

## Supplementary File

Table S1. WHO ATC classification, AWaRe category, oral and parenteral Defined Daily Doses (DDDs).

Antibiotic Chemical Subgroup	ATC code	Antibiotic Type	AWaRe Category	DDDs	
				Oral g	Parenteral g
Intestinal antibiotics	A07AA11	Rifaximin	Watch	0.6	-
Tetracyclines	J01AA02	Doxycycline	Access	0.1	0.1
Penicillins with extended spectrum	J01CA04	Amoxicillin	Access	1.5	3
Combinations of penicillins*	J01CR02	Amoxicillin and clavulanic acid	Access	1.5	3
Second-generation cephalosporins	J01DC02	Cefuroxime	Watch	0.5	3
Third-generation cephalosporins	J01DD01	Cefotaxime	Watch	-	4
	J01DD02	Ceftazidime	Watch	-	4
	J01DD04	Ceftriaxone	Watch	-	2
	J01DD08	Cefixime	Watch	0.4	-
	J01DD13	Cefpodoxime	Watch	0.4	-
	J01DD64	Cefpodoxime proxetil and clavulanic acid	Not recommended	0.4	-
Monobactams	J01DF01	Aztreonam	Reserve	-	4
Macrolides	J01FA10	Azithromycin	Watch	-	0.5
Aminoglycosides	J01GB03	Gentamicin	Access	-	0.24
Fluoroquinolones	J01MA01	Ofloxacin	Watch	0.4	0.4
	J01MA02	Ciprofloxacin	Watch	1	0.8
	J01MA06	Norfloxacin	Watch	0.8	-
	J01MA12	Levofloxacin	Watch	0.5	0.5
Combinations of antibacterials	J01RA09	Ofloxacin and ornidazole	Not recommended	2 UD=2 tabs	-
	J01RA13	Norfloxacin and tinidazole	Unclassified	2 UD=2 tabs	-
	J01RAXX	Cefixime and azithromycin	Not recommended	2 UD=2 tabs	-
Glycopeptide antibacterials	J01XA01	Vancomycin	Watch	-	2
Imidazole/Nitroimidazole derivatives	J01XD01/P01AB01	Metronidazole	Access	2	1.5
Nitrofuran derivatives	J01XE01	Nitrofurantoin	Access	0.2	-

\*including  $\beta$ -lactamase inhibitors

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Table S2. Distribution of patient reported antibiotic use before outpatient visit across age groups in years, according to the WHO AWaRe classification by encounters and percentage.

AWaRe Category	<5 (n=17)		5-17 (n=8)		18-34 (n=36)		35-49 (n=13)		50-65 (n=9)		Total (n=83)	
	n	%	n	%	n	%	n	%	n	%	n	%
Access	5.0	29.4%	4.0	50.0%	7.0	19.4%	3.0	23.1%	2.0	22.2%	21.0	25.3%
Watch	10.0	58.8%	4.0	50.0%	29.0	80.6%	10.0	76.9%	7.0	77.8%	60.0	72.3%
Reserve	-	-	-	-	-	-	-	-	-	-	-	-
Not recommended	2.0	11.8%	-	-	-	-	-	-	-	-	2.0	2.4%
Unclassified	-	-	-	-	-	-	-	-	-	-	-	-
Total	17.0		8.0		36.0		13.0		9.0		83.0	100.0%

Table S3. Distribution of patient reported antibiotic prescription during outpatient visit across age groups in years, according to the WHO AWaRe classification by encounters and percentage.

AWaRe Category	<5 (n=38)		5-17 (n=64)		18-34 (n=134)		35-49 (n=49)		50-65 (n=28)		Total (n=313)	
	n	%	n	%	n	%	n	%	n	%	n	%
Access	9.0	23.7%	27.0	42.2%	66.0	49.3%	25.0	51.0%	15.0	53.6%	142.0	45.4%
Watch	28.0	73.7%	37.0	57.8%	64.0	47.8%	24.0	49.0%	12.0	42.9%	165.0	52.7%
Reserve	-	-	-	-	1.0	0.7%	-	-	-	-	1.0	0.3%
Not recommended	1.0	2.6%	-	-	2.0	1.5%	-	-	1.0	3.6%	4.0	1.3%
Unclassified	-	-	-	-	1.0	0.7%	-	-	-	-	1.0	0.3%
Total	38.0		64.0		134.0		49.0		28.0		313.0	100.0%

Table S4. Distribution of patient reported antibiotic use after outpatient visit across age groups in years, according to the WHO AWaRe classification by encounters and percentage.

AWaRe Category	<5 (n=11)		5-17 (n=27)		18-34 (n=36)		35-49 (n=13)		50-65 (n=2)		Total (n=89)	
	n	(%)	n	%	n	%	n	%	n	%	n	%
Access	2.0	18.2%	13.0	48.1%	10.0	27.8%	4.0	30.8%	-	-	29.0	32.6%
Watch	9.0	81.8%	13.0	48.1%	25.0	69.4%	8.0	61.5%	2.0	100.0%	57.0	64.0%
Reserve	-	-	-	-	-	-	-	-	-	-	-	-
Not recommended	-	-	-	-	-	-	-	-	-	-	-	-
Unclassified	-	-	1.0	3.7%	1.0	2.8%	1.0	7.7%	-	-	3.0	3.4%
Total	11.0		27.0		36.0		13.0		2.0		89.0	100.0%

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Table S5. Distribution of patient reported antibiotic use before outpatient visit by age groups in years and WHO ATC class in Defined Daily Doses (DDD).

Antibiotic Chemical Subgroup	Antibiotic Type	<5 (n=17)		5-17 (n=8)		18-34 (n=36)		35-49 (n=13)		50-65 (n=9)		Total (n=83)	
		DDD	%	DDD	%	DDD	%	DDD	%	DDD	%	DDD	%
Intestinal antibiotics	Rifaximin	-	-	-	-	-	-	-	-	-	-	-	-
Tetracyclines	Doxycycline	-	-	-	-	18.0	13.6%	8.0	22.1%	2.0	8.2%	28.0	12.0%
Penicillins with extended spectrum	Amoxycillin	1.9	8.5%	-	-	5.0	3.8%	2.5	6.9%	2.0	8.2%	11.4	4.9%
Combinations of penicillins*	Amoxycillin and clavulanic acid	1.7	7.5%	7.2	35.9%	5.1	3.8%	0.8	2.3%	-	-	14.8	6.3%
Second-generation cephalosporins	Cefuroxime	-	-	-	-	1.6	1.2%	-	-	-	-	1.6	0.7%
Third-generation cephalosporin	Cefotaxime	-	-	-	-	-	-	0.5	1.4%	0.5	-	0.5	0.2%
	Ceftazidime	-	-	-	-	-	-	-	-	-	-	-	-
	Ceftriaxone	-	-	5.3	26.4%	-	-	-	-	-	-	5.3	2.2%
	Cefixime	0.5	2.2%	1.0	5.0%	27.0	20.4%	4.0	11.0%	3.0	12.4%	35.5	15.2%
	Cefpodoxime	3.3	14.4%	-	-	8.0	6.1%	-	-	-	-	11.3	4.8%
	Cefpodoxime proxetil and clavulanic acid	2.0	8.9%	-	-	-	-	-	-	-	-	2.0	0.9%
Monobactams	Aztreonam	-	-	-	-	-	-	-	-	-	-	-	-
Macrolides	Azithromycin	4.7	20.7%	2.5	12.6%	22.5	17.0%	3.3	9.2%	2.0	8.2%	35.0	15.0%
Aminoglycosides	Gentamicin	-	-	-	-	-	-	-	-	-	-	-	-
Fluoroquinolones	Ofloxacin	3.5	15.6%	-	-	18.0	13.6%	3.0	8.3%	3.0	12.4%	27.5	11.8%
	Ciprofloxacin	-	-	-	-	26.1	19.7%	14.0	38.7%	2.0	8.2%	42.1	18.0%
	Norfloxacin	-	-	-	-	-	-	-	-	6.0	24.7%	6.0	2.6%
	Levofloxacin	-	-	4.0	20.1%	-	-	-	-	4.0	16.5%	8.0	3.4%
Combinations of antibacterials	Ofloxacin and ornidazole	5.0	22.2%	-	-	-	-	-	-	-	-	5.0	2.1%
	Norfloxacin and tinidazole	-	-	-	-	-	-	-	-	-	-	-	-
	Cefixime and azithromycin	-	-	-	-	-	-	-	-	-	-	-	-
Glycopeptide antibacterials	Vancomycin	-	-	-	-	-	-	-	-	-	-	-	-
Imidazole/Nitroimidazole derivatives	Metronidazole	-	-	-	-	0.4	0.3%	-	-	-	-	0.4	0.2%
Nitrofuran derivatives	Nitrofurantoin	-	-	-	-	-	-	-	-	-	-	-	-
Total		22.5		19.9		131.6		36.2		24.5		234.2	100%

\*including  $\beta$ -lactamase inhibitors

## Supplementary File

Table S6. Distribution of antibiotic prescription at outpatient visit across age groups in years and WHO ATC class in Defined Daily Doses (DDD).

Antibiotic Chemical Subgroup	Antibiotic Type	<5 (n=38)		5-17 (n=64)		18-34 (n=134)		35-49 (n=49)		50-65 (n=28)		Total (n=313)	
		DDD	%	DDD	%	DDD	%	DDD	%	DDD	%	DDD	%
Intestinal antibiotics	Rifaximin	-	-	-	-	-	-	-	-	-	-	-	-
Tetracyclines	Doxycycline	-	-	-	-	202.0	26.9%	48.0	19.8%	26.0	21.3%	276.0	19.5%
Penicillins with extended spectrum	Amoxycillin	0.5	0.5%	-	-	-	-	-	-	-	-	0.5	0.0%
Combinations of penicillins*	Amoxycillin and clavulanic acid	7.8	7.7%	45.7	21.9%	157.3	20.9%	68.8	28.4%	35.3	28.9%	314.9	22.3%
Second-generation cephalosporins	Cefuroxime	-	-	-	-	2.4	0.3%	6.0	2.5%	-	-	8.4	0.6%
Third-generation cephalosporins	Cefotaxime	-	-	-	-	2.2	0.3%	1.8	0.7%	2.5	2.0%	6.5	0.5%
	Ceftazidime	-	-	-	-	-	-	0.4	0.2%	-	-	0.4	-
	Ceftriaxone	0.3	0.3%	-	-	5.0	0.7%	1.0	0.4%	-	-	6.3	0.4%
	Cefixime	20.4	20.2%	54.5	26.2%	57.5	7.7%	5.5	2.3%	7.5	6.1%	145.4	10.3%
	Cefpodoxime	1.3	1.2%	-	-	8.0	1.1%	8.1	3.4%	-	-	17.4	1.2%
	Cefpodoxime proxetil and clavulanic acid	-	-	-	-	7.5	1.0%	-	-	-	-	7.5	0.5%
Monobactams	Aztreonam	-	-	-	-	0.8	0.1%	-	-	-	-	0.8	-
Macrolides	Azithromycin	54.7	54.1%	100.0	48.0%	188.0	25.0%	43.4	17.9%	5.0	4.1%	391.1	27.7%
Aminoglycosides	Gentamicin	-	-	-	-	-	-	-	-	-	-	0.0	0.0%
Fluoroquinolones	Ofloxacin	5.5	5.4%	7.0	3.4%	6.0	0.8%	2.5	1.0%	-	-	21.0	1.5%
	Ciprofloxacin	-	-	-	-	37.0	4.9%	26.1	10.8%	8.6	7.0%	71.7	5.1%
	Norfloxacin	-	-	-	-	21.0	2.8%	9.0	3.7%	24.5	20.0%	54.5	3.9%
	Levofloxacin	3.0	3.0%	-	-	-	-	-	-	-	-	3.0	0.2%
Combinations of antibacterials	Ofloxacin and ornidazole	5.0	5.0%	-	-	-	-	-	-	5.0	4.1%	10.0	0.7%
	Norfloxacin and tinidazole	-	-	-	-	3.0	0.4%	-	-	-	-	3.0	0.2%
	Cefixime and azithromycin	-	-	-	-	5.0	0.7%	-	-	-	-	5.0	-
Glycopeptide antibacterials	Vancomycin	1.1	1.1%	-	-	-	-	-	-	-	-	1.1	0.1%
Imidazole/Nitroimidazole derivatives	Metronidazole	1.5	1.5%	1.2	0.6%	38.2	5.1%	18.8	7.8%	7.8	6.4%	67.5	4.8%
Nitrofurantoin derivatives	Nitrofurantoin	-	-	-	-	10.5	1.4%	3.0	1.2%	-	-	13.5	1.0%
Total		101.0		208.4		751.3		242.4		122.2		1425.3	100%

\*including  $\beta$ -lactamase inhibitors

## Supplementary File

Table S7. Distribution of patient reported antibiotic use after outpatient visit across age groups in years and WHO ATC class in Defined Daily Doses (DDD).

Antibiotic Chemical Subgroup	Antibiotic Type	<5 (n=11)		5-17 (n=27)		18-34 (n=36)		35-49 (n=13)		50-65 (n=2)		Total (n=89)	
		DDD	%	DDD	%	DDD	%	DDD	%	DDD	%	DDD	%
Intestinal antibiotics	Rifaximin	-	-	-	-	6.7	3.2%	-	-	-	-	6.7	1.7%
Tetracyclines	Doxycycline	-	-	-	-	-	-	-	-	-	-	-	-
Penicillins with extended spectrum	Amoxycillin	-	-	1.0	1.5%	3.3	1.6%	-	-	-	-	4.3	1.1%
Combinations of penicillins*	Amoxycillin and clavulanic acid	1.5	4.2%	20.0	30.0%	22.5	10.8%	12.5	21.9%	-	-	56.5	14.3%
Second-generation cephalosporins	Cefuroxime	-	-	-	-	-	-	-	-	-	-	-	-
Third-generation cephalosporins	Cefotaxime	3.8	10.6%	-	-	3.8	1.8%	-	-	-	-	7.5	1.9%
	Ceftazidime	-	-	-	-	-	-	-	-	-	-	-	-
	Ceftriaxone	-	-	-	-	-	-	-	-	-	-	-	-
	Cefixime	-	-	17.5	26.2%	6.0	2.9%	6.0	10.5%	3.0	50.0%	32.5	8.2%
	Cefpodoxime	3.1	8.9%	-	-	-	-	-	-	-	-	3.1	0.8%
	Cefpodoxime proxetil and clavulanic acid	-	-	-	-	-	-	-	-	-	-	-	-
Monobactams	Aztreonam	-	-	-	-	-	-	-	-	-	-	-	-
Macrolides	Azithromycin	12.5	35.4%	25.8	38.7%	132.3	63.8%	25.0	43.9%	-	-	195.7	49.6%
Aminoglycosides	Gentamicin	3.4	9.7%	-	-	-	-	-	-	-	-	3.4	0.9%
Fluoroquinolones	Ofloxacin	5.0	14.2%	-	-	7.5	3.6%	-	-	-	-	12.5	3.2%
	Ciprofloxacin	-	-	2.4	3.6%	20.7	10.1%	3.0	5.3%	3.0	50.0%	29.1	7.4%
	Norfloxacin	-	-	-	-	4.5	2.2%	10.5	18.4%	-	-	15.0	3.8%
	Levofloxacin	9.8	17.0%	-	-	-	-	-	-	-	-	9.8	2.5%
Combinations of antibacterials	Ofloxacin and ornidazole	-	-	-	-	-	-	-	-	-	-	-	-
	Norfloxacin and tinidazole	-	-	4.0	-	4.0	-	3.0	-	-	-	11.0	2.8%
	Cefixime and azithromycin	-	-	-	-	-	-	-	-	-	-	-	-
Glycopeptide antibacterials	Vancomycin	-	-	-	-	-	-	-	-	-	-	-	-
Imidazole/Nitroimidazole derivatives	Metronidazole	-	-	0.6	-	3.0	-	3.8	-	-	-	7.4	1.9%
Nitrofuran derivatives	Nitrofurantoin	-	-	-	-	-	-	-	-	-	-	-	-
Total		39.1		71.4		214.3		63.8		6.0		394.5	100%

\*including  $\beta$ -lactamase inhibitors

## Supplementary File

Table S8. Distribution of antibiotic encounters for all 1000 patients by presumptive diagnosis and AWaRe category, in encounters and percentages.

AWaRe Category	Presumptive diagnosis																Total (n=1000)	
	AVI (n=601)		UTI (n=117)		URTI (n=92)		LRTI (n=58)		Gastro. (n=58)		Typhoid (n=40)		Malaria (n=15)		Other* (n=19)			
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Access	50.0	8.3%	34.0	29.1%	22.0	23.9%	13.0	22.4%	10.0	17.2%	6.0	15.0%	5.0	33.3%	2.0	10.5%	143.5	14.3%
Watch	79.0	13.1%	28.0	23.9%	17.0	18.5%	13.0	22.4%	11.0	19.0%	10.0	25.0%	2.0	13.3%	5.0	26.3%	166.4	16.6%
Reserve	1.0	0.2%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-
Not recommended	2.0	0.3%	-	-	1.0	1.1%	-	-	1.0	1.7%	-	-	-	-	-	-	4.0	-
Unclassified	-	-	1.0	0.9%	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-
Sub-total AWaRe	132.0	22.0%	63.0	53.8%	40.0	43.5%	26.0	44.8%	22.0	37.9%	16.0	40.0%	7.0	46.7%	7.0	36.8%	313.0	31.3%
No antibiotics	469	78.0%	54.0	46.2%	52.0	56.5%	32.0	55.2%	36.0	62.1%	24.0	41.4%	8.0	53.3%	12.0	63.2%	687.0	68.7%

AVI-Acute viral illness, UTI-urinary tract infection, URTI-Upper respiratory tract infection, LRTI-Lower respiratory tract infection, Gastro.-gastroenteritis, Other includes tuberculosis, appendicitis, severe acute malnutrition, rheumatic heart disease, abscess and septic arthritis. \*including  $\beta$ -lactamase inhibitors

## Supplementary File

Table S9. Distribution of antibiotics for all patients prescribed antibiotics at outpatient visit by presumptive diagnosis and ATC class in defined daily doses (DDDs).

Antibiotic Chemical Subgroup	Antibiotic Type	AVI (n=132)		UTI (n=63)		URTI (n=40)		LRTI (n=26)		Gastro. (n=22)		Typhoid (n=16)		Malaria (n=7)		Other (n=7)		Total (n=313)	
		DDD	%	DDD	%	DDD	%	DDD	%	DDD	%	DDD	%	DDD	%	DDD	%	DDD	%
Intestinal antibiotics	Rifaximin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0%
Tetracyclines	Doxycycline	112.0	17.4%	92.0	30.4%	20.0	12.2%	-	-	20.0	25.0%	24.0	26.8%	2.0	9.6%	6.0	15.3%	276.0	19.5%
Penicillins with extended spectrum	Amoxycillin	0.5	0.1%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	0.0%
Combinations of penicillins*	Amoxycillin and clavulanic acid	118.5	18.5%	57.8	19.1%	63.7	38.9%	34.8	40.1%	13.7	17.1%	6.1	6.8%	11.7	55.8%	8.8	22.4%	314.9	22.3%
Second-generation cephalosporins	Cefuroxime	2.4	0.4%	-	-	-	-	-	-	-	-	6.0	6.7%	-	-	-	-	8.4	0.6%
Third-generation cephalosporins	Cefotaxime	2.7	0.4%	-	-	3.8	2.3%	-	-	-	-	-	-	-	-	-	-	6.4	0.5%
	Ceftazidime	0.4	0.1%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	0.0%
	Ceftriaxone	3.0	0.5%	-	-	-	-	-	-	0.3	0.3%	-	-	-	-	3.0	7.7%	6.3	0.4%
	Cefixime	50.5	7.9%	40.5	13.4%	7.1	4.4%	5.5	6.4%	6.0	7.5%	18.8	20.9%	6.0	28.7%	11.0	28.1%	145.4	10.3%
	Cefpodoxime	12.4	1.9%	5.0	1.6%	-	-	-	-	-	-	-	-	-	-	-	-	17.4	1.2%
	Cefpodoxime proxetil and clavulanic	7.5	1.2%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	0.5%
Monobactams	Aztreonam	0.8	0.1%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	0.1%
Macrolides	Azithromycin	261.3	40.7%	8.3	2.7%	54.5	33.3%	39.2	45.2%	-	-	21.0	23.4%	-	-	6.7	17.1%	391.0	27.7%
Aminoglycosides	Gentamicin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0%
Fluoroquinolones	Ofloxacin	14.0	2.2%	-	-	2.5	1.5%	-	-	4.5	5.6%	-	-	-	-	-	-	21.0	1.5%
	Ciprofloxacin	40.0	6.2%	3.0	1.0%	1.2	0.7%	3.0	3.5%	19.5	24.4%	5.0	5.6%	-	-	-	-	71.7	5.1%
	Norfloxacin	-	-	54.5	18.0%	-	-	-	-	-	-	-	-	-	-	-	-	54.5	3.9%
	Levofloxacin	-	-	-	-	-	-	3.0	3.5%	-	-	-	-	-	-	-	-	3.0	0.2%
Combinations of antibacterials	Ofloxacin and ornidazole	5.0	0.8%	-	-	-	-	-	-	5.0	6.3%	-	-	-	-	-	-	10.1	0.7%
	Norfloxacin and tinidazole	-	-	3.0	1.0%	-	-	-	-	-	-	-	-	-	-	-	-	3.0	0.2%
	Cefixime and azithromycin	-	-	-	-	5.0	3.1%	-	-	-	-	-	-	-	-	-	-	5.0	0.4%
Glycopeptide antibacterials	Vancomycin	-	-	-	-	-	-	1.1	1.3%	-	-	-	-	-	-	-	-	1.1	0.1%
Imidazole/Nitroimidazole derivatives	Metronidazole	11.2	1.7%	25.5	8.4%	6.0	3.7%	-	-	11.0	13.8%	8.8	9.8%	1.2	5.7%	3.8	9.7%	67.5	4.8%
Nitrofurantoin derivatives	Nitrofurantoin	-	-	13.5	4.5%	-	-	-	-	-	-	-	-	-	-	-	-	13.5	1.0%
Total		642.1	45.0%	303.1	21.3%	163.7	11.5%	86.6	6.1%	79.9	5.6%	89.7	6.3%	20.9	1.5%	39.2	2.8%	1425.3	100.0%

\*including  $\beta$ -lactamase inhibitors

AVI-Acute viral illness, UTI-urinary tract infection, URTI-Upper respiratory tract infection, LRTI-Lower respiratory tract infection, Gastro.-gastroenteritis, Other includes tuberculosis, appendicitis, severe acute malnutrition, rheumatic heart disease, abscess and septic arthritis.