Interactive training on how to apply the ATC and DDD systems for drug utilization studies

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DURU

Website:
https://www.who.int/publications/i/item/8280820396

Introduction to drug utilization research

1 January 2003 | Publication

Download (1.4 MB)

Overview

The ultimate goal of drug utilization research must be to assess whether drug therapy is rational or not. History has taught us that successful research in drug utilization requires multidisciplinary collaboration between clinicians, clinical pharmacologists, pharmacists and epidemiologists. Without the support of the prescribers, this research effort will fail to reach its goal of facilitating the rational use of drugs.

Prepared by the WHO Collaborating Centre for Drug Statistics Methodology, the WHO Collaborating Centre for Drug Utilization Research and Clinical Pharmacological Services, and the International Working Group for Drug Statistics Methodology

Downloads

Korean

Russian

WHO TEAM

Access to Medicines and Health Products (MHP),
INN and Classification of Medical Products (INN),
Pharmacovigilance (PVG),
Regulation and Prequalification (RPQ),
Regulation and safety (REG), WHO Headquarters (HQ)

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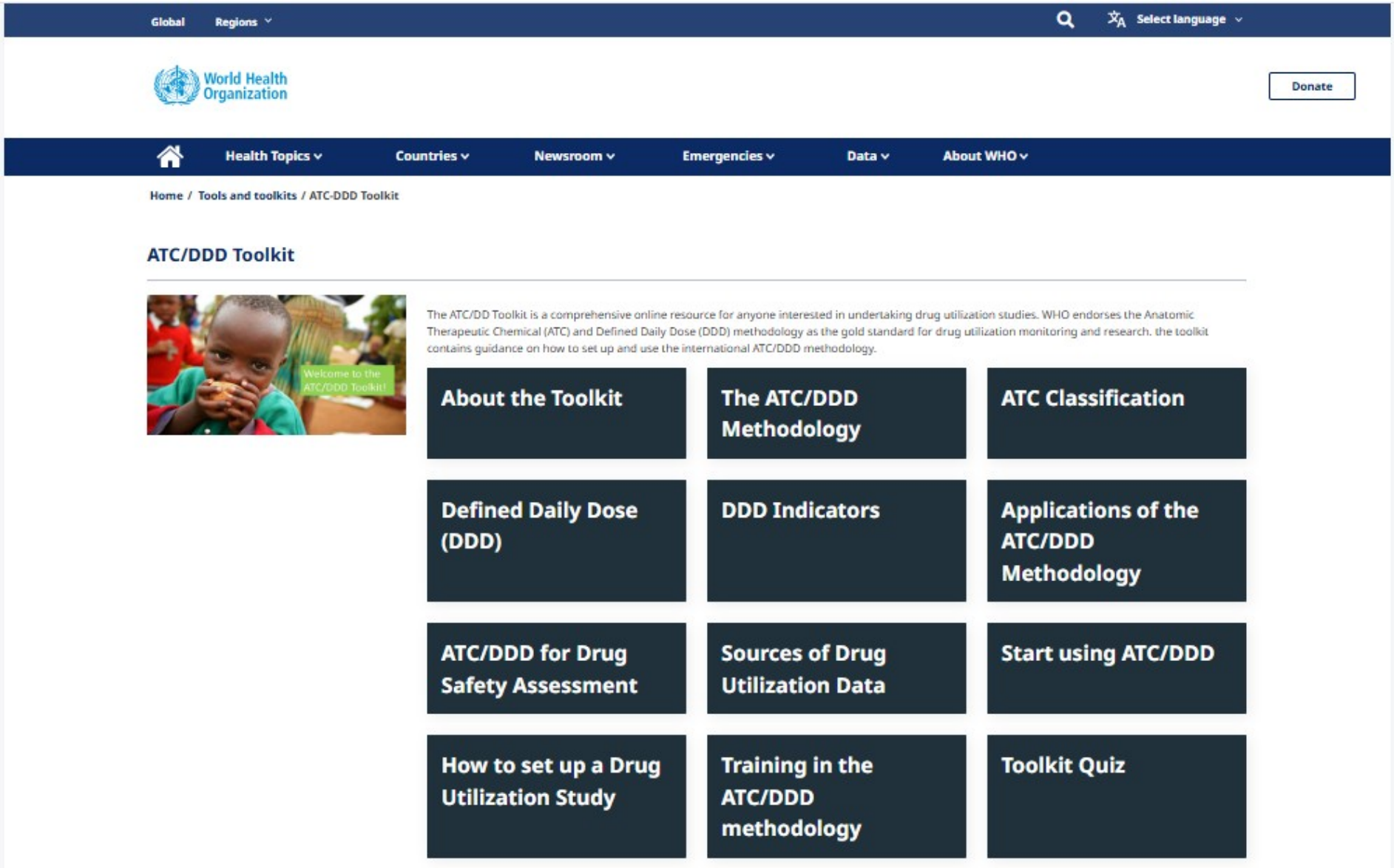
Website: https://www.who.int/tools/atc-ddd-toolkit



Toolkit content:

- The ATC/DDD methodology : Background and history of the ATC/DDD methodology, and responsible organizations
- ATC (Anatomical Therapeutic Chemical) classification : Structure and classification principles, challenges and changes in the classification
- DDD (Defined Daily Dose) : Definition, principles of DDD assignments, DDDs for single products, combinations, children, changes in DDDs, and the concept of the prescribed daily dose (PDD)
- DDD indicators : Common indicators for presenting drug utilization in DDDs
- Applications of the ATC/DDD methodology : Uses and misuses of the ATC/DDD methodology
- ATC/DDD for drug safety assessment : Use of ATC and DDD in the WHO Programme for International Drug Monitoring
- Sources of Drug Utilization data : Types of drug use, information available, and sources of data on drug utilization
- Start using ATC/DDD: First steps required to start using the ATC/DDD system in drug utilization monitoring and research, implementation of ATC/DDD system and how to request or change an ATC code and/or DDD
- How to set up a Drug Utilization study
- Training in the ATC/DDD methodology: More about the ATC/DDD methodology directly from the experts: Training courses organized by WHO Collaborating Centre for Drug Statistics Methodology

New online course soon

Example 1 (ATC)

(Source: https://www.chestercountyhospital.org/news/health-eliving-blog/2021/june/10-possible-causes-of-your-migraines)

Antimigraine prescribing in a private healthcare setting in South Africa during lockdown: A database study

Identify six concepts in the title?

Correct or not?

"All products in Anatomical Therapeutic Chemical (ATC) subgroup N02C (antimigraine preparations) must be extracted and analysed."

“Antimigraine”

- **Acute medicines (abortive)**

OTC pain medicine and combinations (ibuprofen, paracetamol, etc.)

- **Triptans**
  - Almotriptan
  - Eletriptan
  - Frovatriptan
  - Naratriptan
  - Rizatriptan
  - Sumatriptan
  - Zolmitriptan
- **Other acute migraine medicines**
- CGRP antagonists: Rimegepant, Ubrogepant, Zavegepant
- Ergots including: Dihydroergotamine, Ergotamine tartrate
- **Prednisone**
- **For nausea related to migraine:**

Chlorpromazine, Droperidol, Metoclopramide, Prochlorperazine

- **Preventative medicines**
  - Antihypertensives:
    - Beta-blockers (propranolol, timolol, metoprolol)
    - Calcium channel blockers (verapamil)
  - Antidepressants: amitriptyline, nortriptyline
  - Anti-epileptics: gabapentin, topiramate, valproic acid
  - CGRP inhibitors: Atogepant, eptinezumab, erenumab, fremanezumab, galcanumab, rimegepant, zavegepant
  - Botox

- **Supplements for migraine**
  - Non-traditional supplement treatments for migraine prevention, e.g. butterbur, coenzyme Q10, feverfew

- **Other treatments**
  - Mindfulness, relaxation therapy, yoga, etc.

N02C ANTIMIGRAINE PREPARATIONS

This group comprises preparations specifically used in the prophylaxis and treatment of migraine.
Analgesics, see N02A and N02B.
Beta blocking agents, see C07.
Antivertigo preparations, see N07.
Cyproheptadine, see R06A - Antihistamines for systemic use.
Tolfenamic acid, see M01AG - Fenamates.
Indometacin in combination with prochlorperazine and caffeine is classified in M01AB51 - Indometacin, combinations.
Botulinum toxin used in the prophylactic treatment of migraine is classified in M03AX01.

N NERVOUS SYSTEM
N02 ANALGESICS
N02C ANTIMIGRAINE PREPARATIONS
N02CC Selective serotonin (5HT1) agonists

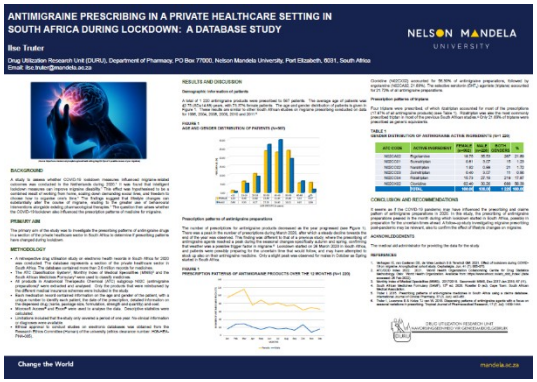
ATC code	Name	DDD	U	Adm.R	Note
N02CC01	sumatriptan	20	mg	N	
		50	mg	O	
		6	mg	P	
		25	mg	R	
N02CC02	naratriptan	2.5	mg	O	
N02CC03	zolmitriptan	2.5	mg	N	
		2.5	mg	O	
N02CC04	rizatriptan	10	mg	O	
N02CC05	almotriptan	12.5	mg	O	
N02CC06	eletriptan	40	mg	O	
N02CC07	frovatriptan	2.5	mg	O	
N02CC08	lasmiditan	0.1	g	O	
N02CC51	sumatriptan and naproxen				

(Source: https://www.chestercountyhospital.org/news/health-eliving-blog/2021/june/10-possible-causes-of-your-migraines)

Antimigraine prescribing in a private healthcare setting in South Africa during lockdown: A database study

"All products in Anatomical Therapeutic Chemical (ATC) subgroup N02C (antimigraine preparations) must be extracted and analysed."

Incorrect


ANTIMIGRAINE PRESCRIBING IN A PRIVATE HEALTHCARE SETTING IN SOUTH AFRICA DURING LOCKDOWN: A DATABASE STUDY

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BACKGROUND

PRIMARY AIM

METHODOLOGY

RESULTS AND DISCUSSION

Demographic information of patients

FIGURE 1
AGE AND GENDER DISTRIBUTION OF PATIENTS (n=507)

Prescription patterns of antimigraine preparations

FIGURE 2
PRESCRIPTION PATTERNS OF ANTIMIGRAINE PRODUCTS OVER THE 12 MONTHS (N=1 320)

Prescription patterns of triptans

TABLE 1
GENDER DISTRIBUTION OF ANTIMIGRAINE ACTIVE INGREDIENTS (N=1 320)

ATC CODE	ACTIVE INGREDIENT	FEMALE (claims)	MALE (claims)	ACTIVE (claims)	%
N02C800	Rizatriptan	14.70	18.33	397	27.46
N02C201	Sumatriptan	6.81	5.47	181	12.51
N02C202	Zolmitriptan	5.46	4.47	151	10.44
N02C203	Almotriptan	5.46	3.47	111	8.58
N02C204	Eletriptan	10.73	22.16	316	12.87
N02C205	Frovatriptan	62.42	70.29	420	26.29
		105.58	124.42	1 320	100.00

CONCLUSION AND RECOMMENDATIONS

ACKNOWLEDGEMENTS

REFERENCES

Change the World

mandela.ac.za

METHODOLOGY

- A retrospective drug utilisation study on electronic health records in South Africa for 2020 was conducted. The database represents a section of the private healthcare sector in South Africa. The database contained more than 2.6 million records for medicines.
- The ATC Classification System[2], Monthly Index of Medical Specialities (MIMS)[3] and the South African Medicines Formulary[4] were used to classify medicines.
- All products in Anatomical Therapeutic Chemical (ATC) subgroup N02C (antimigraine preparations)[2] were extracted and analysed. Only the products that were reimbursed by the different medical insurance schemes were included in the study.
- Each medication record contained information on the age and gender of the patient, with a unique number to identify each patient, the date of the prescription, detailed information on the dispensed drug (name, package size, formulation, strength and quantity) and cost.
- Microsoft Access® and Excel® were used to analyse the data. Descriptive statistics were calculated.
- Limitations included that the study only covered a period of one year. No clinical information or diagnoses were available.
- Ethical approval to conduct studies on electronic databases was obtained from the Research Ethics Committee (Human) of the university (ethics clearance number: H08-HEA-PHA-005).

Example 2 (DDD)

(Source: https://healthlifeandstuff.com/intuniv-for-adhd/)

Practical example on sales data

International Journal of Clinical Pharmacy (2019) 41:859–863
https://doi.org/10.1007/s11096-019-00865-9

SHORT RESEARCH REPORT

Check for updates

Consumption of methylphenidate and atomoxetine in the private healthcare sector in South Africa: a longitudinal study

Ashmitha Premchand Munasur-Naidoo[1] · Ilse Truter[2]

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© Springer Nature Switzerland AG 2019

Calculations

- ATC codes:
  - Methylphenidate: N06BA04
  - Atomoxetine: N06B09

  - DDDs:
    - Methylphenidate: 30 mg/day
    - Atomoxetine: 80 mg/day

- Number of DDDs/1000 inhabitants/*day* =

  (number of packages dispensed x number of doses (tablets or capsules) per package x number of milligram (mg) per dose 1000 inhabitants)

  (DDD in mg x number of inhabitants in South Africa per day)

- Calculated: Number of DDDs/1000 inhabitants/*month*

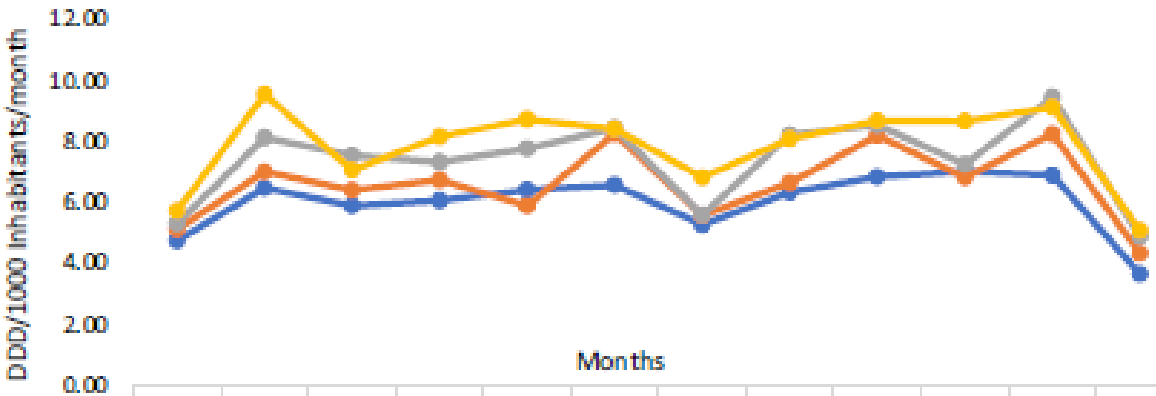
Results

Year	Population of South Africa	Population belonging to the private healthcare sector[a]	DDD/1000 Inhabitants/day (%) (n)	
			MPH	ATX
2013	52,980,000	9,006,600	6.01 (95.85%) n = 827,359	0.26 (4.15%) n = 55,897
2014	54,000,000	9,180,000	6.59 (95.80%) n = 920,920	0.29 (4.20%) n = 61,683
2015	54,960,000	9,343,200	7.36 (96.07%) n = 1,036,293	0.30 (3.93%) n = 65,292
2016	55,910,000	9,504,700	7.83 (96.40%) n = 1,126,558	0.29 (3.60%) n = 57,655

[a]17% of the South African population (the estimated population belonging to the private healthcare sector)

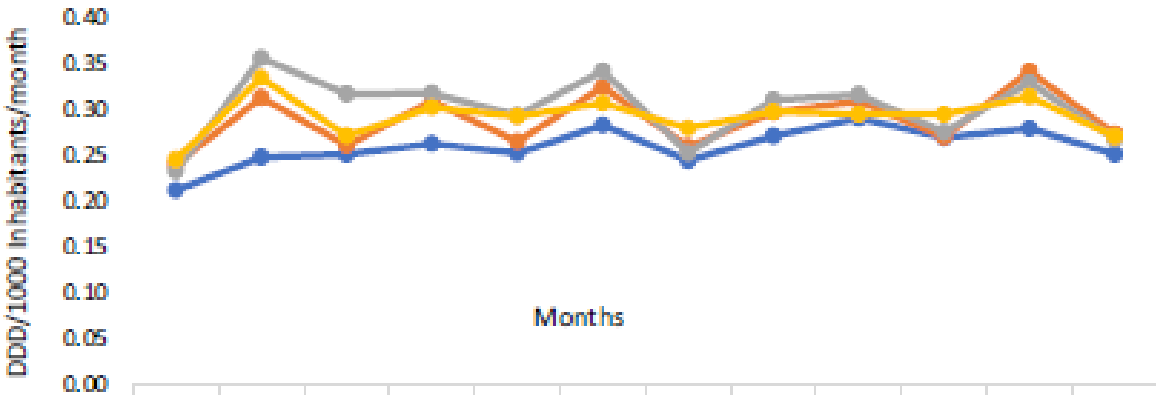
Drug consumption expressed as DDDs/1000 inhabitants/ month from 2013 to 2016

(a) MPH



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2013	4.75	6.48	5.89	6.07	6.42	6.57	5.28	6.34	6.85	7.03	6.91	3.65
2014	5.13	7.02	6.41	6.75	5.89	8.26	5.58	6.65	8.20	6.83	8.26	4.34
2015	5.32	8.13	7.55	7.33	7.78	8.45	5.59	8.22	8.54	7.26	9.46	4.89
2016	5.74	9.56	7.07	8.17	8.73	8.42	6.83	8.09	8.69	8.67	9.13	5.09

(b) ATX



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2013	0.21	0.25	0.25	0.26	0.25	0.28	0.24	0.27	0.29	0.27	0.28	0.25
2014	0.24	0.31	0.26	0.31	0.27	0.32	0.26	0.30	0.31	0.27	0.34	0.27
2015	0.23	0.36	0.32	0.32	0.29	0.34	0.25	0.31	0.32	0.28	0.33	0.27
2016	0.25	0.33	0.27	0.30	0.29	0.31	0.28	0.30	0.30	0.30	0.31	0.27

Conclusion

- Clear methodology very important
- Context of the study / local conventions
- Mention year study was conducted
- Comparative studies: Remember possible ATC and/or DDD changes/amendments over time

Further reading

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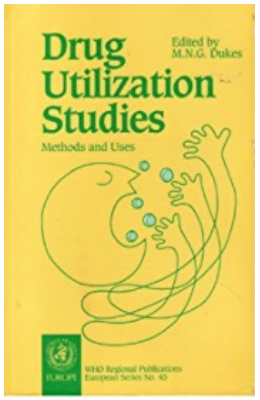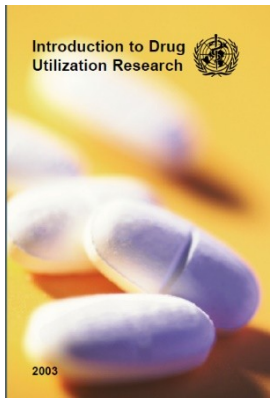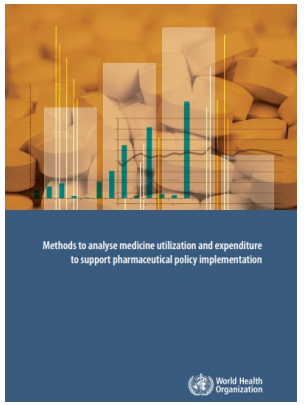
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