ANTIBIOTICS PRESCRIBING PRACTICES IN PRIMARY HEALTH CARE FACILITIES IN GABORONE, BOTSWANA

Mashalla Y, Massele A, Sepako E, Setlhare V, Kgatlwane J, Brian G

06/11/2017

Introduction

- WHO defines rational use of medicines as:

- ***"Patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, at the lowest cost to them and their community"***

- Irrational use of drugs is still a challenge more so in developing countries

Irrational use of medicines and effects

- **Irrational use:**
  - Polypharmacy
  - Inappropriate antibiotics prescriptions
  - Incorrect dosage
  - Injections vs oral
  - Prescription contravening good clinical practices
- **Consequences**
  - Increased rate of antimicrobial resistance (AMR)
  - Morbidity
  - Mortality
  - Costs

WHO & INRUD initiatives

- **Indicators for:**
  - Prescribing practices
  - Patient care indicators
  - Facility specific indicators
- **WHO Good practice:**
  - < 2 drugs/encounter
  - 100% prescription by INN
- **Practice average:**
- Increasing trend from 2.4 to 3.5
- 2.6 in Africa

Antibiotics prescribing trends

- Antibiotics prescribed for self-limiting conditions predominantly viral (URTI, diarrhoeas)
- About 50% antibiotics prescribed inappropriately
- High prescribing rates ranging between 22 and 58% reported in Africa

- **This is therefore concerning because AMR has been associated with antibiotics usage in communities**

Study objective

- Assess current drug prescribing practices in PHC facilities in Gaborone, South East and Kweneng districts

Methods

- **Design:**
  - Retrospective cross-sectional data collection from patient's records (January – December 2013)
- **Target site:**
  - Primary Health Care facilities
- **Sample size:**
  - All 20 clinics were included in the study
  - At least 30 prescriptions collected from each facility
  - Data from 19 clinics was collected and analysed using the WHO/DAP (1993) indicator guidelines

Data collection and analysis

- Data was collected by trained RAs under supervision
- Crude prescribing rates were assessed against WHO/ INRUD criteria
- Quality of antibiotic prescribing were assessed against the Botswana Essential Drug List, Botswana Treatment Guidelines 2012 and EU recommendations

Quality against EU recommendations

- Utilisation of penicillin (J01C) as % of total antibiotic use
- Utilisation of combination penicillin (e.g. co-amoxiclav) as % of total amoxicillin use
- Utilisation of 3rd and 4th generation cephalosporins versus 1st and 2nd generation cephalosporins
- Utilisation of fluoroquinolones (J01MA) as % of total antibiotic use

Ethical consideration

- Ethical clearance: UB – IRB (Ref. URB/IRB/1506)
- Permit: Ministry of Health and Wellness (Ref. PME.13/18/87)
- Access to health facilities: DHMT Ref: GGDHMT/14/2/i dated 28th November 2014
- The identity of the clinics were protected by keeping them anonymous and assigned coded numbers.

Results

- Data was collected from 19 clinics
- Total prescriptions were 570
- 550 prescriptions were analysed
- 20 were excluded
  - 7 were attending ANC
  - 6 visited for counselling
  - 7 visited for HIV testing

Prescribing practices against documented indicators

Prescription practices	**N**	%
Total number of prescriptions analysed	550	
Total number of drugs prescribed	1551	
Average drugs/prescription	2.8	
Prescriptions with generic (INN) names	1219	78.6
Total antibiotics encounters	235	42.7
Medicines from EDL	1490	96.1

Prescriptions with antibiotics

- 235 patient encounters
- 306 antibiotics prescribed
  - 17 were topical applications (13 Chloramphenicol ointments, 3 Tetracycline ointments and one gentamicin ointment prescription).
- Systemic antibiotics (J01) were the most commonly prescribed
- 45.4% were beta-lactam antibiotics (J01C)
- Amoxicillin was commonly prescribed (28.4%) followed by metronidazole (14.4%)

Prescribed antibiotics

- 235 patient encounters
- 306 antibiotics prescribed
  - 17 were topical applications (13 Chloramphenicol ointments, 3 Tetracycline ointments and one gentamicin ointment prescription).
- Systemic antibiotics (J01) were most prescribed
- Beta-lactam (J01C) accounted for 45.4%
- Amoxicillin accounted for 28.4%
- 14.4% were Metronidazole
- Cotrimoxazole (sulphamethoxazole + tromethropim) 9.2%
- 3rd generation cephalosporin (ceftriaxone) 9.8%
- Macrolides (erythromycin) 6.2%
- No fluoroquinolones (J01MA) were prescribed.

Antibiotics prescribed

Antibiotic	ATC classification	N	%
Amoxicillin	J01CA04	87	28.4
Ampicillin	J01CA01	3	1.0
Augmentin	J01CR02	1	0.3
Bactrim (Cotrimoxazole)	J01EE01	28	9.2
Benzathine Penicillin (Retarpen)	J01CE08	13	4.2
Ceftriaxone	J01DD54	30	9.8
Chloramphenicol caps	S01A01	3	1.0
Chloramphenicol ointment	S01AA01	13	4.2
Cloxacillin	J01CF02	21	6.9
Doxycycline	J01AA02	23	7.5
Erythromycin	J01FA01	19	6.2
Gentamicin	J01GB03	2	0.7
Metronidazole(Imidazole derivative)	J01XD01	44	14.4
Nitrofurantoin (Nitrofuran derivative)	J01XE	1	0.3
Penicillin V	J01CE02	13	4.2
Tetracycline ointment	S01AA	3	1.0
Crystalline Penicillin	J01CE01	1	0.3
Gentamicin ointment	SO1AA	1	0.3
Total		306	100

Indications for antibiotic prescriptions

- Most diagnoses based on signs and symptoms
  - 69 diagnoses had antibiotic prescribed
- 60 prescriptions compliant with ICD (2017)
- Diarrhoea was commonest indication for antibiotic
- 9 prescriptions were non-specific
- Cough, vaginal discharge and sexually transmitted infections were most commonly indicated for antibiotic prescriptions in that order

Indications for more than one antibiotic per prescription

Amoxicillin				Metronidazole				Cough	Chest pain	
Amoxicillin	Gentamicin			Ear sores		Ear drops				
Amoxicillin	Metronidazole			Agsoris?	Headache					
Amoxicillin	Metronidazole	Retarpen		Pharyngitis	Swollen jaw					
Amoxicillin	Cotrimoxazole			Post SMC wound						
Amoxicillin	Cotrimoxazole			Cough	Eye watering					
Amoxicillin	Metronidazole			Abscess						
Amoxicillin	Ceftriaxone			VDS						
Amoxicillin	Metronidazole			Dental caries						
Augmentin	Doxycycline			Pelvic pain	Pleaural thickening					
Benzathine Penicillin	Doxycline	Metronidazone	Ceftriazone	VDS contact						
Benzathine Penicillin	Ceftriazone			GOD						
Benzathine Penicillin	Penicillin V			Tonsilitis						
Benzathine Penicillin	Amoxicillin			Sputum						
Benzathine Penicillin	Amoxicillin			NIL						
Benzathine Penicillin	Amoxiclin			Bacterial exudate						
Ceftriaxone	Metronidazole	Doxycycline		VDS						
Ceftriaxone	Doxycycline	Metronidazole		PV discharge						
Ceftriaxone	Doxycyclin	Metronidazole		VDS						
Ceftriaxone	Doxycycline	Metronidazole		Penile rash						
Ceftriaxone	Metronidazole			Abdominal pain						
Ceftriaxone	Doxycycline			Urethral discharge						
Ceftriaxone	Doxycycline	Metronidazole		Pelvic pain	Vaginal discharge					
Ceftriaxone	Doxycycline	Metronidazole		PV discharge						
Ceftriaxone	Doxycycline	Metronidazole		STI discharge						
Ceftriaxone	Erythromycin			VDS	Gynaecological pelvis					
Ceftriaxone	Doxycycline	Metronidazole		VDS	VRT					
Ceftriaxone	Cotrimoxazole	Metronidazole	Doxycycline	PV discharge						
Ceftriaxone	Metronidazole	Erythromycin		Pregnant masses						
Ceftriaxone	Erythomicin	Metronidazole	Cotrimoxazole	PV discharge	Dysuria					
Ceftriaxone	Doxycycline			Urethral discharge						
Cloxacillin	Bactrim			Abscess						
Cotrimoxazole	Ceftriaxone	Doxycycline	Metronidazole	PID						
Doxycycline	Cefriaxone			Orchitis						
Doxycycline	Metronidazole			STI contact						
Doxycycline	Metronidazole			STI contact						
Doxycycline	Ceftriaxone	Metronidazole		Vaginal discharge						
Gentamicin	Chloramphenicol			Dolpocrocystitis	Chest pain					
Metronidazole	Ceftriazone	Erythromicin		Vaginal discharge						
Metronidazole	Ceftriazone	Doxycycline		PVD						
Metronidazole	Cotrimoxazole			Abscess	Scapular wound	Cold				
Metronidazole	Doxycycline	Ceftriaxone		Pelvic pain	Ovarian cyst					
Metronidazole	Doxycycline			MDS	PV discharge					
Metronidazole	Erythromycin			Genital warts	Cold					
Penicillin V	Cotrimoxazole			Tonsilitis						
	45	18	4							

Indications for more than one antibiotic per prescription

- Out of the 235 antibiotic encounters:
  - 45 prescriptions (19.1%) had two antibiotics
  - 18 (7.7%) had three antibiotics
  - 4 (1.7%) had four antibiotics per prescription
- Doxycycline was most antibiotic combined followed by metronidazole and ceftriaxone respectively
- Combination was common in STIs (vaginal and urethral discharge, pelvic inflammatory diseases)

Discussion: Key findings

- Good practices in Botswana:
  - 96.1% of medicines prescribed compliant with Botswana EDL
  - 78.6% of prescriptions in INN name suggests good practice
  - Most indications for antibiotic (87%) were based on signs and symptoms, compliant with ICD (2017) codes

Discussion: Key findings

- Concerns:
  - Average medicines/prescription 2.8 > 2.0 WHO recommendation
  - 42.7% of encounters contained an antibiotic prescription, higher than < 30% recommended by WHO
  - Prescription of antibiotics where no diagnosis is shown
  - Antibiotics prescribed on non-indicated conditions

Over prescription of antibiotics

- **Factors:**
  - Inadequate human resources
  - Inadequate training (basic and In-service)
  - Patient demand

- Availability of medicines

Recommendations: Prescribers

- In-service training on:
- Use of treatment guidelines
- Classification of diseases (ICD) and adopt at PHCs
- INN prescribing
- History taking
- Diagnosis recording
- Pharmacists should promote ration drugs use

Recommendations: Government

- Design harmonised tool that will contain quality indicators for monitoring antibiotic prescribing
- Multi-sectoral antibiotics campaign programmes be introduced and implemented

Recommendation: Training & research institutions

- Further research to include rural and urban areas
- Adopt findings

Limitations

- Small study in Gaborone (urban)


Thank
You
Merci
Gracias
Ke a leboga
TapadhLeat
Köszönöm
Murakoze
aDank
BarakAllahuFiik
Grazzi
Grazie
Buznyg
WaadMahadsantahay
ThintKo
Takk
Mèsi
Chokrane
Kiitos
Blagodaram
Rahmat
Dhanyavaad
Xièxie
Dziakuju
Mauruuru
Matondo
TerimaKasih
Aabhar
Barkal
GratiasAgimus
Mercé
Taiku
Tanemirt
Tenki
Chnorakaloutioun
TänanVäga
Ačiū
Motashakkeram
Dankie
Dakujem
Spacibo
Danke
Gratzias
Tak
Sagolun
GratiasAgo
Grandmercé
Gràcies
NajisTuke
Hvala
Arigatô
KhobChaiDeu
Gracie
KopKhunKha
Faleminderit
Efharisto
Matondo
Mercé
CámOn
Obrigado
Nirringrazzjak
Bayarlalaa
Salamat
Saha
Multumesc