilization rates were expressed as defined daily doses (DDDs)/1000 persons/day. To determine whether changes in reimbursement policies influenced clopidogrel utilization, a segmented linear regression approach was used.

RESULTS:

Clopidogrel prescribing varied widely in the studied countries, from 2.76 (The Netherlands) to 6.83 (Belgium) DDDs/1000 persons/day (March 2005). Six countries had therapeutic indication restrictions to clopidogrel use. Health system characteristics did not explain variation in clopidogrel prescribing.

CONCLUSION:

A disconnect will be indicated in this study between the concept of a harmonized EU pharmaceuticals market and the reality in an individual member state. Although clopidogrel was centrally registered in the EU, policy measures at the national level result in different roles in clinical practice for this drug.

PMID:

18489520

[BMJ](#). 2008 Nov 24;337:a2245. doi: 10.1136/bmj.a2245.

59. Drug use in children: cohort study in three European countries.

[Sturkenboom MC](#), [Verhamme KM](#), [Nicolosi A](#), [Murray ML](#), [Neubert A](#), [Caudri D](#), [Picelli G](#), [Sen EF](#), [Giaquinto C](#), [Cantarutti L](#), [Baiardi P](#), [Felisi MG](#), [Ceci A](#), [Wong IC](#); [TEDDY European Network of Excellence](#).

Source

Department of Medical Informatics, Erasmus University Medical Centre, 3000CA Rotterdam, Netherlands.
m.sturkenboom@erasmusmc.nl

Abstract

OBJECTIVE:

To provide an overview of drug use in children in three European countries.

DESIGN:

Retrospective cohort study, 2000-5.

SETTING:

Primary care research databases in the Netherlands (IPCI), United Kingdom (IMS-DA), and Italy (Pedianet).

PARTICIPANTS:

675 868 children aged up to 14 (Italy) or 18 (UK and Netherlands).

MAIN OUTCOME MEASURE:

Prevalence of use per year calculated by drug class (anatomical and therapeutic). Prevalence of "recurrent/chronic" use (three or more prescriptions a year) and "non-recurrent" or "acute" use (less than three prescriptions a year) within each therapeutic class. Descriptions of the top five most commonly used drugs evaluated for off label status within each anatomical class.

RESULTS:

Three levels of drug use could be distinguished in the study population: high (>10/100 children per year), moderate (1-10/100 children per year), and low (<1/100 children per year). For all age categories, anti-infective, dermatological, and respiratory drugs were in the high use group, whereas cardiovascular and antineoplastic drugs were always in the low use group. Emollients, topical steroids, and asthma drugs had the highest prevalence of recurrent use, but relative use of low prevalence drugs was more often recurrent than acute. In the top five highest prevalence drugs topical inhaled and systemic steroids, oral contraceptives, and topical or systemic antifungal drugs were most commonly used off label.

CONCLUSION:

This overview of outpatient paediatric prescription patterns in a large European population could provide information to prioritise paediatric therapeutic research needs.

PMID:

19029175

60. A three-country comparison of psychotropic medication prevalence in youth.

[Zito JM](#), [Safer DJ](#), [de Jong-van den Berg LT](#), [Janhsen K](#), [Fegert JM](#), [Gardner JF](#), [Glaeske G](#), [Valluri SC](#).

Source

Pharmaceutical Health Services Research, School of Pharmacy, University of Maryland, Baltimore, Maryland, USA. jzito@rx.umaryland.edu

Abstract

BACKGROUND:

The study aims to compare cross-national prevalence of psychotropic medication use in youth.

METHODS:

A population-based analysis of psychotropic medication use based on administrative claims data for the year 2000 was undertaken for insured enrollees from 3 countries in relation to age group (0-4, 5-9, 10-14, and 15-19), gender, drug subclass pattern and concomitant use. The data include insured youth aged 0-19 in the year 2000 from the Netherlands (n = 110,944), Germany (n = 356,520) and the United States (n = 127,157).

RESULTS:

The annual prevalence of any psychotropic medication in youth was significantly greater in the US (6.7%) than in the Netherlands (2.9%) and in Germany (2.0%). Antidepressant and stimulant prevalence were 3 or more times greater in the US than in the Netherlands and Germany, while antipsychotic prevalence was 1.5-2.2 times greater. The atypical antipsychotic subclass represented only 5% of antipsychotic use in Germany, but 48% in the Netherlands and 66% in the US. The less commonly used drugs e.g. alpha agonists, lithium and antiparkinsonian agents generally followed the ranking of US>Dutch>German youth with very rare (less than 0.05%) use in Dutch and German youth. Though rarely used, anxiolytics were twice as common in Dutch as in US and German youth. Prescription hypnotics were half as common as anxiolytics in Dutch and US youth and were very uncommon in German youth. Concomitant drug use applied to 19.2% of US youth which was more than double the Dutch use and three times that of German youth.

CONCLUSION:

Prominent differences in psychotropic medication treatment patterns exist between youth in the US and Western Europe and within Western Europe. Differences in policies regarding direct to consumer drug advertising, government regulatory restrictions, reimbursement policies, diagnostic classification systems, and cultural beliefs regarding the role of medication for emotional and behavioral treatment are likely to account for these differences.

PMID:

18817536

[PubMed]

PMCID: PMC2569908

61. Exposure to antibacterial agents with QT liability in 14 European countries: trends over an 8-year period.

[Raschi E](#), [Poluzzi E](#), [Zuliani C](#), [Muller A](#), [Goossens H](#), [De Ponti F](#).

Source

Department of Pharmacology, University of Bologna, Bologna, Italy.

Abstract

AIMS:

(i) To classify antibacterial agents with QT liability on the basis of the available evidence, and (ii) to assess trends in their consumption over an 8-year period (1998-2005) in 14 European countries.

METHODS:

Current published evidence on QT liability of antibiotics was retrieved through MEDLINE search and joined to official warnings from regulatory agencies. Each drug was classified according to an already proposed algorithm based on the strength of evidence: from group A (any evidence) to group E (clinical reports of torsades de pointes and warnings on QT liability). Consumption data were provided by the European Surveillance of Antibacterial Consumption (ESAC) project and were expressed as defined daily doses per 1000 inhabitants per day (DID).

RESULTS:

Among 21 detected compounds, nine [six fluoroquinolones (FQs) and three macrolides (MACs)] belonged to group E. Use of group E drugs ranged from 1.3 (Sweden) to 4.1 DID (Italy) in 1998 and from 1.2 (Sweden) to 6.5 DID (Italy) in 2005. Significant exposure was observed in Italy and Spain (6.5 and 3.8 DID, respectively, in 2005). Only Denmark, Sweden and UK showed a slight decrease in use. Exposure to clarithromycin increased in 10 out of 14 countries, with a marked increment in Italy (3 DID in 2005).

CONCLUSIONS:

Notwithstanding regulatory measures, in 2005 there was still significant exposure to antibacterials with strong evidence of QT liability and, in most countries, it was even increased. This warrants further investigation of appropriateness of use and suggests closer monitoring of group E drugs. Physicians should be aware when prescribing them to susceptible patients.

PMID:

19076158

[PubMed - indexed for MEDLINE]

PMCID: PMC2668089

[J Affect Disord.](#) 2009 Nov;118(1-3):224-8. Epub 2009 Feb 26.

62. Use of lithium in the adult populations of Denmark, Norway and Sweden.

[Bramness JG](#), [Weitof GR](#), [Hallas J](#).

Source

Department of Pharmacoepidemiology, Division of Epidemiology, Norwegian Institute of Public Health, Oslo, Norway. jorgen.bramness@fhi.no

Abstract

BACKGROUND:

Lithium is an important drug in the treatment of bipolar disorder. Earlier epidemiological studies of lithium use have depended on sales statistics, clinical surveys or population surveys. The national prescription databases in Denmark, Norway and Sweden may help provide more reliable information on the epidemiology of lithium use.

METHODS:

Data were taken from the three national prescription databases in Denmark, Norway and Sweden from July 2005 until June 2006, encompassing 1 year of prescription data. Similar methods were used to identify a number of different pharmacoepidemiological measures and data were collected for adults aged 18-69 at the time of prescription.

RESULTS:

Norway and Sweden had higher sales and more prevalent use than Denmark. In all three countries, more female than males were treated and the prevalence of use increased linearly with age. In all, 0.17, 0.21, and 0.25% of the populations in Denmark, Norway and Sweden respectively redeemed at least 1 prescription for lithium in the period studied. The amount prescribed per user per year varied with age, increasing to maximum doses at 40 years of age and then decreasing.

CONCLUSION:

This study is the first attempt to use prescription databases in all three Scandinavian countries to describe in detail the epidemiology of a drug's use. The analysis revealed subtle differences in the clinical use of lithium that cannot be explained by differences in the epidemiology of bipolar disorder.

PMID:

19249102

[Epilepsia](#). 2009 Oct;50(10):2305-9. Epub 2009 May 12.

63. Utilization of antiepileptic drugs during pregnancy: comparative patterns in 38 countries based on data from the EURAP registry.

[Eurap Study Group](#).

Collaborators (8)

[Battino D](#), [Bonizzoni E](#), [Craig J](#), [Lindhout D](#), [Perucca E](#), [Sabers A](#), [Vajda F](#), [Tomson T](#).

Abstract

We assessed the utilization of antiepileptic drugs (AEDs), 1999-2005, in 4,798 prospective epilepsy pregnancies from 38 countries participating in EURAP, an international AED and pregnancy registry. Prominent differences in utilization patterns were observed across the various countries. Exposure to second-generation AEDs ranged from 3.5% in India and 7.3% in Italy to 75% in Denmark. Even wider variation was recorded in exposure to individual AEDs. The utilization of second-generation AEDs increased over time (for lamotrigine, from 9.9% of all pregnancies before 2001 to 29.6% after 2003). The differences in use of individual AEDs across countries probably reflect lack of evidence concerning the optimal treatment of epilepsy in women of childbearing age, as well as variation in country-specific traditions, medication costs, and drug promotion. Our observations underscore the need for comparative studies to investigate the factors influencing the prescription of AEDs during pregnancy, as well as their influence on pregnancy outcome.

PMID:

19453723

64. The Nordic countries as a cohort for pharmacoepidemiological research.

[Furu K](#), [Wettermark B](#), [Andersen M](#), [Martikainen JE](#), [Almarsdottir AB](#), [Sørensen HT](#).

Source

Norwegian Institute of Public Health, Oslo and Institute of Pharmacy, University of Tromsø, Tromsø, Norway.
kari.furu@fhi.no

Abstract

The Nordic countries have a long tradition of registry-based epidemiological research. Many population-based health registries were established in the 1960s, with use of unique personal identifiers facilitating linkage between registries. In recent years, each country has established a national database to track prescription drugs dispensed to individuals in ambulatory care. The objectives were to present an overview of the prescription databases established in the Nordic countries, as well as to elaborate on their unique potential for record linkage and cross-national comparison of drug utilization. Five Nordic countries collect drug exposure data based on drugs dispensed at pharmacies and have the potential to link these data to health outcomes. The databases together cover 25 million inhabitants (Denmark: 5.5 million; Finland: 5.3 million; Iceland: 0.3 million; Norway: 4.8 million; and Sweden: 9.2 million). In 2007, the registries encompassed 17 million prescription drug users (68% of the total population). We provide examples of how these databases have been used for descriptive drug utilization studies and analytical pharmacoepidemiological studies linking drug exposure to other health registries. Comparisons are facilitated by many similarities among the databases, including data source, content, coverage and methods used for drug utilization studies and record linkage. There are, however, some differences in coding systems and validity, as well as in some access and technical issues. To perform cross-national pharmacoepidemiological studies, resources, networks and time are needed, as well as methods for pooling data. Interpretation of results needs to account for inter-country heterogeneity and the possibility of spurious relationships. The Nordic countries have a unique potential for collaborative high-quality cross-national pharmacoepidemiological studies with large populations. This research may assist in resolving safety issues of international interest, thus minimizing the risk of either over-reacting on possible signals or underestimating drug safety issues.

PMID:

19961477

65. Variable use of opioid pharmacotherapy for chronic noncancer pain in Europe: causes and consequences.

[Galvez R.](#)

Source

Pain and Palliative Care Service, Hospital Universitario Virgen de las Nieves, Granada, Spain.
rafaelgalvez@hotmail.com

Abstract

According to the 2005 Pain in Europe Survey, the use of opioids to treat patients with chronic noncancer pain varies considerably among different countries in Europe. Undertreatment of chronic pain is common. This review examines the possible causes and consequences of limiting opioid availability to these patients. The causes of inadequate opioid use include medical, ethical, and cultural factors that influence prescribing decisions; legislative and health care system controls that serve to restrict the use of opioids for long-term treatment of non-cancer-related pain conditions; and poor treatment acceptance by patients. The validity of these restrictions is discussed in relation to the need to protect patients and society from harm due to adverse events, and the potential for misuse and abuse with prescribed opioids. This is balanced against the therapeutic goal of providing the best available pain-relieving treatment and to avoid the consequences of unnecessary suffering in patients with chronic noncancer pain.

PMID:

19947833

66. Trends in opioid consumption in the Nordic countries 2002-2006.

[Hamunen K](#), [Paakkari P](#), [Kalso E](#).

Source

Pain Clinic, Department of Anaesthesiology and Intensive Care Medicine, Helsinki University Central Hospital, Meilahti Hospital, Helsinki, HUS, Finland. katri.hamunen@fimnet.fi

Abstract

OBJECTIVE:

The purpose of the study was to examine the trends in opioid consumption in the five Nordic countries between 2002 and 2006 and to explore possible explanations for changes in the quality and quantity of opioids consumed.

METHODS:

Data on opioid consumption were extracted from the databases of the respective national authorities. Six strong and four weak opioids were included in the analysis. Data were presented as DDDs/1000 inhabitants/day. In addition, information on the reimbursement system and opioid prescription regulations in respective countries was obtained. Also, the cost of analgesic medication in the Nordic countries was compared as equipotent doses of CR morphine, CR oxycodone and transdermal fentanyl.

RESULTS:

During the five year period examined the total use of opioids showed some increase in all countries except Sweden. In Finland and Norway the increase in the total consumption was mainly due to an increase in the consumption of strong opioids while in Denmark the rise was due to increased consumption of weak opioids. The consumption of morphine was stable or decreased slightly in all countries while the use of transdermal fentanyl increased in Denmark, Finland and Sweden and oxycodone in all countries except Iceland. The consumption of dextropropoxyphene decreased in all countries. Reimbursement policies or prescription regulations do not seem to explain the kind/type of opioids consumed or changes in their consumption.

CONCLUSIONS:

Consumption of opioid analgesics in the Nordic countries showed changes over the five year period that cannot be explained by pharmacology, price, reimbursement or prescription regulations. Marketing has most likely significantly influenced the type and amount of opioids consumed.

PMID:

19091608

67. Direct medical mental health care costs of schizophrenia in France, Germany and the United Kingdom - findings from the European Schizophrenia Cohort (EuroSC).

[Heider D](#), [Bernert S](#), [König HH](#), [Matschinger H](#), [Hogh T](#), [Brugha TS](#), [Bebbington PE](#), [Azorin M](#), [Angermeyer MC](#), [Toumi M](#).

Source

Health Economic Research Unit, Department of Psychiatry, University of Leipzig, Germany. heidd@medizin.uni-leipzig.de

Abstract

OBJECTIVES:

To quantify and compare the resource consumption and direct costs of medical mental health care of patients suffering from schizophrenia in France, Germany and the United Kingdom.

METHODS:

In the European Cohort Study of Schizophrenia, a naturalistic two-year follow-up study, patients were recruited in France (N=288), Germany (N=618), and the United Kingdom (N=302). Data about the use of services and medication were collected. Unit cost data were obtained and transformed into United States Dollar Purchasing Power Parities (USD-PPP). Mean service use and costs were estimated using between-effects regression models.

RESULTS:

In the French/German/UK sample estimated means for a six-month period were respectively 5.7, 7.5 and 6.4 inpatient days, and 11.0, 1.3, and 0.7 day-clinic days. After controlling for age, sex, number of former hospitalizations and psychopathology (CGI score), mean costs were 3700/2815/3352 USD-PPP.

CONCLUSIONS:

Service use and estimated costs varied considerably between countries. The greatest differences were related to day-clinic use. The use of services was not consistently higher in one country than in the others. Estimated costs did not necessarily reflect the quantity of service use, since unit costs for individual types of service varied considerably between countries.

PMID:

19328658

68. Market uptake of biologic and small-molecule--targeted oncology drugs in Europe.

[Obradovic M](#), [Mrhar A](#), [Kos M](#).

Source

Faculty of Pharmacy, University of Ljubljana, Ljubljana, Slovenia.

Abstract

OBJECTIVE:

The aim of this study was to investigate the market uptake of biologic and small-molecule-targeted oncology drugs in Europe.

METHODS:

Targeted oncology drugs that were used in one of the selected European countries before the end of 2007 were eligible for inclusion in the analysis. The following European countries were included: Austria, Croatia, France, Germany, Hungary, Italy, Slovenia, and the United Kingdom. Monetary market uptake of targeted oncology drugs was assessed by using sales data (in euros) obtained from 2 large data-bases for the period 1997-2007. Market uptake was assessed in terms of expenditures for specific drugs in euros per capita and in market shares.

RESULTS:

The monetary market uptake of targeted oncology drugs had an exponential growth from 1997 to 2007 in all comparison countries and reached 40% of the total oncology drug market in 2007. Although the various European countries allocate substantially different amounts of resources per capita for oncology drugs, the share of expenditures attributed to targeted oncology drugs did not differ substantially among the countries. Biologic molecules were used in clinical practice before the small-molecule-targeted oncology drugs. Targeted oncology drugs that were introduced first to clinical practice in most of the comparison countries (ie, rituximab, trastuzumab, imatinib mesylate) maintained the leading positions on the market throughout the period of the analysis. In 2007, approximately 25% of all expenditures for oncology drugs were attributed to biologic oncology drugs, and approximately 15% were spent on small-molecule-targeted oncology drugs.

CONCLUSIONS:

Expenditures on targeted oncology drugs have been increasing exponentially in Europe throughout the past decade and have reached a 40% share of the oncology drug market. As of 2007, the market share of biologic oncology drugs was higher than the market share of small-molecule-targeted oncology drugs.

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PMID:

20110034

69. Projected economic impact of clinical findings of generic entry of topiramate on G4 European countries.

[Paradis PE](#), [Latrémouille-Viau D](#), [Moore Y](#), [Mishagina N](#), [Lafeuille MH](#), [Lefebvre P](#), [Gaudig M](#), [Duh MS](#).

Source

Groupe d'analyse, Ltée, Montréal, Québec, Canada.

Abstract

OBJECTIVES:

To explore the effects of generic substitution of the antiepileptic drug (AED) topiramate (Topamax) in Canada; to convert observed Canadian costs into the settings of France, Germany, Italy, and the United Kingdom (UK); and to forecast the economic impact of generic topiramate entry in these four European countries.

DESIGN AND METHODS:

Health claims from Régie de l'assurance maladie du Québec (RAMQ) plan (1/2006-9/2008) and IMS Health data (1998-2008) were used. Patients with epilepsy and ≥ 2 topiramate dispensings were selected. An open-cohort design was used to classify observation into mutually-exclusive periods of branded versus generic use of topiramate. Canadian healthcare utilization and costs (2007 CAN\$/person-year) were compared between periods using multivariate models. Annualized per-patient costs (2007 euro or 2007 pound sterling/person-year) were converted using Canadian utilization rates, European prices and service-use ratios. Non-parametric bootstrap served to assess statistical significance of cost differences. Topiramate market was forecasted following generic entry (09/2009-09/2010) using autoregressive models based on the European experience. The economic impact of generic topiramate entry was estimated for each country.

RESULTS:

A total of 1164 patients (mean age: 39.8 years, 61.7% female) were observed for 2.6 years on average. After covariates adjustment, generic-use periods were associated with increased pharmacy dispensings (other AEDs: +0.95/person-year, non-AEDs: +12.28/person-year, $p < 0.001$), hospitalizations (+ 0.08/person-year, $p = 0.015$), and lengths of hospital stays (+0.51 days/person-year, $p < 0.001$). Adjusted costs, excluding topiramate, were CAN\$1060/person-year higher during generic use ($p = 0.005$). Converted per-patient costs excluding topiramate were significantly higher for generic relative to brand periods in all European countries (adjusted cost differences per person-year: 706-815 euro, $p < 0.001$ for all comparisons). System-wide costs would increase from 3.5 to 24.4% one year after generic entry.

LIMITATIONS:

Study limitations include the absence of indirect costs, possible claim inaccuracies, and IMS data limitations.

CONCLUSIONS:

Higher health costs were projected for G4 European countries from the Canadian experience following the generic entry of topiramate.

PMID:

19505202

70. The use of driving impairing medicines: a European survey.

[Ravera S](#), [Hummel SA](#), [Stolk P](#), [Heerdink RE](#), [de Jong-van den Berg LT](#), [de Gier JJ](#).

Source

Department of Pharmacotherapy and Pharmaceutical Care, University of Groningen, Antonius Deusinglaan 1, 9713 AV, Groningen, The Netherlands.

Abstract

AIM:

To analyse the consumption of a number of medicines with a known potential for increasing the risk of road traffic accidents in the general population of Europe.

METHODS:

Questionnaires were distributed through the European Drug Utilization Research Group (EuroDURG) and Post-Innovation Learning through Life-events of drugs (PILLS) networks. A total of 30 countries (the current EU Member States, Iceland, Norway and Switzerland) were asked to supply data on the use of driving impairing medicines for the period 2000-2005, aggregated at the level of the active substance and presented in Defined Daily Doses (DDDs) per 1000 inhabitants per day.

RESULTS:

National utilization data were provided by 12 of the 30 countries. Based on these data, a considerable increase in consumption was only seen for the antidepressants and the selective serotonin reuptake inhibitors. A slight increase, decrease or no increase was seen for the rest of the drugs studied (i.e. opioids, antipsychotics, anxiolytics, hypnotics and sedatives, drugs that are used in addictive disorders and antihistamines). Limitations were encountered when data on driving impairing medicines were compared between countries (e.g. variation in the data sources and providers, population coverage, inclusion of hospital data, use of divergent ATC/DDD versions) and, therefore, a cross-national comparison could not be performed.

CONCLUSIONS:

During the study period, trends within countries showed slight to no increase in the consumption of selected medicinal drug groups, with the exception of the antidepressants and the selective serotonin reuptake inhibitors: they showed a remarkable increased use during the study time-frame. Our results illustrate that it is still difficult to perform a valid and comprehensive collection of drug utilization data on driving impairing medicines. Therefore, efforts to harmonize data collection techniques are required and recommended.

PMID:

19621220

[PubMed - indexed for MEDLINE]

PMCID: PMC2764057

71. A comparison of mycophenolate use in Australia and Northern Europe, and the impact on the pharmaceutical benefits scheme.

[Staatz CE](#), [Smith AJ](#), [Tett SE](#).

Source

School of Pharmacy, University of Queensland, Queensland, Australia. chris@pharmacy.uq.edu.au

Abstract

PURPOSE:

The aim of this study was to characterise utilisation of mycophenolate in Australian transplant recipients from 2001 to 2007; to identify specific patterns of mycophenolate mofetil and enteric-coated mycophenolate sodium usage; to examine expenditure on mycophenolate prescription and to compare Australian usage with Danish, Finish and Netherlands populations.

METHODS:

Data on mycophenolate usage were obtained from Medicare Australia, Finish and Danish Medicines Agency and Netherlands Healthcare Insurance Board databases. Utilisation of mycophenolate was described as daily defined dose (DDD/per 1000 population/day).

RESULTS:

From 2001 to 2007, utilisation of mycophenolate in Australia increased approximately 30-fold. In 2007, mycophenolate sodium accounted for 8.3% of mycophenolate total DDDs. In 2007, AUD\$4,890,000 was spent on mycophenolate prescription. In 2006, utilisation of mycophenolate was five- to eight-fold higher in Northern Europe compared to Australia. Renal transplant rates per 1000 population/year were similar across countries.

CONCLUSIONS:

Differences in the rate of mycophenolate utilisation between Northern Europe and Australia exist and may be due to differences in approved indications between countries, prescribing habits, or because of a more mature market in Europe. If the Australian market increases to that of North Europe the cost of prescribing mycophenolate will eventually be in the vicinity of AUD\$20-80 million.

PMID:

19253908

72. No difference in between-country variability in use of newly approved orphan and non- orphan medicinal products--a pilot study.

[Stolk P](#), [Heemstra HE](#), [Leufkens HG](#), [Bloechl-Daum B](#), [Heerdink ER](#).

Source

Division of Pharmacoepidemiology and Pharmacotherapy, Utrecht Institute for pharmaceutical Sciences, Utrecht University, PO Box 80082, 3508 TB Utrecht, The Netherlands. p.stolk@uu.nl

Abstract

BACKGROUND:

Regulators and payers have to strike a balance between the needs of the patient and the optimal allocation of resources. Drugs indicated for rare diseases (orphan medicines) are a special group in this context because of their often high per unit costs. Our objective in this pilot study was to determine, for drugs used in an outpatient setting, how utilisation of centrally authorised drugs varies between countries across a selection of EU member states.

METHODS:

We randomly selected five orphan medicines and nine other drugs that were centrally authorised in the European Union between January 2000 and November 2006. We compared utilisation of these drugs in six European Union member states: Austria, Denmark, Finland, Portugal, The Netherlands, and Sweden. Utilisation data were expressed as Defined Daily Doses per 1000 persons per year. Variability in use across countries was determined by calculating the relative standard deviation for the utilisation rates of individual drugs across countries.

RESULTS:

No association between orphan medicine status and variability in use across countries was found ($P = 0.52$). Drugs with an orphan medicine status were more expensive and had a higher innovation score than drugs without an orphan medicine status.

CONCLUSIONS:

The results show that the variability in use of orphan medicines in the different health care systems of the European Union appears to be comparable to the other newly authorised drugs that were included in the analysis. This means that, although strong heterogeneity in access may exist, this heterogeneity is not specific for drugs with an orphan status.

PMID:

20003427

[PubMed - indexed for MEDLINE]

PMCID: PMC2805618

73. European Surveillance of Antimicrobial Consumption (ESAC): outpatient systemic antimycotic and antifungal use in Europe.

[Adriaenssens N](#), [Coenen S](#), [Muller A](#), [Vankerckhoven V](#), [Goossens H](#); [ESAC Project Group](#).

Collaborators (34)

[Mittermayer H](#), [Hendrickx E](#), [Markova B](#), [Andrasević A](#), [Kontemeniotis A](#), [Vlcek J](#), [Frimodt-Møller N](#), [Rootslane L](#), [Vuopio-Varkila J](#), [Cavalié P](#), [Kern W](#), [Giamarellou H](#), [Ternák G](#), [Kristinsson K](#), [Cunney R](#), [Raz R](#), [Folino P](#), [Dumpis U](#), [Valinteliene R](#), [Bruch M](#), [Borg M](#), [Natsch S](#), [Blix HS](#), [Hryniewicz W](#), [Ribeirinho M](#), [Băicuș A](#), [Ratchina S](#), [Foltán V](#), [Cizman M](#), [Campos J](#), [Skoog G](#), [Zanetti G](#), [Unal S](#), [Davey P](#).

Source

Laboratory of Medical Microbiology, Vaccine & Infectious Disease Institute, University of Antwerp, Universiteitsplein 1, 2610 Antwerp, Belgium. Niels.Adriaenssens@ua.ac.be

Abstract

OBJECTIVES:

To assess the total outpatient systemic antimycotic and antifungal use in Europe, and to identify the antimycotic and antifungal substances most commonly used.

METHODS:

Within ESAC (www.esac.ua.ac.be), using the anatomical therapeutic chemical (ATC) and defined daily dose (DDD) classification, data on outpatient use of all 14 antimycotics (12) and antifungals (2) for systemic use (ATC J02 and D01B, respectively), aggregated at the level of the active substance, were collected for 2007. Use was expressed in DDD (WHO ATC/DDD, version 2008) per 1000 inhabitants per day (DID). Only countries for which data on both J02 and D01B use were available were included in the analysis.

RESULTS:

In 20 European countries (data for Cyprus and Estonia include hospital use), total outpatient systemic antimycotic and antifungal use varied by a factor of 6.7 between the country with the highest (3.03 DID in Belgium) and the country with the lowest (0.45 in Croatia) use. Terbinafine, ketoconazole, itraconazole and fluconazole represented >94% of the total outpatient antimycotic and antifungal use in all countries. Terbinafine use represented >50% of the total systemic antimycotic and antifungal use in 16 out of 20 countries (not in Croatia, Italy, Luxembourg and Bulgaria).

CONCLUSIONS:

We present for the first time a standardized and validated data set of outpatient systemic antimycotic and antifungal use in Europe. Our study demonstrates a variation of antimycotic and antifungal use in Europe, as striking as that of antibiotic use. The ESAC data facilitate the auditing of antimycotic and antifungal prescribing, and the evaluation of the implementation of guidelines and public health policies to promote their judicious use.

PMID:

20142264

[PubMed - indexed for MEDLINE]

74. Inter-country variations in anti-asthmatic drug prescriptions for children. Systematic review of studies published during the 2000-2009 period.

[Bianchi M](#), [Clavenna A](#), [Bonati M](#).

Source

Laboratory for Mother and Child Health, Department of Public Health, Mario Negri Pharmacological Research Institute, via G. La Masa 19, 20156 Milan, Italy. marina.bianchi@marionegri.it

Abstract

OBJECTIVE:

The objective of this study was to analyse inter-and intra-country quantitative and qualitative differences in anti-asthmatic prescriptions to children and adolescents.

METHODS:

A literature search was performed in EMBASE and MEDLINE to identify pharmaco-epidemiological studies published from January 1, 2000 to December 31, 2008 in which anti-asthmatic prescription prevalence in out-hospital children was measured. A meta-analytic weighted average and 95% confidence intervals of prescription prevalences were calculated using a random-effect(s) model. Inter- and intra-country quantitative and, where possible, qualitative prescribing patterns were compared and assessed.

RESULTS:

Twelve studies were identified (ten from Europe, one from Canada and one from the USA), but epidemiological indicators varied widely, and only eight were suitable for meta-analysis. The data from these studies revealed inter-country quantitative differences in prescription prevalences in the overall population ≤ 19 years, with Italy having a prescription prevalence of 19.0%, Canada, 18.0%, USA, 14.6%, Denmark, 13.9%, Norway, 9.1% and the Netherlands, 6.2%. The overall prevalence was 13.3%. The analysis of qualitative inter-country differences revealed that, except for Italy, inhalatory short-acting beta-agonists were the most prescribed, followed by inhalatory corticosteroids.

CONCLUSIONS:

This first overall analysis of anti-asthmatic utilization studies in out-of-hospital children indicates a wide variability in anti-asthmatic prescription prevalence. It also reveals that epidemiological evaluations should be improved by using homogeneous indicators and, in order to validate the use of anti-asthmatic prescription as a proxy of disease, the diagnosis of asthma should accompany the data of prescriptions within the same population.

PMID:

20533030

[

75. Observation of the treatment and outcomes of patients receiving chemotherapy for advanced NSCLC in Europe (ACTION study).

[Bischoff HG](#), [van den Borne B](#), [Pimentel FL](#), [Arellano J](#), [Langer F](#), [Leschinger MI](#), [Thatcher N](#).

Source

Thoraxklinik, Heidelberg, Germany. Helge.Bischoff@thoraxklinik-heidelberg.de

Abstract

OBJECTIVE:

The ACTION (Assessment of Cost and outComes of chemotherapy In an Observational setting) study investigated associations between chemotherapy, patient/disease characteristics and outcomes in advanced non-small cell lung cancer (NSCLC) patients in clinical practice.

RESEARCH DESIGN AND METHODS:

Chemonaïve NSCLC patients from five European countries were observed for 18 months from initiation of first-line chemotherapy; care was at the physician's discretion.

MAIN OUTCOME MEASURES:

Survival and associated prognostic factors were estimated using Kaplan-Meier methods and a Cox proportional hazards model, respectively. Cluster analyses of baseline patient characteristics were also performed. Toxicity data were not considered in these analyses.

RESULTS:

A total of 975 eligible patients with NSCLC (Stage IIIb/IV) were enrolled and provided baseline and response data; cluster analysis was performed on 829 patients and survival data were available from 906 patients. In first-line treatment, a 39.8% response rate, a 39.5% 1-year survival rate and unadjusted median survival of 9.3 months were observed. Prognostic factors for survival included performance status (PS), number of metastatic organs, gender and age. Five patient clusters were identified, highlighting patient heterogeneity in terms of baseline condition and age. PS was maintained or improved throughout first-line and second-line chemotherapy in half the patients receiving these treatments.

CONCLUSIONS:

ACTION provides valuable information about patient population, disease characteristics, treatment choices, prescribing patterns and outcomes in routine clinical practice in advanced NSCLC in Europe. Our findings suggest that maintenance of PS after first and subsequent lines of chemotherapy, and survival rates may both be higher than previously anticipated. Our results also showed an association between age and survival, which suggests that age should not exclude patients from receiving chemotherapy if they meet all other eligibility criteria.

PMID:

20394472

76. Comparing policies to enhance prescribing efficiency in Europe through increasing generic utilization: changes seen and global implications.

[Godman B](#), [Shrank W](#), [Andersen M](#), [Berg C](#), [Bishop I](#), [Burkhardt T](#), [Garuoliene K](#), [Herholz H](#), [Joppi R](#), [Kalaba M](#), [Laius O](#), [McGinn D](#), [Samaluk V](#), [Sermet C](#), [Schwabe U](#), [Teixeira I](#), [Tilson L](#), [Tulunay FC](#), [Vlahović-Palčevski V](#), [Wendykowska K](#), [Wettermark B](#), [Zara C](#), [Gustafsson LL](#).

Source

Institute for Pharmacological Research 'Mario Negri', Via Giuseppe La Masa 19, 20156 Milan, Italy.
godman@marionegri.it

Abstract

AIM:

The aim of this article was to evaluate the influence of different demand-side measures to enhance the prescribing of generics in ambulatory care based on cross-national comparisons.

METHODS:

An observational retrospective study was conducted using administrative databases from across Europe, documenting changes in reimbursed utilization and expenditure of different proton pump inhibitors (PPIs) and statins between 2001 and 2007, alongside different reforms to enhance prescribing efficiency. Utilization was converted to defined daily doses (DDDs) and expenditures were converted to euros. Demand-side measures were collated under the '4 Es'--education, engineering, economics and enforcement--to enable comparisons on the nature and intensity of reforms between countries.

RESULTS:

There were considerable differences in the utilization of generics and patent-protected PPIs and statins among Western European countries. Decreased utilization of omeprazole and simvastatin, alongside increased utilization of esomeprazole, atorvastatin and rosuvastatin, was seen in countries with limited demand-side measures to counteract commercial pressures. Prescribing restrictions, or a combination of education, prescribing targets and financial incentives, had the greatest influence on enhancing the utilization of omeprazole and simvastatin. For example, there was a threefold reduction in the utilization of atorvastatin in Austria following prescribing restrictions. Multiple demand-side interventions generally had a greater influence than single interventions, with the impact appearing additive. Multiple interventions coupled with initiatives to lower prices of generics considerably enhanced prescribing efficiency.

CONCLUSION:

This cross-national study has demonstrated considerable variation in the utilization and expenditure of PPIs and statins across Europe, providing opportunities to further improve prescribing efficiency. The '4 Es' do provide an understandable methodology to document and compare the influence of different demand-side measures, with the influence varying by their extent and intensity. Further reforms are essential given current financial pressures. Consequently, further research will concentrate on the potential to develop a scoring system to help predict the possible impact of different demand-side measures on future utilization patterns.

PMID:

21155704

77. Self-medication with antibiotics in Europe: a case for action.

[Grigoryan L](#), [Monnet DL](#), [Haaijer-Ruskamp FM](#), [Bonten MJ](#), [Lundborg S](#), [Verheij TJ](#).

Source

Julius Center for Health Sciences and Primary Care, Utrecht, The Netherlands. larissa_holland@yahoo.com

Abstract

Unlike most other drugs that only affect individual patients if used incorrectly for self-medication, misused antibiotics add to the global risk of increased spread of bacterial resistance. This review focuses on self-medication with antibiotics in Europe and its determinants. High prevalence of self-medication with antibiotics has been repeatedly found in Southern and Eastern European countries that also report high levels of antibiotic resistance. Despite being illegal, over the counter dispensation of systemic antibiotics occurs in several European Union Member States. A second major source of self-medication is the availability of "leftover" antibiotics which results from either patient non-compliance or dispensation of a larger number of tablets than needed for one single course. The potentially modifiable factors associated with self-medication are: availability of antibiotics without prescription, pack-based antibiotic dispensing system, misconceptions of the general public about the efficacy of antibiotics for minor illnesses and prescribing of antibiotics for minor ailments by physicians. Measures that may reduce and prevent self-medication include dispensation of exact tablet quantities in pharmacies as already implemented e.g. in the UK, Netherlands, the Czech Republic and the United States, and enforcement of existing laws prohibiting over-the-counter sales of antibiotics. Such measures should be embedded in a general policy to change the culture of antibiotic use by improving awareness of the general public and professionals about antibiotics and the risks associated with their use as well as reducing misconceptions about the need for antibiotics for minor ailments.

PMID:

20615180

78. Comparison of antiepileptic drug prescribing in children in three European countries.

[Hsia Y](#), [Neubert A](#), [Sturkenboom MC](#), [Murray ML](#), [Verhamme KM](#), [Sen F](#), [Giaquinto C](#), [Ceci A](#), [Wong IC](#); [TEDDY Network of Excellence](#).

Source

Centre for Paediatric Pharmacy Research, The School of Pharmacy, University of London and Institute of Child Health, University College London, London, United Kingdom. yingfen.hsia@pharmacy.ac.uk

Abstract

PURPOSE:

Antiepileptic drug (AED) use in young people is increasing. However, evidence of its use at a multinational level is limited. This study aims to characterize AED prescribing in the young in three European countries and to assess the capacity of drug safety surveillance.

METHODS:

A retrospective cohort study was conducted in 2001-2005 using primary care databases: PEDIANET (Italy, 0-11 years), IPCI (The Netherlands, 0-18 years), and IMS Disease Analyzer (United Kingdom, 0-18 years). Prescribing prevalence was calculated by country, patient age, and drug type.

RESULTS:

In 2005, AED prevalence in children (0-11 years) was highest in Italy [3.9 subjects/1,000 person-years (PY)] followed by the United Kingdom (3.0 subjects/1,000 PY) and The Netherlands (2.2 subjects/1,000 PY). Over the study period, prescribing prevalence in 0-11 year olds was stable in all countries. In contrast, a steady rise of AED prevalence was observed in adolescents (12-18 years) in the United Kingdom ($p = 0.0003$) but not in The Netherlands ($p = 0.88$). All countries showed a slight increase in prevalence for newer AEDs. Simultaneously, the prevalence of conventional AEDs decreased in The Netherlands and Italy, but not in the United Kingdom. In 2005, lamotrigine use was highest in The Netherlands and the United Kingdom, whereas topiramate was favored in Italy.

DISCUSSION:

In Europe, conventional AEDs are still the main treatment choice for children with epilepsy, and the use of newer AEDs remains low. Our study highlights a lack of research capacity to conduct multinational AED safety studies in children. Further work should explore large databases and other health care settings to meet these research needs.

PMID:

19817815

79. Trends in the non-steroidal anti-inflammatory drug market in six Central-Eastern European countries based on retail information.

[Inotai A](#), [Hankó B](#), [Mészáros A](#).

Source

University Pharmacy Department of Pharmacy Administration, Semmelweis University, Budapest, Hungary.
inotai.andras@gytk.sote.hu

Abstract

PURPOSE:

The objective of this study was to evaluate the non-steroidal anti-inflammatory drug market of six Central and Eastern European countries. Trends and similarities were compared across the examined countries.

METHODS:

The Intercontinental Marketing Service Health database was used to determine consumption data between the years 2000 and 2007. We applied the anatomical therapeutic chemical-defined daily dose method, focussing on three major non-steroidal anti-inflammatory drug groups: conventional non-steroidal anti-inflammatory drugs, 'stronger cyclooxygenase 2 inhibitors' (all together as: non-cyclooxygenase 2 selective non-steroidal anti-inflammatory drugs) and selective cyclooxygenase 2 inhibitors. The main outcome measure was defined daily dose/1000 inhabitants/day. Different active agents have been distinguished between the three major groups.

RESULTS:

In total the non-steroidal anti-inflammatory drug group reached a 42.82-74.17 defined daily dose/1000 inhabitants/day volume in 2007, with an average total increase of 25.1% between 2002 and 2007. In the conventional non-steroidal anti-inflammatory drug group, diclofenac and ibuprofen have attained the highest consumption. Our results show a notable increase (325%, 2002-2007) of the 'stronger cyclooxygenase 2 inhibitor group' (nimesulide and meloxicam). Trends of selective cyclooxygenase 2 inhibitor volumes differ within the observed countries.

CONCLUSION:

Differences in the six countries concerning their NSAID consumption and market trends could not be explained with the inequalities in patient characteristics. The conventional NSAID retail gave the majority of the total NSAID market. The consumption of selective COX2 inhibitors in all of the six countries were much lower than in the US or Australia. The NSAID risk profile in the region is comparable to previous studies in other countries.

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PMID:

20014174

[Kidney Int.](#) 2010 Jul;78(2):215-23. Epub 2010 Apr 28.

80. International trends in erythropoietin use and hemoglobin levels in hemodialysis patients.

[McFarlane PA](#), [Pisoni RL](#), [Eichleay MA](#), [Wald R](#), [Port FK](#), [Mendelssohn D](#).

Source

Division of Nephrology, Department of Medicine, St Michael's Hospital, University of Toronto, Toronto, Ontario, Canada. phil.mcfarlane@utoronto.ca

Abstract

Hemoglobin levels and the dose of erythropoiesis-stimulating agents (ESAs) have risen over time in hemodialysis patients within the United States. There are concerns that these trends may be driven by reimbursement policies that provide potential incentives to increase this use. To determine this we studied trends in the use of ESA and hemoglobin levels in hemodialysis patients and the relationship of these trends to the mode of reimbursement. Using the Dialysis Outcomes and Practice Patterns Study (DOPPS) database of hemodialysis we analyzed facility practices in over 300 randomly selected dialysis units in 12 countries. At each of three phases (years 1996-2001, 2002-2004, and 2005-present), we randomly selected over 7500 prevalent hemodialysis, hemofiltration, or hemodiafiltration patients. ESA usage rose significantly in every country studied except Belgium. All but Sweden demonstrated a substantial increase in hemoglobin levels. In 2005 more than 40% of patients had hemoglobin levels above the KDOQI upper target limit of 120 g/l in all but Japan. These trends appeared to be independent of the manner of reimbursement even though the United States is the only country with significant financial incentives promoting increased use of these agents. Thus, our study found that prescribing higher doses of ESAs and achieving higher hemoglobin levels by physicians reflects a broad trend across DOPPS countries regardless of the reimbursement policies.

PMID:

20428102

81. The prescribing of analgesics and non-steroidal anti-inflammatory drugs in paediatric primary care in the UK, Italy and the Netherlands.

[Neubert A](#), [Verhamme K](#), [Murray ML](#), [Picelli G](#), [Hsia Y](#), [Sen FE](#), [Giaquinto C](#), [Ceci A](#), [Sturkenboom M](#), [Wong IC](#); [TEDDY Network of Excellence](#).

Source

Centre for Paediatric Pharmacy Research, The School of Pharmacy, University of London and Institute of Child Health, University College London, London, United Kingdom. antje.neubert@pharmacy.ac.uk

Abstract

Non-steroidal anti-inflammatory drugs (NSAIDs) and opioids are commonly prescribed drugs which are frequently used for the treatment of various painful conditions. However, particularly for the paediatric population, there is a lack of information on effectiveness, safety and appropriate formulation resulting in off-label use and undertreatment. The aim of this study was to investigate the prescribing patterns of non-steroid anti-inflammatory drugs and opioids in children and adolescents in three European countries. A retrospective cohort study was conducted using the same protocol in three primary care databases: Pedianet (Italy), IPCI (Netherlands) and IMS Disease Analyzer (UK). User prevalence rates were calculated for opioids (N02A) and non-steroidal anti-inflammatory drugs (NSAIDs) (M01A) based on ATC therapeutic and chemical levels and stratified by country, age and gender. The prescribing prevalence for NSAIDs was lower in the Netherlands compared to Italy and the UK. Ibuprofen was the most frequently prescribed drug in this group in Italy (20.8 users/1000 PY) and the UK (30.6 users/1000 PY) whereas diclofenac was dominant in the Netherlands (1.7 users/1000 PY). Among opioids, codeine and codeine combinations were most commonly prescribed; only little use was seen for other drugs. There is a great variety of different NSAIDs and opioids prescribed to children in Europe in primary care. This is due to a varying availability of drugs in different countries but also because of differing prescribing attitudes, reimbursement scheme and a lack of data on the effectiveness of individual drugs. Further research into the rationale for prescribing these drugs to children is clearly needed.

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PMID:

20451614

[PubMed - indexed for MEDLINE]

82. Treatment retention with risperidone long-acting injection: 24-month results from the Electronic Schizophrenia Treatment Adherence Registry (e-STAR) in six countries.

[Peuskens J](#), [Olivares JM](#), [Pecenak J](#), [Tuma I](#), [Bij de Weg H](#), [Eriksson L](#), [Ressler S](#), [Akhras K](#), [Jacobs A](#).

Source

Universitair Psychiatrisch Centrum, KU Leuven campus UC St. Jozef Kortenberg, Belgium.
jozef.peuskens@med.kuleuven.be

Abstract

OBJECTIVE:

To assess treatment retention on risperidone long-acting injection (RLAI) and outcomes in schizophrenia patients for whom 24 months of follow-up data in the electronic Schizophrenia Treatment Adherence Registry (e-STAR) were available.

RESEARCH DESIGN AND METHODS:

e-STAR is an ongoing, international, multicenter, prospective, observational registry assessing use of antipsychotics in patients with schizophrenia or schizoaffective disorder in a normal clinical practice setting. Parameters were assessed prior to and post-initiation of RLAI. Data presented are from six European countries that enrolled patients in e-STAR after they initiated treatment with RLAI.

MAIN OUTCOME MEASURES:

Clinical and demographic information were collected at baseline and treatment-related data, including RLAI discontinuation, psychiatric hospitalization and medication utilization, were collected prospectively every 3 months. Data collection continued for 24 months, even for patients who discontinued RLAI therapy. Hospitalization and medication utilization were also collected retrospectively by chart review for the 12-month period prior to RLAI initiation.

RESULTS:

A total of 1659 patients (mean age, 39.2; 18.3% inpatients) completed the study. Twenty-four months after initiating therapy (initial RLAI dose = 33.6 mg) 85% of patients (n = 1410) remained on RLAI (completers) while 15% discontinued therapy. The main reasons for discontinuation were insufficient response (28.5%), patient/family choice (26.1%), adverse events (9.6%) and unacceptable tolerability (6.0%). At baseline, compared to completers, discontinuers were younger (37.4 vs. 39.6 years, p = 0.01), had schizophrenia for a shorter time (10.2 vs. 11.9 years, p = 0.02), had lower Global Assessment of Functioning (GAF) scores (43.5 vs. 48.0, p = 0.0001), higher utilization of benzodiazepines (56.5 vs. 43.3%) and more initiated therapy as inpatients (30 vs. 16%). With RLAI therapy GAF scores improved significantly (p < 0.001) for both groups but the 24-month value for discontinuers was lower than that of completers (55.4 vs. 67.2). Compared to the pre-RLAI initiation period, at 12 months post-initiation completers had greater reductions than discontinuers in the percent of patients hospitalized (66.2% reduction vs. 29.2%) and in the length (68% reduction vs. 0%) and number (80.0 vs. 14.3%) of hospital stays, differences that remained at 24 months. The most common adverse events while patients were taking RLAI were nervous system disorders (6.8%), psychiatric disorders (5.6%), weight increase (3.2%), reproductive system and breast disorders (2.5%) and gastrointestinal disorders (2.1%).

CONCLUSIONS:

These observational data confirm that RLAI is an effective treatment in schizophrenia and high levels of adherence to therapy offers an opportunity for effective long-term disease management and significant sustained decreases in hospitalization.

83. Insulin pump use in Europe.

[Renard E.](#)

Source

Endocrinology Department, Centre Hospitalier Universitaire de Montpellier, Montpellier, France. e-renard@chu-montpellier.fr

Abstract

Although European groups have initiated innovative clinical research in the field of insulin pump therapy, insulin pump use remains currently limited in many European countries, and well behind that in the United States. The main reason is the late approval of cost coverage by most national healthcare insurance systems, which is still lacking in some countries. Partly in connection with this delay, the number of trained physicians to pump therapy is low in many countries, while diabetes educators do not exist as an acknowledged entity in many European countries, and pump manufacturers are excluded from the education process of patients in most of them. Pump use in pediatric-age populations has strongly increased during the last years, following the evidence-based demonstrations of the benefits of pump therapy in these patients leading to an international consensus on pump indications and practice. Failure to control type 1 diabetes to target and frequent hypoglycemia under multiple daily insulin injections are consensus-based but restrictive indications for pump therapy in adults in most countries. The economic burden on healthcare insurance systems does not facilitate wider use of insulin pumps, but a significant expansion of pump therapy according to consensus-based indications is still expected thanks to the growing knowledge of physicians in technologies and because of the increasing interest of patients to use technology to improve their control of diabetes and health-related quality of life. More sophisticated technologies connected to pump therapy, such as continuous glucose monitoring or telemedicine, will need specific cost coverage for a true implementation in diabetes care in Europe.

PMID:

20515303

84. Prescribing patterns of antiparkinsonian agents in Europe.

[Rosa MM](#), [Ferreira JJ](#), [Coelho M](#), [Freire R](#), [Sampaio C](#).

Source

Laboratory of Clinical Pharmacology and Therapeutics, Institute of Molecular Medicine, Lisbon School of Medicine, Lisbon, Portugal. mario.miguel.rosa@gmail.com

Abstract

In the 1990 s, previous knowledge and randomized controlled trials supported the establishment of today's therapeutic recommendations in Parkinson's disease (PD). Scientific evidence allows different options for the treatment of PD. Patterns of use of antiparkinsonian agents (APA) across European countries may thus reflect these options. We wanted to describe patterns of use of APA in Europe and characterize the changes in prescription habits between 2003 and 2007. We investigated APA outpatient sales in 26 European countries where all commercially available APA were studied. Data for molecules and brand names were collected through IMS Health. Treatment per 1000 inhabitants daily (DID) was obtained from the WHO defined daily dose. Prescription pattern changes were evaluated by market share. Prescription patterns varied widely. In most countries, levodopa/dopamine agonists accounted for half of the drug use; whereas in others, anticholinergics, MAO inhibitors and amantadine prevailed. The greatest increase occurred with monoamine oxidase inhibitors and levodopa. There was an increase in dopamine agonists and a decrease in anticholinergics. For a 6.8% dose consume increase, there was a 41.1% sales increase (in euro). We showed an increase in the consumption of APA over 5 years. There was significant heterogeneity in the use of APA in Europe, suggesting differences in drug treatment. Costs of medication increased more than did dose consume, implying an increase in the cost of individual patient treatment. Published evidence does not explain the observed differences in the prescribing of APA.

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PMID:

20222132

85. Impact of supervision of methadone consumption on deaths related to methadone overdose (1993-2008): analyses using OD4 index in England and Scotland.

[Strang J](#), [Hall W](#), [Hickman M](#), [Bird SM](#).

Source

Kings College London, National Addiction Centre, Institute of Psychiatry, London SE5 8BB, UK.
john.strang@kcl.ac.uk

Abstract

OBJECTIVE:

To evaluate the impact of introduction of supervision of methadone dosing on deaths related to overdose of methadone in Scotland and England between 1993 and 2008 while controlling for increased prescribing of methadone.

DESIGN:

Analysis of annual trends in deaths related to overdose of methadone in relation to defined daily doses of methadone prescribed.

SETTING:

Scotland and England. Population Deaths in which methadone was coded as the only drug involved or as one of the drugs implicated.

MAIN OUTCOME MEASURE:

Annual OD4-methadone index (number of deaths with methadone implicated per million defined daily doses of methadone prescribed in that year).

RESULTS:

OD4-methadone declined substantially over the four epochs of four years between 1993 and 2008. It decreased significantly ($P < 0.05$) in 10 of 12 epoch changes: in Scotland from 19.3 (95% confidence interval 15 to 24) to 4.1 (2.8 to 5.4) and finally to 3.0 (2.4 to 3.5) for methadone only deaths (and from 58 to 29 to 14 for deaths with any mention of methadone); in England from 27.1 (25 to 29) to 24.8 (23 to 27) and finally to 5.8 (5.3 to 6.3) for methadone only deaths (and from 46 to 42 to 12 for deaths with any mention of methadone). The decreases in OD4-methadone were closely related to the introduction of supervised dosing of methadone in both countries, first in Scotland (1995-2000) and later in England (1999-2005). These declines occurred over periods of substantial increases in prescribing of methadone (18-fold increase in defined daily doses per million population annually in Scotland and sevenfold increase in England).

CONCLUSIONS:

Introduction of supervised methadone dosing was followed by substantial declines in deaths related to overdose of methadone in both Scotland and England. OD4-methadone index analyses, controlled for substantial increases in methadone prescribing in both countries, identified at least a fourfold reduction in deaths due to methadone related overdose per defined daily dose (OD4-methadone) over this period.

PMID:

20847018

86. The relationship between sales of SSRI, TCA and suicide rates in the Nordic countries.

[Zahl PH](#), [De Leo D](#), [Ekeberg Ø](#), [Hjelmeland H](#), [Dieserud G](#).

Source

Department of Suicide Research and Prevention, Division of Mental Health, Norwegian Institute of Public Health, Oslo, Norway. per-henrik.zahl@fhi.no

Abstract

BACKGROUND:

In the period 1990-2006, strong and almost equivalent increases in sales figures of selective serotonin re-uptake inhibitors (SSRIs) were observed in all Nordic countries. The sales figures of tricyclic antidepressants (TCAs) dropped in Norway and Sweden in the nineties. After 2000, sales figures of TCAs have been almost constant in all Nordic countries. The potentially toxic effect of TCAs in overdose was an important reason for replacing TCAs with SSRIs when treating depression. We studied whether the rapid increase in sales of SSRIs and the corresponding decline in TCAs in the period 1990-98 were associated with a decline in suicide rates.

METHODS:

Aggregated suicide rates for the period 1975-2006 in four Nordic countries (Denmark, Finland, Norway and Sweden) were obtained from the national causes-of-death registries. The sales figures of antidepressants were provided from the wholesale registers in each of the Nordic countries. Data were analysed using Fisher's exact test and Pearson's correlation coefficient.

RESULTS:

There was no statistical association ($P = 1.0$) between the increase of sales figures of SSRIs and the decline in suicide rates. There was no statistical association ($P = 1.0$) between the decrease in the sale figures of TCAs and change in suicide rates either.

CONCLUSIONS:

We found no evidence for the rapid increase in use of SSRIs and the corresponding decline in sales of TCAs being associated with a decline in the suicide rates in the Nordic countries in the period 1990-98. We did not find any inverse relationship between the increase in sales of SSRIs and declining suicide rates in four Nordic countries.

PMID:

20691035

[PubMed - indexed for MEDLINE]

PMCID: PMC2927503

87. Determinants of self-reported medicine underuse due to cost: a comparison of seven countries.

[Kemp A](#), [Roughead E](#), [Preen D](#), [Glover J](#), [Semmens J](#).

Source

The University of Western Australia, Perth, WA 6009, Australia. anna.kemp@uwa.edu.au

Abstract

OBJECTIVES:

To compare the predictors of self-reported medicine underuse due to cost across countries with different pharmaceutical subsidy systems and co-payments.

METHODS:

We analysed data from a 2007 survey of adults in Australia, Canada, Germany, the Netherlands, New Zealand (NZ), the United Kingdom (UK) and the United States (US). The predictors of underuse were calculated separately for each country using multivariate poisson regression.

RESULTS:

Reports of underuse due to cost varied from 3% in the Netherlands to 20% in the US. In Australia, Canada, NZ, the UK and the US, cost-related underuse was predicted by high out-of-pocket costs (RR range 2.0-4.6), below average income (RR range 1.9-3.1), and younger age (RR range 3.9-16.4). In all countries except Australia and the UK, history of depression was associated with cost-related underuse (RR range 1.2-4.1). In Australia, Canada, Germany, the UK and the US lack of patient involvement in treatment decisions was associated with cost-related underuse (RR range 1.2-1.4). In Australia, Canada and NZ, indigenous persons more commonly reported underuse due to cost (RR range 2.1-2.9).

CONCLUSIONS:

Cost-related underuse of medicines was least commonly reported in countries with the lowest out-of-pocket costs, the Netherlands and the UK. Countries with reduced co-payments or cost ceilings for low income patients showed the least disparity in rates of underuse between income groups. Despite differences in health insurance systems in these countries, age, ethnicity, depression, and involvement with treatment decisions were consistently predictive of underuse. There are opportunities for policy makers and clinicians to support medicine use in vulnerable groups.

PMID:

20203082

88. European Surveillance of Antimicrobial Consumption (ESAC): systemic antiviral use in Europe.

[Adriaenssens N](#), [Coenen S](#), [Kroes AC](#), [Versporten A](#), [Vankerkhoven V](#), [Muller A](#), [Blix HS](#), [Goossens H](#); [ESAC Project Group](#).

Collaborators (34)

[Mittermayer H](#), [Vaerenberg S](#), [Markova B](#), [Andrasevic A](#), [Kontemeniotis A](#), [Vlcek J](#), [Frimodt-Møller N](#), [Rootslane L](#), [Vuopio-Varkila J](#), [Cavalié P](#), [Kern W](#), [Giamarellou H](#), [Ternák G](#), [Briem H](#), [Cunney R](#), [Raz R](#), [Folino P](#), [Dumpis U](#), [Valinteliene R](#), [Bruch M](#), [Borq M](#), [Natsch S](#), [Blix HS](#), [Hryniewicz W](#), [Ribeirinho M](#), [Băicuș A](#), [Ratchina S](#), [Foltán V](#), [Cizman M](#), [Campos J](#), [Skoog G](#), [Zanetti G](#), [Unal S](#), [Davey P](#).

Source

Laboratory of Medical Microbiology, Vaccine & Infectious Disease Institute (VAXINFECTIO), University of Antwerp, Antwerp, Belgium. niels.adriaenssens@ua.ac.be

Abstract

OBJECTIVES:

To assess the total systemic antiviral use in Europe and to identify the antiviral substances most commonly used.

METHODS:

Within the European Surveillance of Antimicrobial Consumption (ESAC; www.esac.ua.ac.be), using the anatomical therapeutic chemical (ATC) classification and defined daily dose (DDD) measurement unit, data on total (out- and inpatient) systemic antiviral use (ATC J05), aggregated at the level of the active substance, were collected for 2008, and use was expressed in DDD (WHO ATC/DDD, version 2010) per 1000 inhabitants per day (DID). Antiviral substances were grouped according to their main indication.

RESULTS:

In Europe, 12 countries (Belgium, Croatia, Denmark, Estonia, Finland, France, Hungary, Italy, Luxembourg, Russia, Slovenia and Sweden) provided total (out- and inpatient) data and 4 countries (Austria, the Netherlands, Portugal and Norway) provided outpatient data only. Total systemic antiviral use varied by a factor of 10.95 between the country with the highest (3.53 DID in France) and the country with the lowest (0.32 DID in Croatia) use. HIV/AIDS antivirals represented more than 50% of the total antiviral use in most countries. The amount and spectrum of antivirals used varied greatly between countries.

CONCLUSIONS:

Our study demonstrated a wide variation of total systemic antiviral use in several European countries, as striking as that of outpatient systemic antibiotic, antimycotic and antifungal use. The variation is mainly determined by the use of HIV/AIDS antivirals. These observations should stimulate further analysis to understand the variation of specific antiviral substances. The ESAC data facilitate auditing of antiviral prescriptions and evaluation of the implementation of guidelines and public health policies.

PMID:

21622674

[PubMed - indexed for MEDLINE]

89. Efficiency of glaucoma drug regulation in 5 European countries: a 1995-2006 longitudinal prescription analysis.

[De Natale R](#), [Le Pen C](#), [Berdeaux G](#).

Source

UO Oculistica di Monselice, Padova, Italy.

Abstract

PURPOSE:

To compare the evolution of prostaglandin analog (PGA) and β -blocker (BB) prescriptions across 5 European countries.

METHODS:

Data were extracted from various sources: (1) IMS data for France, Germany, Italy, Spain, and the United Kingdom, (2) glaucoma-treated patients from the United Kingdom General Practice Research Database (UK-GPRD), (3) prescriptions delivered by the territorial pharmaceutical service of Monselice of the Padova region (Italy). Drugs were grouped into 3 classes: PGAs, BBs, and other drugs. Yearly market shares were calculated. Treatment persistence survival curves were estimated for Italian and UK data, and the 3 drug groups were compared using the Cochran Mantel Haenszel test.

RESULTS:

According to Padova data, BBs decreased in market share, whereas PGAs increased. A linear extrapolation of these market shares, based on 1998 to 2003 data, predicted that the 2 curves should cross in 2005, a prediction reinforced by the European Medicines Agency authorization (2002) of PGAs as first-line glaucoma treatments. That this did not occur may be explained by Italy's refusal to reimburse PGAs as first-line therapy. IMS data identified Italy and Germany as 2 countries in which BBs are still more frequently prescribed than PGAs. Treatment persistence with PGAs as monotherapy, in PGA-naïve patients, was longer than for BBs according to both Padova and UK-GPRD data. This held true for both first-line and second-line PGA prescriptions (UK-GPRD); the persistence of second-line PGA equalled first-line BB treatment.

CONCLUSION:

Health care regulations impacted upon glaucoma prescribing and may be one of the reasons for different annual evolution rates of PGA and BB prescriptions.

PMID:

21682002

90. Usage patterns of stop smoking medications in Australia, Canada, the United Kingdom, and the United States: findings from the 2006-2008 International Tobacco Control (ITC) Four Country Survey.

[Fix BV](#), [Hyland A](#), [Rivard C](#), [McNeill A](#), [Fong GT](#), [Borland R](#), [Hammond D](#), [Cummings KM](#).

Source

Department of Health Behavior, Roswell Park Cancer Institute, Elm and Carlton Street, Buffalo, NY 14263, USA.
brian.fix@roswellpark.org

Abstract

Varenicline is a new prescription stop smoking medication (SSM) that has been available in the United States since August 1, 2006, in the United Kingdom and other European Union countries since December 5, 2006, in Canada since April 12, 2007, and in Australia since January 1, 2008. There are few population-based studies that have examined use rates of varenicline and other stop smoking medications. We report data from the ITC Four Country survey conducted with smokers in the US, UK, Canada, and Australia who reported an attempt to quit smoking in past year in the 2006 survey (n = 4,022 participants), 2007 (n = 3,790 participants), and 2008 surveys (n = 2,735 participants). Respondents reported use of various stop smoking medications to quit smoking at each survey wave, along with demographic and smoker characteristics. The self-reported use of any stop smoking medication has increased significantly over the 3 year period in all 4 countries, with the sharpest increase occurring in the United States. Varenicline has become the second most used stop smoking medication, behind NRT, in all 4 countries since being introduced. Between 2006 and 2008, varenicline use rates increased from 0.4% to 21.7% in the US, 0.0% to 14.8% in Canada, 0.0% to 14.5% in Australia, and 0.0% to 4.4% in the UK. In contrast, use of NRT and bupropion remained constant in each country. Males and non-whites were significantly less likely to report using any SSM, while more educated smokers were significantly more likely to use any SSM, including varenicline. Our findings suggest that the introduction of varenicline led to an increase in the number of smokers who used evidence-based treatment during their quit attempts, rather than simply gaining market share at the expense of other medications. From a public health perspective, messages regarding increased success rates among medication users and the relative safety of stop smoking medications should be disseminated widely so as to reach all smokers of all socioeconomic classifications equally.

PMID:

21318025

[PubMed - indexed for MEDLINE]

PMCID: PMC3037071

91. Medication use in relation to noise from aircraft and road traffic in six European countries: results of the HYENA study.

[Floud S](#), [Vigna-Taglianti E](#), [Hansell A](#), [Blangiardo M](#), [Houthuijs D](#), [Breugelmans O](#), [Cadum E](#), [Babisch W](#), [Selander J](#), [Pershagen G](#), [Antoniotti MC](#), [Pisani S](#), [Dimakopoulou K](#), [Haralabidis AS](#), [Velonakis V](#), [Jarup L](#); HYENA Study Team.

Collaborators (26)

[Read J](#), [Tan Y](#), [Soogun Y](#), [Dudley ML](#), [Savigny P](#), [Seiffert I](#), [Wölke G](#), [Swart W](#), [Kwekkeboom J](#), [Bluhm G](#), [Theorell T](#), [Ohlander B](#), [Thunberg E](#), [Dimakopoulou K](#), [Sourtzi P](#), [Davou E](#), [Zahos Y](#), [Athanasopoulou A](#), [Mathis F](#), [Preti C](#), [Martinez R](#), [Bonarrigo D](#), [Ceriani MP](#), [Barbaglia G](#), [Borgini A](#), [Giampaolo M](#).

Source

Department of Epidemiology and Biostatistics, School of Public Health, Imperial College London, Norfolk Place, London W21PG, UK. s.floud07@imperial.ac.uk

Abstract

OBJECTIVES:

Studies on the health effects of aircraft and road traffic noise exposure suggest excess risks of hypertension, cardiovascular disease and the use of sedatives and hypnotics. Our aim was to assess the use of medication in relation to noise from aircraft and road traffic.

METHODS:

This cross-sectional study measured the use of prescribed antihypertensives, antacids, anxiolytics, hypnotics, antidepressants and antasthmatics in 4,861 persons living near seven airports in six European countries (UK, Germany, the Netherlands, Sweden, Italy, and Greece). Exposure was assessed using models with 1 dB resolution (5 dB for UK road traffic noise) and spatial resolution of 250×250 m for aircraft and 10×10 m for road traffic noise. Data were analysed using multilevel logistic regression, adjusting for potential confounders.

RESULTS:

We found marked differences between countries in the effect of aircraft noise on antihypertensive use; for night-time aircraft noise, a 10 dB increase in exposure was associated with ORs of 1.34 (95% CI 1.14 to 1.57) for the UK and 1.19 (1.02 to 1.38) for the Netherlands but no significant associations were found for other countries. For day-time aircraft noise, excess risks were found for the UK (OR 1.35; CI: 1.13 to 1.60) but a risk deficit for Italy (OR 0.82; CI: 0.71 to 0.96). There was an excess risk of taking anxiolytic medication in relation to aircraft noise (OR 1.28; CI: 1.04 to 1.57 for daytime and OR 1.27; CI: 1.01 to 1.59 for night-time) which held across countries. We also found an association between exposure to 24hr road traffic noise and the use of antacids by men (OR 1.39; CI 1.11 to 1.74).

CONCLUSION:

Our results suggest an effect of aircraft noise on the use of antihypertensive medication, but this effect did not hold for all countries. Results were more consistent across countries for the increased use of anxiolytics in relation to aircraft noise.

PMID:

21084328

92. Policies to enhance prescribing efficiency in europe: findings and future implications.

[Godman B](#), [Shrank W](#), [Andersen M](#), [Berg C](#), [Bishop I](#), [Burkhardt T](#), [Garuoliene K](#), [Herholz H](#), [Joppi R](#), [Kalaba M](#), [Laius O](#), [Lonsdale J](#), [Malmström RE](#), [Martikainen JE](#), [Samaluk V](#), [Sermet C](#), [Schwabe U](#), [Teixeira I](#), [Tilson L](#), [Tulunay FC](#), [Vlahović-Palčevski V](#), [Wendykowska K](#), [Wettermark B](#), [Zara C](#), [Gustafsson LL](#).

Source

Institute for Pharmacological Research 'Mario Negri' Milan, Italy.

Abstract

Introduction: European countries need to learn from each other to address unsustainable increases in pharmaceutical expenditures. Objective: To assess the influence of the many supply and demand-side initiatives introduced across Europe to enhance prescribing efficiency in ambulatory care. As a result provide future guidance to countries. Methods: Cross national retrospective observational study of utilization (DDDs - defined daily doses) and expenditure (Euros and local currency) of proton pump inhibitors (PPIs) and statins among 19 European countries and regions principally from 2001 to 2007. Demand-side measures categorized under the "4Es" - education engineering, economics, and enforcement. Results: Instigating supply side initiatives to lower the price of generics combined with demand-side measures to enhance their prescribing is important to maximize prescribing efficiency. Just addressing one component will limit potential efficiency gains. The influence of demand-side reforms appears additive, with multiple initiatives typically having a greater influence on increasing prescribing efficiency than single measures apart from potentially "enforcement." There are also appreciable differences in expenditure (€/1000 inhabitants/year) between countries. Countries that have not introduced multiple demand side measures to counteract commercial pressures to enhance the prescribing of generics have seen considerably higher expenditures than those that have instigated a range of measures. Conclusions: There are considerable opportunities for European countries to enhance their prescribing efficiency, with countries already learning from each other. The 4E methodology allows European countries to concisely capture the range of current demand-side measures and plan for the future knowing that initiatives can be additive to further enhance their prescribing efficiency.

PMID:

21833180
[PubMed]

93. Quality and completeness of utilisation data on biological agents across European countries: tumour necrosis factor alpha inhibitors as a case study.

[Hoebert JM](#), [Mantel-Teeuwisse AK](#), [van Dijk L](#), [Laing RO](#), [Leufkens HG](#).

Source

Division of Pharmacoepidemiology and Clinical Pharmacology, Utrecht Institute for Pharmaceutical Sciences, Utrecht University, Utrecht, The Netherlands.

Abstract

PURPOSE:

For optimal decision making on access to and regulations around biologicals availability of national utilisation data is a prerequisite. This study characterises the main categories of critical issues in collecting available national utilisation data on tumour necrosis factor alpha (TNFalpha) inhibitors in different European countries.

METHODS:

Data were collected on characteristics of the nature of TNFalpha usage data and on usage of TNFalpha itself (2003-2007). Utilisation rates were expressed as defined daily doses (DDDs)/1000 inhabitants/day. Data from Denmark, Finland, Ireland, the Netherlands, Norway and Portugal were included.

RESULTS:

Characteristics of TNFalpha (usage settings and ways of distribution to patients) and databases (type of data collected, public availability and data sources) influenced the way data were collected and determined the type of research and policy questions that can validly be addressed. The prevailing differences in the structure of national databases are prohibitive for critical aspects of medicines utilisation studies. An increase in TNFalpha usage over time was observed in all countries and varied widely from 0.32 (Portugal) to 1.89 (Norway) DDDs/1000 inhabitants/day (2007).

CONCLUSIONS:

In the European countries studied data on national TNFalpha usage is not easily, if at all accessible. Intercountry collaboration and sharing of technical resources will facilitate harmonisation of data collection allowing independent, population based, health and outcomes research.

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PMID:

21351308

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94. Consumption of three most widely used analgesics in six European countries.

[Hudec R](#), [Božeková L](#), [Tisoňová J](#).

Source

Department of Pharmacology and Clinical Pharmacology, Faculty of Medicine, Comenius University, Bratislava, Slovakia.

Abstract

What is known and Objective: Analgesics are among the most widely used drugs and there is wide intercountry variability in the rates of consumption of different analgesics. Our objective is to determine and compare patterns of analgesic consumption in the Slovak Republic and a number of other European countries. **Methods:** We undertook a drug utilization study using WHO ATC/defined daily doses (DDD) methodology. Wholesale analgesic data collected by the Slovak State Institute for Drug Control were used. Utilization was calculated as DDD per 1000 inhabitants per day. Comparison with wholesale data from Czech Republic, Estonia, Finland, Norway and Denmark, published on the Internet, was made. **Results and Discussion:** Paracetamol/acetaminophen consumption varied only a little in Slovak Republic and Czech Republic, whereas consumption in Nordic countries was significantly higher ($P < 0.05$) and in Estonia significantly lower. Ibuprofen consumption was significantly higher in Czech Republic and Finland. Significantly lower consumption was in Norway. The lowest consumption of ASA/aspirin was in Denmark and in Norway. The highest consumption was in Finland. **What is new and Conclusion:** Effective therapy needs good prescribing and well-informed prescribers and patients. Our study highlights wide differences in analgesic consumption even among similar European countries. The basis of these differences and their potential clinical impact require further investigation.

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PMID:

21466569

95. Use of ziprasidone in patients with schizophrenia in four European countries.

[Montes JM](#).

Source

Hospital del Sureste, Arganda del Rey, Spain. j_m_montes@hotmail.com

Abstract

PURPOSE:

To characterise patients with schizophrenia from four European countries treated with ziprasidone, and to compare these with patients treated with other second generation antipsychotics (SGAs) included in this survey.

METHOD:

A randomly selected, representative sample of psychiatrists (N = 744), from Germany, Greece, Italy and Spain, collected data on the five last patients with schizophrenia they had seen in consultation (N = 3996), including up to two patients treated with ziprasidone (N = 1096).

RESULTS:

Ziprasidone was most frequently prescribed to patients requiring a switch from another antipsychotic. Compared to other surveyed SGAs, ziprasidone was more likely to be prescribed to women than to men (OR: 1.52), to patients with mild disease than to those with severe disease (OR: 1.94) and to outpatients than to inpatients (1.30). The most frequently cited reasons for prescribing ziprasidone were good tolerability and efficacy against positive and negative symptoms. Compared to other SGAs included in this survey, it was more likely to be prescribed due to the low risk of weight gain, metabolic syndrome and extrapyramidal symptoms.

CONCLUSION:

Patients treated by ziprasidone more frequently belong to subgroups composed of more autonomous patients and those with mild to moderate disease severity.

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PMID:

21440221

96. Comparison of anti-diabetic drug prescribing in children and adolescents in seven European countries.

[Neubert A](#), [Hsia Y](#), [de Jong-van den Berg LT](#), [Janhsen K](#), [Glaeske G](#), [Furu K](#), [Kieler H](#), [Nørgaard M](#), [Clavenna A](#), [Wong IC](#).

Source

Centre for Paediatric Pharmacy Research, The School of Pharmacy, University of London and The Institute of Child Health, University College London, London, UK Department of Paediatric and Adolescent Medicine, University Hospital Erlangen-Nuremberg, Erlangen, Germany Unit Pharmacoepidemiology and Pharmacoconomics, Department of Pharmacy, University of Groningen, Groningen, The Netherlands Centre for Social Policy Research (ZeS), University of Bremen, Bremen, Germany LWL University Hospital, Ruhr-University Bochum, Bochum, Germany Department of Pharmacoepidemiology, Norwegian Institute of Public Health and Department of Pharmacy, University of Tromsø, Tromsø, Norway Centre for Pharmacoepidemiology (CPE), Karolinska Institute, Stockholm, Sweden Department of Clinical Epidemiology, Institute of Clinical Medicine, Aarhus University Hospital, Aarhus, Denmark Laboratory for Mother and Child Health, Department of Public Health 'Mario Negri' Institute for Pharmacological Research, Milan, Italy Department of Pharmacology and Pharmacy, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong, China.

Abstract

WHAT IS ALREADY KNOWN ABOUT THIS SUBJECT • The incidence of both type 1 and type 2 diabetes is rising among children and adolescents. • Data on the prevalence of type 1 and type 2 diabetes are limited. • Routine clinical databases can be used to study the prevalence and epidemiology of treatment, depending on the completeness of data capture and their representativeness of the whole population. WHAT THIS STUDY ADDS • The prevalence of insulin prescribing appears to vary among countries, being highest in Sweden (3.5 per 1000 population) and lowest in Italy (1.1 per 1000 population). • The prevalence of oral anti-diabetic prescribing ranges from 0.08 per 1000 population in Sweden and Germany to 0.21 per 1000 population in the UK; however, the total number of patients receiving oral anti-diabetics is low. • It is possible to use the same study protocol across clinical databases in Europe to study the prevalence of type 1 diabetes in children. • Routine clinical databases can identify the prevalence of type 1 diabetes prescribing and could be used to study the secular changes in disease prevalence in children. AIMS The aim of this study was to compare the prevalence of diabetes in children across seven European countries, when using prescribing of anti-diabetics as a proxy for diabetes. A secondary aim was to assess the potential for collaboration between countries using different databases in diabetes research. METHODS Data were obtained from population-based clinical databases in seven European countries. The study population comprised children aged 0-18 years. Prescriptions were categorized using the Anatomic Therapeutic Chemical (ATC) classification. The one-year user prevalence in 2008 was calculated for each country and stratified by age and sex. RESULTS We studied a total of 5.8 million children and adolescents. The prevalence of insulin prescribing varied between 1.1 and 3.5 per 1000 population, being highest in Sweden and lowest in Italy. In all countries, novel insulin analogues were the most commonly used insulins. The prevalence of oral anti-diabetic prescribing ranged from 0.08 per 1000 individuals in Sweden and Germany to 0.21 per 1000 population in the UK. Overall, the absolute number of oral anti-diabetic users was very low. CONCLUSION This study shows that there is a varying frequency of type 1 diabetes in children and adolescents across Europe. We also demonstrated that it is possible to obtain similar information from different clinical databases within Europe, which would allow continuous monitoring of type 1 diabetes. Owing to the lack of indications in most of the databases, this approach is less suitable for type 2 diabetes.

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PMID:

21689139

97. Consumption of serum lipid-reducing drugs in Serbia compared with Scandinavian countries: a population-based study, 2004-2008.

[Sabo A](#), [Tomić Z](#), [Stilinović N](#), [Milijašević B](#), [Mikov M](#), [Vukmirović S](#), [Horvat O](#).

Source

Department of Pharmacology, Toxicology and Clinical Pharmacology, Faculty of Medicine Novi Sad, Serbia.

Abstract

PURPOSE:

The aim of this study was to measure the consumption of serum lipid reducing drugs in Serbia from 2004 to 2008, to compare this data with that from Scandinavian countries, and to compare the consumption of lipid lowering drugs and the rate of mortality from cardiovascular diseases in these countries.

METHODS:

A population-based study was undertaken to analyse lipid lowering drug consumption using the Anatomical Therapeutic Chemical/Defined Daily Dose methodology. Cause-specific mortality rates were obtained from the WHOSIS annual report for the year 2009.

RESULTS:

In 2008, a total of 1207.44 DDD/1000 inh/day of all drugs, was used in Serbia, of which 38.89% belonged to drugs for cardiovascular diseases. While in Scandinavian countries 17.03-24.80% of drugs for cardiovascular diseases belonged to lipid-lowering drugs, in Serbia it was substantially lower (3%). In 2004 in Serbia, 1.50 DDD/1000 inh/day of statins were used. In 2008, this value was 14.24 DDD/1000 inh/day. In every investigated country, simvastatin made up more than 50% of the consumption of statins. After simvastatin, the next most frequently used statin was atorvastatin, with 5.52, 11.00, 11.17 and 24.82 DDD/1000 inh/day, in Serbia, Denmark, Finland and Norway, respectively. In 2004 Serbia has the highest mortality rate for cardiovascular diseases among investigated countries with 762/100.000 inhabitants and Norway has the lowest rate with 158/100.000 inhabitants.

CONCLUSION:

The use of lipid lowering drugs is 6-8 times lower in Serbia than in Scandinavian countries but there is an evident rise in lipid lowering drugs consumption in Serbia during years.

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PMID:

20938914

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98. Influence of demand-side measures to enhance renin-angiotensin prescribing efficiency in Europe: implications for the future.

[Vončina L](#), [Strizrep T](#), [Godman B](#), [Bennie M](#), [Bishop I](#), [Campbell S](#), [Vlahović-Palčevski V](#), [Gustafsson LL](#).

Source

Croatian Institute for Health Insurance, Margaretska 3, Zagreb, Croatia.

Abstract

European countries strive to enhance prescribing efficiency. This includes renin-angiotensin drugs following the availability of generic angiotensin-converting enzyme inhibitors (ACEIs).

AIMS:

To compare angiotensin receptor blocker utilization and expenditure patterns in Austria and Croatia following prescribing restrictions, as well as with other European countries introducing different supply- and demand-side measures. Lastly, to appraise the impact of generic losartan in Croatia on utilization of patented angiotensin receptor blockers.

METHOD:

Observational retrospective study principally between 2001 and 2007, using defined daily doses and €/1000 inhabitants/year. Demand-side measures were based on the four 'E's - education, engineering, economics and enforcement.

RESULTS:

Greater intensity of follow-up of prescribing restrictions in Croatia enhanced utilization of ACEIs versus Austria. There was high utilization of ACEIs in Scotland following intensive demand-side measures, similar to Austria and Croatia. Demand-side measures in Spain (Catalonia) and Sweden also appeared to moderate angiotensin receptor blockers utilization. The combination of measures helped stabilize expenditure on renin-angiotensin drugs when adjusted for population sizes despite appreciable increases in volumes. The only exception was Portugal, with less intensive measures.

CONCLUSION:

Multiple and intensive demand-side measures enhanced prescribing efficiency. The more intense follow-up of ARB prescribing restrictions in Croatia had a greater influence on subsequent utilization patterns than Austria. Both findings confirm earlier studies. Reforms also favorably enhanced the prescribing of generic losartan once available.

PMID:

21831028

99. Use of ADHD drugs in the Nordic countries: a population-based comparison study.

[Zoëga H](#), [Furu K](#), [Halldórsson M](#), [Thomsen PH](#), [Sourander A](#), [Martikainen JE](#).

Source

Centre of Public Health Sciences, University of Iceland, Reykjavík, Iceland. hez2@hi.is

Abstract

OBJECTIVE:

To compare national use of attention-deficit/hyperactivity disorder (ADHD) drugs between five Nordic countries.

METHOD:

A population-based drug utilisation study based on nationwide prescription databases, covering in total 24 919 145 individuals in 2007. ADHD drugs defined according to the World Health Organization Anatomic Therapeutic Chemical classification system as centrally acting sympathomimetics (N06BA). Results: The 2007 prevalence of ADHD drug use among the total Nordic population was 2.76 per 1000 inhabitants, varying from 1.23 per 1000 in Finland to 12.46 per 1000 in Iceland. Adjusting for age, Icelanders were nearly five times more likely than Swedes to have used ADHD drugs (Prev.Ratio = 4.53, 95% CI: 4.38-4.69). Prevalence among boys (age 7-15) was fourfold the prevalence among girls (Prev.Ratio = 4.28, 95% CI: 3.70-4.96). The gender ratio was diminished among adults (age 21 +) (Prev.Ratio = 1.24, CI: 1.21-1.27).

CONCLUSION:

A considerable national variation in use of ADHD drugs exists between the Nordic countries.

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PMID:

20860726

100. Determinants of patient-reported medication errors: a comparison among seven countries.

[Lu CY](#), [Roughead E](#).

Source

Department of Population Medicine, Harvard Medical School and Harvard Pilgrim Health Care Institute, Boston, MA, USA. christine_lu@harvardpilgrim.org

Abstract

OBJECTIVE:

Medication errors are a frequent cause of adverse drug events and a major concern for patient safety. This study compared the predictors of error among seven countries (Australia, Canada, New Zealand, the United Kingdom, the United States, Germany and the Netherlands).

METHODS:

We conducted a cross-sectional study using the 2007 Commonwealth Fund International Health Policy Survey data. The outcome was patient-reported error in the past 2 years. Possible predictors were studied using logistic regression.

RESULTS:

Eleven thousand nine hundred and ten respondents were included in this analysis, of which 1291 respondents (11%) had experienced error. Poor coordination of care was a shared concern of all seven countries [adjusted odds ratios (ORs) ranged from 2.1 (95% CI: 1.3-3.5) to 3.0 (95% CI: 2.1-4.5)]. Cost-related barriers to medical services/medicines was also a predictor in six countries [ORs ranged from 1.9 (95% CI: 1.5-2.6) to 2.6 (95% CI: 1.5-4.6)]. Other common risk factors across countries included seeing multiple specialists, multiple chronic conditions, hospitalisation and multiple emergency room visits. Cross-country heterogeneity in contributing factors included age and specific chronic condition. Number of medications, number of doctor visits, household income and education level were not associated with error in most countries.

CONCLUSION:

Poor coordination of care is a key risk factor in all seven countries. Cost-related barriers were also associated with an increased likelihood of error. The major challenge for all countries for error prevention is better communication among multiple healthcare providers and more structured organisation of care across healthcare settings.

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PMID:

21470350