

SUPPLEMENTARY MATERIAL

Antibiotic Prescription in the Community-Dwelling Elderly Population in Lombardy, Italy: A Sub-Analysis of the EDU.RE.DRUG Study

Table S1 – Characteristics of the resident citizens (≥65 years) and their general practitioners (GP) in Lombardy region and by local health unit (LHU)

	Lombardy*	Bergamo	Lecco	Mantova	Monza Brianza	4 LHUs combined
CITIZENS (N)						
≥65 ys	2269109	234053	79512	97529	195766	606860
65-74 ys	1095770	118883	39170	46446	95014	299513
75-84 ys	826847	82429	28366	34907	72031	217733
≥85 ys	346492	32741	11976	16176	28721	89614
MALES (N)						
≥65 ys	977542	103521	35043	41819	85640	266023
65-74 ys	516603	57620	18882	22020	44755	143277
75-84 ys	354322	35869	12435	14943	31566	94813
≥85 ys	106617	10032	3726	4856	9319	27933
FEMALES (N)						
≥65 ys	1291567	130532	44469	55710	110126	340837
65-74 ys	579167	61263	20288	24426	50259	156236
75-84 ys	472525	46560	15931	19964	40465	122920
≥85 ys	239875	22709	8250	11320	19402	61681
GP (N)						
Overall	6218	644	214	266	519	1643
Males	3924	414	147	164	314	1039
Females	2294	230	67	102	205	604

*data retrieved from ISTAT (<https://demo.istat.it/popres/index.php?anno=2019&lingua=ita>) and Ministry of Health websites (https://www.salute.gov.it/portale/documentazione/p6_2_2_1.jsp?lingua=italiano&id=2980)

Table S2 - ESAC-based indicators

ESAC 1	J01_DID	Consumption of antibacterials for systemic use (J01) expressed in DID
ESAC 2	J01C_DID	Consumption of penicillins (J01C) expressed in DID
ESAC 3	J01D_DID	Consumption of cephalosporins (J01D) expressed in DID
ESAC 4	J01F_DID	Consumption of macrolides, lincosamides and streptogramins (J01F) expressed in DID
ESAC 5	J01M_DID	Consumption of quinolones (J01M) expressed in DID
ESAC 6	J01CE_%	Consumption of beta-lactamase sensitive penicillins (J01CE) expressed as percentage of the total consumption of antibacterials for systemic use (J01)
ESAC 7	J01CR_%	Consumption of combination of penicillins, including beta-lactamase inhibitor (J01CR) expressed as percentage of the total consumption of antibacterials for systemic use (J01)
ESAC 8	J01DD+DE_%	Consumption of third- and fourth-generation cephalosporins (J01(DD+DE)) expressed as percentage of the total consumption of antibacterials for systemic use (J01)
ESAC 9	J01MA_%	Consumption of fluoroquinolones (J01MA) expressed as percentage of the total consumption of antibacterials for systemic use (J01)
ESAC 10	J01_B/N	Ratio of consumption of broad-spectrum penicillins, cephalosporins, macrolides (except erythromycin) and fluoroquinolones (J01(CR+DC+DD+(FA-FA01)+MA)) to the consumption of narrow-spectrum penicillins, cephalosporins and erythromycin (J01(CA+CE+CF+DB+FA01))
ESAC 11	J01_SV	Seasonal variation (SV) of the total antibiotic consumption (J01) SV= [Winter (January, February, March, October, November, and December) consumption expressed in DID/ Summer (April, May, June, July, August and September) consumption expressed in DID)-1] x100
ESAC 12	J01M_SV	Seasonal variation of quinolone consumption (J01M) SV= [Winter (January, February, March, October, November, and December) consumption expressed in DID/ Summer (April, May, June, July, August and September) consumption expressed in DID)-1] x100

Table S3 - WHO-AWaRe classification, 2021

Antibiotic	Class	ATC code	Category
<i>Amikacin</i>	Aminoglycosides	J01GB06	Access
<i>Amoxicillin</i>	Penicillins	J01CA04	Access
<i>Amoxicillin/clavulanic-acid</i>	Beta-lactam/beta-lactamase-inhibitor	J01CR02	Access
<i>Ampicillin</i>	Penicillins	J01CA01	Access
<i>Ampicillin/sulbactam</i>	Beta-lactam/beta-lactamase-inhibitor	J01CR01	Access
<i>Arbekacin</i>	Aminoglycosides	J01GB12	Watch
<i>Aspoxicillin</i>	Penicillins	J01CA19	Watch
<i>Azidocillin</i>	Penicillins	J01CE04	Access
<i>Azithromycin</i>	Macrolides	J01FA10	Watch
<i>Azlocillin</i>	Penicillins	J01CA09	Watch
<i>Aztreonam</i>	Monobactams	J01DF01	Reserve
<i>Bacampicillin</i>	Penicillins	J01CA06	Access
<i>Bekanamycin</i>	Aminoglycosides	J01GB13	Watch
<i>Benzathine-benzylpenicillin</i>	Penicillins	J01CE08	Access
<i>Benzylpenicillin</i>	Penicillins	J01CE01	Access
<i>Biapenem</i>	Carbapenems	J01DH05	Watch
<i>Brodinoprim</i>	Trimethoprim-derivatives	J01EA02	Access
<i>Carbenicillin</i>	Penicillins	J01CA03	Watch
<i>Carindacillin</i>	Penicillins	J01CA05	Watch
<i>Carumonam</i>	Monobactams	J01DF02	Reserve
<i>Cefacetrile</i>	First-generation-cephalosporins	J01DB10	Access
<i>Cefaclor</i>	Second-generation-cephalosporins	J01DC04	Watch
<i>Cefadroxil</i>	First-generation-cephalosporins	J01DB05	Access
<i>Cefalexin</i>	First-generation-cephalosporins	J01DB01	Access
<i>Cefaloridine</i>	First-generation-cephalosporins	J01DB02	Access
<i>Cefalotin</i>	First-generation-cephalosporins	J01DB03	Access
<i>Cefamandole</i>	Second-generation-cephalosporins	J01DC03	Watch
<i>Cefapirin</i>	First-generation-cephalosporins	J01DB08	Access
<i>Cefatrizine</i>	First-generation-cephalosporins	J01DB07	Access
<i>Cefazedone</i>	First-generation-cephalosporins	J01DB06	Access
<i>Cefazolin</i>	First-generation-cephalosporins	J01DB04	Access
<i>Cefbuperazone</i>	Second-generation-cephalosporins	J01DC13	Watch
<i>Cefcapene-pivoxil</i>	Third-generation-cephalosporins	J01DD17	Watch
<i>Cefdinir</i>	Third-generation-cephalosporins	J01DD15	Watch
<i>Cefditoren-pivoxil</i>	Third-generation-cephalosporins	J01DD16	Watch
<i>Cefepime</i>	Fourth-generation-cephalosporins	J01DE01	Watch
<i>Cefetamet-pivoxil</i>	Third-generation-cephalosporins	J01DD10	Watch
<i>Cefiderocol</i>	Other-cephalosporins	J01DI04	Reserve
<i>Cefixime</i>	Third-generation-cephalosporins	J01DD08	Watch
<i>Cefmenoxime</i>	Third-generation-cephalosporins	J01DD05	Watch
<i>Cefmetazole</i>	Second-generation-cephalosporins	J01DC09	Watch
<i>Cefminox</i>	Second-generation-cephalosporins	J01DC12	Watch
<i>Cefodizime</i>	Third-generation-cephalosporins	J01DD09	Watch
<i>Cefonicid</i>	Second-generation-cephalosporins	J01DC06	Watch
<i>Cefoperazone</i>	Third-generation-cephalosporins	J01DD12	Watch
<i>Ceforanide</i>	Second-generation-cephalosporins	J01DC11	Watch

<i>Cefoselis</i>	Fourth-generation-cephalosporins	to be assigned	Watch
<i>Cefotaxime</i>	Third-generation-cephalosporins	J01DD01	Watch
<i>Cefotetan</i>	Second-generation-cephalosporins	J01DC05	Watch
<i>Cefotiam</i>	Second-generation-cephalosporins	J01DC07	Watch
<i>Cefoxitin</i>	Second-generation-cephalosporins	J01DC01	Watch
<i>Cefozopran</i>	Fourth-generation-cephalosporins	J01DE03	Watch
<i>Cefpiramide</i>	Third-generation-cephalosporins	J01DD11	Watch
<i>Cefpirome</i>	Fourth-generation-cephalosporins	J01DE02	Watch
<i>Cefpodoxime-proxetil</i>	Third-generation-cephalosporins	J01DD13	Watch
<i>Cefprozil</i>	Second-generation-cephalosporins	J01DC10	Watch
<i>Cefradine</i>	First-generation-cephalosporins	J01DB09	Access
<i>Cefroxadine</i>	First-generation-cephalosporins	J01DB11	Access
<i>Cefsulodin</i>	Third-generation-cephalosporins	J01DD03	Watch
<i>Ceftaroline-fosamil</i>	Fifth-generation cephalosporins	J01DI02	Reserve
<i>Ceftazidime</i>	Third-generation-cephalosporins	J01DD02	Watch
<i>Ceftazidime/avibactam</i>	Third-generation-cephalosporins	J01DD52	Reserve
<i>Cefteram-pivoxil</i>	Third-generation-cephalosporins	J01DD18	Watch
<i>Ceftezole</i>	First-generation-cephalosporins	J01DB12	Access
<i>Ceftibuten</i>	Third-generation-cephalosporins	J01DD14	Watch
<i>Ceftizoxime</i>	Third-generation-cephalosporins	J01DD07	Watch
<i>Ceftobiprole-medocaril</i>	Fifth-generation cephalosporins	J01DI01	Reserve
<i>Ceftolozane/tazobactam</i>	Fifth-generation cephalosporins	J01DI54	Reserve
<i>Ceftriaxone</i>	Third-generation-cephalosporins	J01DD04	Watch
<i>Cefuroxime</i>	Second-generation-cephalosporins	J01DC02	Watch
<i>Chloramphenicol</i>	Amphenicols	J01BA01	Access
<i>Chlortetracycline</i>	Tetracyclines	J01AA03	Watch
<i>Cinoxacin</i>	Quinolones	J01MB06	Watch
<i>Ciprofloxacin</i>	Fluoroquinolones	J01MA02	Watch
<i>Clarithromycin</i>	Macrolides	J01FA09	Watch
<i>Clindamycin</i>	Lincosamides	J01FF01	Access
<i>Clofoctol</i>	Phenol derivatives	J01XX03	Watch
<i>Clometocillin</i>	Penicillins	J01CE07	Access
<i>Clomocycline</i>	Tetracyclines	J01AA11	Watch
<i>Cloxacillin</i>	Penicillins	J01CF02	Access
<i>Colistin_IV</i>	Polymyxins	J01XB01	Reserve
<i>Colistin_oral</i>	Polymyxins	A07AA10	Reserve
<i>Dalbavancin</i>	Glycopeptides	J01XA04	Reserve
<i>Dalfopristin/quinupristin</i>	Streptogramins	J01FG02	Reserve
<i>Daptomycin</i>	Lipopeptides	J01XX09	Reserve
<i>Delafoxacin</i>	Fluoroquinolones	J01MA23	Watch
<i>Demeclocycline</i>	Tetracyclines	J01AA01	Watch
<i>Dibekacin</i>	Aminoglycosides	J01GB09	Watch
<i>Dicloxacillin</i>	Penicillins	J01CF01	Access
<i>Dirithromycin</i>	Macrolides	J01FA13	Watch
<i>Doripenem</i>	Carbapenems	J01DH04	Watch
<i>Doxycycline</i>	Tetracyclines	J01AA02	Access
<i>Enoxacin</i>	Fluoroquinolones	J01MA04	Watch
<i>Epicillin</i>	Penicillins	J01CA07	Access

<i>Eravacycline</i>	Tetracyclines	J01AA13	Reserve
<i>Ertapenem</i>	Carbapenems	J01DH03	Watch
<i>Erythromycin</i>	Macrolides	J01FA01	Watch
<i>Faropenem</i>	Penems	J01DI03	Reserve
<i>Fidaxomicin</i>	Macrolides	A07AA12	Watch
<i>Fleroxacin</i>	Fluoroquinolones	J01MA08	Watch
<i>Flomoxef</i>	Second-generation-cephalosporins	J01DC14	Watch
<i>Flucloxacillin</i>	Penicillins	J01CF05	Access
<i>Flumequine</i>	Quinolones	J01MB07	Watch
<i>Flurithromycin</i>	Macrolides	J01FA14	Watch
<i>Fosfomycin_IV</i>	Phosphonics	J01XX01	Reserve
<i>Fosfomycin_oral</i>	Phosphonics	J01XX01	Watch
<i>Furazidin</i>	Nitrofurán derivatives	J01XE03	Access
<i>Fusidic-acid</i>	Steroid antibacterials	J01XC01	Watch
<i>Garenoxacin</i>	Fluoroquinolones	J01MA19	Watch
<i>Gatifloxacin</i>	Fluoroquinolones	J01MA16	Watch
<i>Gemifloxacin</i>	Fluoroquinolones	J01MA15	Watch
<i>Gentamicin</i>	Aminoglycosides	J01GB03	Access
<i>Grepafloxacin</i>	Fluoroquinolones	J01MA11	Watch
<i>Hetacillin</i>	Penicillins	J01CA18	Access
<i>Iclaprim</i>	Trimethoprim-derivatives	J01EA03	Reserve
<i>Imipenem/cilastatin</i>	Carbapenems	J01DH51	Watch
<i>Imipenem/cilastatin/relebactam</i>	Carbapenems	J01DH56	Reserve
<i>Isepamicin</i>	Aminoglycosides	J01GB11	Watch
<i>Josamycin</i>	Macrolides	J01FA07	Watch
<i>Kanamycin_IV</i>	Aminoglycosides	J01GB04	Watch
<i>Kanamycin_oral</i>	Aminoglycosides	A07AA08	Watch
<i>Lascufloxacin</i>	Fluoroquinolones	J01MA25	Watch
<i>Latamoxef</i>	Third-generation-cephalosporins	J01DD06	Watch
<i>Lefamulin</i>	Pleuromutilin	J01XX12	Reserve
<i>Levofloxacin</i>	Fluoroquinolones	J01MA12	Watch
<i>Levonadifloxacin</i>	Fluoroquinolones	J01MA24	Watch
<i>Lincomycin</i>	Lincosamides	J01FF02	Watch
<i>Linezolid</i>	Oxazolidinones	J01XX08	Reserve
<i>Lomefloxacin</i>	Fluoroquinolones	J01MA07	Watch
<i>Loracarbef</i>	Second-generation-cephalosporins	J01DC08	Watch
<i>Lymecycline</i>	Tetracyclines	J01AA04	Watch
<i>Mecillinam</i>	Penicillins	J01CA11	Access
<i>Meropenem</i>	Carbapenems	J01DH02	Watch
<i>Meropenem/vaborbactam</i>	Carbapenems	J01DH52	Reserve
<i>Metacycline</i>	Tetracyclines	J01AA05	Watch
<i>Metampicillin</i>	Penicillins	J01CA14	Access
<i>Meticillin</i>	Penicillins	J01CF03	Access
<i>Metronidazole_IV</i>	Imidazoles	J01XD01	Access
<i>Metronidazole_oral</i>	Imidazoles	P01AB01	Access
<i>Mezlocillin</i>	Penicillins	J01CA10	Watch
<i>Micronomicin</i>	Aminoglycosides	to be assigned	Watch
<i>Midecamycin</i>	Macrolides	J01FA03	Watch

<i>Minocycline_IV</i>	Tetracyclines	J01AA08	Reserve
<i>Minocycline_oral</i>	Tetracyclines	J01AA08	Watch
<i>Miocamycin</i>	Macrolides	J01FA11	Watch
<i>Moxifloxacin</i>	Fluoroquinolones	J01MA14	Watch
<i>Nafcillin</i>	Penicillins	J01CF06	Access
<i>Nemonoxacin</i>	Quinolones	J01MB08	Watch
<i>Neomycin_IV</i>	Aminoglycosides	J01GB05	Watch
<i>Neomycin_oral</i>	Aminoglycosides	A07AA01	Watch
<i>Netilmicin</i>	Aminoglycosides	J01GB07	Watch
<i>Nifurtinol</i>	Nitrofurans derivatives	J01XE02	Access
<i>Nitrofurantoin</i>	Nitrofurans-derivatives	J01XE01	Access
<i>Norfloxacin</i>	Fluoroquinolones	J01MA06	Watch
<i>Ofloxacin</i>	Fluoroquinolones	J01MA01	Watch
<i>Oleandomycin</i>	Macrolides	J01FA05	Watch
<i>Omadacycline</i>	Tetracyclines	J01AA15	Reserve
<i>Oritavancin</i>	Glycopeptides	J01XA05	Reserve
<i>Ornidazole_IV</i>	Imidazoles	J01XD03	Access
<i>Ornidazole_oral</i>	Imidazoles	P01AB03	Access
<i>Oxacillin</i>	Penicillins	J01CF04	Access
<i>Oxolinic-acid</i>	Quinolones	J01MB05	Watch
<i>Oxytetracycline</i>	Tetracyclines	J01AA06	Watch
<i>Panipenem</i>	Carbapenems	J01DH55	Watch
<i>Pazufloxacin</i>	Fluoroquinolones	J01MA18	Watch
<i>Pefloxacin</i>	Fluoroquinolones	J01MA03	Watch
<i>Penamecillin</i>	Penicillins	J01CE06	Access
<i>Penimepicycline</i>	Tetracyclines	J01AA10	Watch
<i>Pheneticillin</i>	Penicillins	J01CE05	Watch
<i>Phenoxyethylpenicillin</i>	Penicillins	J01CE02	Access
<i>Pipemidic-acid</i>	Quinolones	J01MB04	Watch
<i>Piperacillin</i>	Penicillins	J01CA12	Watch
<i>Piperacillin/tazobactam</i>	Beta-lactam/beta-lactamase-inhibitor_anti-pseudomonal	J01CR05	Watch
<i>Piromidic-acid</i>	Quinolones	J01MB03	Watch
<i>Pivampicillin</i>	Penicillins	J01CA02	Access
<i>Pivmecillinam</i>	Penicillins	J01CA08	Access
<i>Plazomicin</i>	Aminoglycosides	J01GB14	Reserve
<i>Polymyxin-B_IV</i>	Polymyxins	J01XB02	Reserve
<i>Polymyxin-B_oral</i>	Polymyxins	A07AA05	Reserve
<i>Pristinamycin</i>	Streptogramins	J01FG01	Watch
<i>Procaine-benzylpenicillin</i>	Penicillins	J01CE09	Access
<i>Propicillin</i>	Penicillins	J01CE03	Access
<i>Prulifloxacin</i>	Fluoroquinolones	J01MA17	Watch
<i>Ribostamycin</i>	Aminoglycosides	J01GB10	Watch
<i>Rifabutin</i>	Rifamycins	J04AB04	Watch
<i>Rifampicin</i>	Rifamycins	J04AB02	Watch
<i>Rifamycin_IV</i>	Rifamycins	J04AB03	Watch
<i>Rifamycin_oral</i>	Rifamycins	A07AA13	Watch
<i>Rifaximin</i>	Rifamycins	A07AA11	Watch
<i>Rokitamycin</i>	Macrolides	J01FA12	Watch

<i>Rolitettracycline</i>	Tetracyclines	J01AA09	Watch
<i>Rosoxacin</i>	Quinolones	J01MB01	Watch
<i>Roxithromycin</i>	Macrolides	J01FA06	Watch
<i>Rufloxacin</i>	Fluoroquinolones	J01MA10	Watch
<i>Sarecycline</i>	Tetracyclines	J01AA14	Watch
<i>Secnidazole</i>	Imidazoles	P01AB07	Access
<i>Sisomicin</i>	Aminoglycosides	J01GB08	Watch
<i>Sitafloxacin</i>	Fluoroquinolones	J01MA21	Watch
<i>Solithromycin</i>	Macrolides	J01FA16	Watch
<i>Sparfloxacin</i>	Fluoroquinolones	J01MA09	Watch
<i>Spectinomycin</i>	Aminocyclitols	J01XX04	Access
<i>Spiramycin</i>	Macrolides	J01FA02	Watch
<i>Spiramycin/metronidazole</i>	Antibacterials_combinations	J01RA04	Watch
<i>Streptoduocin</i>	Aminoglycosides	J01GA02	Watch
<i>Streptomycin_IV</i>	Aminoglycosides	J01GA01	Watch
<i>Streptomycin_oral</i>	Aminoglycosides	A07AA04	Watch
<i>Sulbactam</i>	Beta-lactamase-inhibitors	J01CG01	Access
<i>Sulbenicillin</i>	Penicillins	J01CA16	Watch
<i>Sulfadiazine</i>	Sulfonamides	J01EC02	Access
<i>Sulfadiazine/tetroxoprim</i>	Sulfonamide-trimethoprim-combinations	J01EE06	Access
<i>Sulfadiazine/trimethoprim</i>	Sulfonamide-trimethoprim-combinations	J01EE02	Access
<i>Sulfadimethoxine</i>	Sulfonamides	J01ED01	Access
<i>Sulfadimidine</i>	Sulfonamides	J01EB03	Access
<i>Sulfadimidine/trimethoprim</i>	Sulfonamide-trimethoprim-combinations	J01EE05	Access
<i>Sulfafurazole</i>	Sulfonamides	J01EB05	Access
<i>Sulfaisodimidine</i>	Sulfonamides	J01EB01	Access
<i>Sulfalene</i>	Sulfonamides	J01ED02	Access
<i>Sulfamazone</i>	Sulfonamides	J01ED09	Access
<i>Sulfamerazine</i>	Sulfonamides	J01ED07	Access
<i>Sulfamerazine/trimethoprim</i>	Sulfonamide-trimethoprim-combinations	J01EE07	Access
<i>Sulfamethizole</i>	Sulfonamides	J01EB02	Access
<i>Sulfamethoxazole</i>	Sulfonamides	J01EC01	Access
<i>Sulfamethoxazole/trimethoprim</i>	Sulfonamide-trimethoprim-combinations	J01EE01	Access
<i>Sulfamethoxyypyridazine</i>	Sulfonamides	J01ED05	Access
<i>Sulfametomidine</i>	Sulfonamides	J01ED03	Access
<i>Sulfametoxydiazine</i>	Sulfonamides	J01ED04	Access
<i>Sulfametrole/trimethoprim</i>	Sulfonamide-trimethoprim-combinations	J01EE03	Access
<i>Sulfamoxole</i>	Sulfonamides	J01EC03	Access
<i>Sulfamoxole/trimethoprim</i>	Sulfonamide-trimethoprim-combinations	J01EE04	Access
<i>Sulfanilamide</i>	Sulfonamides	J01EB06	Access
<i>Sulfaperin</i>	Sulfonamides	J01ED06	Access
<i>Sulfaphenazole</i>	Sulfonamides	J01ED08	Access
<i>Sulfapyridine</i>	Sulfonamides	J01EB04	Access
<i>Sulfathiazole</i>	Sulfonamides	J01EB07	Access
<i>Sulfathiourea</i>	Sulfonamides	J01EB08	Access
<i>Sultamicillin</i>	Beta-lactam/beta-lactamase-inhibitor	J01CR04	Access
<i>Talampicillin</i>	Penicillins	J01CA15	Access
<i>Tazobactam</i>	Beta-lactamase-inhibitors	J01CG02	Watch
<i>Tebipenem</i>	Carbapenems	J01DH06	Watch

<i>Tedizolid</i>	Oxazolidinones	J01XX11	Reserve
<i>Teicoplanin</i>	Glycopeptides	J01XA02	Watch
<i>Telavancin</i>	Glycopeptides	J01XA03	Reserve
<i>Telithromycin</i>	Macrolides	J01FA15	Watch
<i>Temafloxacin</i>	Fluoroquinolones	J01MA05	Watch
<i>Temocillin</i>	Penicillins	J01CA17	Watch
<i>Tetracycline</i>	Tetracyclines	J01AA07	Access
<i>Thiamphenicol</i>	Amphenicols	J01BA02	Access
<i>Ticarcillin</i>	Penicillins	J01CA13	Watch
<i>Tigecycline</i>	Glycylcyclines	J01AA12	Reserve
<i>Tinidazole_IV</i>	Imidazoles	J01XD02	Access
<i>Tinidazole_oral</i>	Imidazoles	P01AB02	Access
<i>Tobramycin</i>	Aminoglycosides	J01GB01	Watch
<i>Tosufloxacin</i>	Fluoroquinolones	J01MA22	Watch
<i>Trimethoprim</i>	Trimethoprim-derivatives	J01EA01	Access
<i>Troleandomycin</i>	Macrolides	J01FA08	Watch
<i>Trovafloxacin</i>	Fluoroquinolones	J01MA13	Watch
<i>Vancomycin_IV</i>	Glycopeptides	J01XA01	Watch
<i>Vancomycin_oral</i>	Glycopeptides	A07AA09	Watch

Table S4 - Antibiotic consumption per patient, stratified by sex and age groups

	Overall	Males	Females
J01 DDD/patient			
65-74 <i>ys</i>	15.95	16.87	15.20
75-84 <i>ys</i>	16.02	17.42	14.95
≥85 <i>ys</i>	16.68	18.05	15.99
J01 PACKAGES/patient			
65-74 <i>ys</i>	3.15	3.28	3.05
75-84 <i>ys</i>	3.53	3.76	3.36
≥85 <i>ys</i>	4.43	4.60	4.35
J01 POSOLOGIC UNITS/patient			
65-74 <i>ys</i>	21.62	22.82	20.63
75-84 <i>ys</i>	21.80	23.55	20.47
≥85 <i>ys</i>	22.80	24.37	22.01

Table S5 - DID consumption for each antibiotic class (ATC 3rd level) classified according to the WHO-AWaRe list (Access and Watch) and stratified by sex and age groups

Antibiotic classes (ATC 3 rd level)	Males		Females	
	Access	Watch	Access	Watch
65-74 years				
<i>Aminoglycosides</i>	0.0088	0.0032	0.0050	0.0012
<i>Combinations of sulfonamides and trimethoprim</i>	0.3501		0.2210	
<i>First-generation cephalosporins</i>	0.1373		0.0612	
<i>Fluoroquinolones</i>		4.3122		3.4842
<i>Fourth-generation cephalosporins</i>		0.0031		0.0029
<i>Glycopeptides</i>		0.0066		0.0018
<i>Imidazoles</i>			0.00002	
<i>Lincosamides</i>	0.1373		0.0052	
<i>Macrolides</i>		2.6369		3.5810
<i>Penicillins</i>	1.0570	0.0005	1.2819	0.0001
<i>Penicillins, combinations with beta lactamase inhibitors</i>	5.0255		5.0346	
<i>Penicillins, combinations with beta lactamase inhibitors (anti-pseudomonal)</i>		0.0114		0.0011
<i>Phosphonics</i>		1.0472		0.6021
<i>Second-generation cephalosporins</i>		0.0808		0.0936
<i>Tetracyclines</i>	0.2329	0.0182	0.1582	0.0331
<i>Third-generation cephalosporins</i>		2.6485		1.5179
75-84 years				
<i>Aminoglycosides</i>	0.0105	0.0017	0.0095	0.0023
<i>Combinations of sulfonamides and trimethoprim</i>	0.3927		0.2481	
<i>First-generation cephalosporins</i>	0.1249		0.1017	
<i>Fluoroquinolones</i>		5.4886		3.9376
<i>Fourth-generation cephalosporins</i>		0.0066		0.0046
<i>Glycopeptides</i>		0.0027		0.0024
<i>Imidazoles</i>	0.0001		0.0002	
<i>Lincosamides</i>	0.0033		0.0022	
<i>Macrolides</i>		2.8671		2.9402
<i>Penicillins</i>	0.9971	0.0003	1.0675	0.0004
<i>Penicillins, combinations with beta lactamase inhibitors</i>	5.5040		4.6896	
<i>Penicillins, combinations with beta lactamase inhibitors (anti-pseudomonal)</i>		0.0035		0.0024
<i>Phosphonics</i>		0.3395		0.9089
<i>Second-generation cephalosporins</i>		0.0989		0.0850
<i>Tetracyclines</i>	0.2433	0.0737	0.1253	0.0267
<i>Third-generation cephalosporins</i>		1.9597		1.7604
≥85 years				
<i>Aminoglycosides</i>	0.0332	0.0045	0.0149	0.0026

<i>Combinations of sulfonamides and trimethoprim</i>	0.3271		0.2551	
<i>First-generation cephalosporins</i>	0.1294		0.1159	
<i>Fluoroquinolones</i>		6.6340		4.1972
<i>Fourth-generation cephalosporins</i>		0.0097		0.0072
<i>Glycopeptides</i>		0.0109		0.0036
<i>Imidazoles</i>			0.0003	
<i>Lincosamides</i>	0.0043		0.0028	
<i>Macrolides</i>		2.9891		2.4774
<i>Penicillins</i>	0.8290	0.00001	0.7853	0.0007
<i>Penicillins, combinations with beta lactamase inhibitors</i>	6.0317		4.8716	
<i>Penicillins, combinations with beta lactamase inhibitors (anti-pseudomonal)</i>		0.0097		0.0122
<i>Phosphonics</i>		0.7859		1.1655
<i>Second-generation cephalosporins</i>		0.0763		0.0828
<i>Tetracyclines</i>	0.2942	0.0261	0.2061	0.0146
<i>Third-generation cephalosporins</i>		2.9420		2.5156

Table S6 – Rank of antibiotic substances (ATC 5th level) based on consumption in DID, classified according to the WHO-AWaRe list (Access and Watch) and stratified by sex (**panel a**: Overall; **panel b**: Males; **panel c**: Females)

(a) Overall

Rank	Antibiotic name	ATC 5 th level	DDD		DID	AWaRe Class
			N	%		
1	<i>amoxicillin+clavulanic acid</i>	J01CR02	1121952.69	30.54%	5.07	Access
2	<i>levofloxacin</i>	J01MA12	610010.00	16.60%	2.75	Watch
3	<i>clarithromycin</i>	J01FA09	341759.00	9.30%	1.54	Watch
4	<i>azithromycin</i>	J01FA10	314325.00	8.56%	1.42	Watch
5	<i>ciprofloxacin</i>	J01MA02	266686.50	7.26%	1.20	Watch
6	<i>amoxicillin</i>	J01CA04	231910.26	6.31%	1.05	Access
7	<i>cefixime</i>	J01DD08	227715.00	6.20%	1.03	Watch
8	<i>fosfomycin</i>	J01XX01	129602.67	3.53%	0.59	Watch
9	<i>trimetoprim+sulfamethoxazole</i>	J01EE01	64713.00	1.76%	0.29	Access
10	<i>ceftriaxone</i>	J01DD04	64177.50	1.75%	0.29	Watch
11	<i>cefditoren</i>	J01DD16	57460.00	1.56%	0.26	Watch
12	<i>doxycycline</i>	J01AA02	42880.00	1.17%	0.19	Access
13	<i>prulifloxacin</i>	J01MA17	41158.00	1.12%	0.19	Watch
14	<i>ceftibuten</i>	J01DD14	24991.20	0.68%	0.11	Watch
15	<i>cefalexina</i>	J01DB01	23386.50	0.64%	0.11	Access
16	<i>norfloxacin</i>	J01MA06	18067.00	0.49%	0.08	Watch
17	<i>cefuroxima</i>	J01DC02	16254.00	0.44%	0.07	Watch
18	<i>cefpodoxime</i>	J01DD13	14869.00	0.40%	0.07	Watch
19	<i>moxifloxacin</i>	J01MA14	7810.00	0.21%	0.04	Watch
20	<i>spiramycin</i>	J01FA02	7704.00	0.21%	0.03	Watch
21	<i>minocycline</i>	J01AA08	7508.00	0.20%	0.03	Watch
22	<i>roxithromycin</i>	J01FA06	6198.00	0.17%	0.03	Watch
23	<i>lomefloxacin</i>	J01MA07	5415.00	0.15%	0.02	Watch
24	<i>bacampicillin</i>	J01CA06	4332.00	0.12%	0.02	Access
25	<i>pipemidic acid</i>	J01MB04	3090.00	0.08%	0.01	Watch
26	<i>cefaclor</i>	J01DC04	3014.50	0.08%	0.01	Watch
27	<i>lymecycline</i>	J01AA04	2688.00	0.07%	0.01	Watch
28	<i>amikacin</i>	J01GB06	2206.00	0.06%	0.01	Access
29	<i>ceftazidime</i>	J01DD02	1849.38	0.05%	0.01	Watch
30	<i>miocamycin</i>	J01FA11	1848.00	0.05%	0.01	Watch
31	<i>cefodizime</i>	J01DD09	1196.50	0.03%	0.01	Watch
32	<i>cefepime</i>	J01DE01	1027.50	0.03%	<0.01	Watch
33	<i>teicoplanin</i>	J01XA02	839.50	0.02%	<0.01	Watch
34	<i>clindamycin</i>	J01FF01	794.33	0.02%	<0.01	Access
35	<i>piperacillin+tazobactam</i>	J01CR05	770.00	0.02%	<0.01	Watch
36	<i>cefotaxime</i>	J01DD01	708.00	0.02%	<0.01	Watch
37	<i>flucloxacillin</i>	J01CF05	618.00	0.02%	<0.01	Access
38	<i>pefloxacin</i>	J01MA03	572.00	0.02%	<0.01	Watch

39	<i>lincomycin</i>	J01FF02	555.33	0.02%	<0.01	Watch
40	<i>cefprozil</i>	J01DC10	285.00	0.01%	<0.01	Watch
41	<i>netilmicin</i>	J01GB07	259.29	0.01%	<0.01	Watch
42	<i>tobramycin</i>	J01GB01	247.71	0.01%	<0.01	Watch
43	<i>josamycin</i>	J01FA07	171.00	<0.01%	<0.01	Watch
44	<i>rufloxacin</i>	J01MA10	132.00	<0.01%	<0.01	Watch
45	<i>cefazolin</i>	J01DB04	98.00	<0.01%	<0.01	Access
46	<i>telithromycin</i>	J01FA15	70.00	<0.01%	<0.01	Watch
47	<i>piperacillin</i>	J01CA12	53.00	<0.01%	<0.01	Watch
48	<i>erythromycin</i>	J01FA01	42.00	<0.01%	<0.01	Watch
49	<i>benzathine benzylpenicillin</i>	J01CE08	36.25	<0.01%	<0.01	Access
50	<i>metronidazole</i>	J01XD01	19.00	<0.01%	<0.01	Access
51	<i>ampicillin+sulbactam</i>	J01CR01	17.17	<0.01%	<0.01	Access
52	<i>oxacillin</i>	J01CF04	16.50	<0.01%	<0.01	Access
53	<i>cefoxitin</i>	J01DC01	3.50	<0.01%	<0.01	Watch

(b) Males

Rank	Antibiotic name	ATC 5 th level	DDD		DID	AWaRe Class
			N	%		
1	<i>amoxicillin+clavulanic acid</i>	J01CR02	514776.70	30.90%	5.3	Access
2	<i>levofloxacin</i>	J01MA12	324385.00	19.47%	3.34	Watch
3	<i>clarithromycin</i>	J01FA09	141265.00	8.48%	1.45	Watch
4	<i>azithromycin</i>	J01FA10	133132.00	7.99%	1.37	Watch
5	<i>ciprofloxacin</i>	J01MA02	124146.50	7.45%	1.28	Watch
6	<i>amoxicillin</i>	J01CA04	95972.65	5.76%	0.99	Access
7	<i>cefixime</i>	J01DD08	95650.00	5.74%	0.99	Watch
8	<i>trimetoprim+sulfamethoxazole</i>	J01EE01	35234.00	2.11%	0.36	Access
9	<i>ceftriaxone</i>	J01DD04	28992.00	1.74%	0.3	Watch
10	<i>fosfomycin</i>	J01XX01	28249.33	1.70%	0.29	Watch
11	<i>cefditoren</i>	J01DD16	27080.00	1.63%	0.28	Watch
12	<i>doxycycline</i>	J01AA02	23600.00	1.42%	0.24	Access
13	<i>prulifloxacin</i>	J01MA17	22478.00	1.35%	0.23	Watch
14	<i>cefalexina</i>	J01DB01	12786.00	0.77%	0.13	Access
15	<i>ceftibuten</i>	J01DD14	11597.40	0.70%	0.12	Watch
16	<i>cefuroxima</i>	J01DC02	7326.00	0.44%	0.08	Watch
17	<i>cefpodoxime</i>	J01DD13	5865.00	0.35%	0.06	Watch
18	<i>minocycline</i>	J01AA08	5000.00	0.30%	0.05	Watch
19	<i>norfloxacin</i>	J01MA06	4256.00	0.26%	0.04	Watch
20	<i>moxifloxacin</i>	J01MA14	3925.00	0.24%	0.04	Watch
21	<i>spiramycin</i>	J01FA02	3040.00	0.18%	0.03	Watch
22	<i>lomefloxacin</i>	J01MA07	3005.00	0.18%	0.03	Watch
23	<i>roxithromycin</i>	J01FA06	2400.00	0.14%	0.02	Watch
24	<i>bacampicillin</i>	J01CA06	1968.00	0.12%	0.02	Access
25	<i>lymecycline</i>	J01AA04	1778.00	0.11%	0.02	Watch

26	<i>amikacin</i>	J01GB06	1162.50	0.07%	0.01	Access
27	<i>cefactor</i>	J01DC04	1132.50	0.07%	0.01	Watch
28	<i>ceftazidime</i>	J01DD02	851.25	0.05%	0.01	Watch
29	<i>pipemidic acid</i>	J01MB04	610.00	0.04%	0.01	Watch
30	<i>miocamycin</i>	J01FA11	588.00	0.04%	0.01	Watch
31	<i>teicoplanin</i>	J01XA02	550.50	0.03%	0.01	Watch
32	<i>cefodizime</i>	J01DD09	549.00	0.03%	0.01	Watch
33	<i>cefepime</i>	J01DE01	492.75	0.03%	0.01	Watch
34	<i>clindamycin</i>	J01FF01	335.33	0.02%	<0.01	Access
35	<i>piperacillin+tazobactam</i>	J01CR05	328.00	0.02%	<0.01	Watch
36	<i>flucloxacillin</i>	J01CF05	258.00	0.02%	<0.01	Access
37	<i>cefotaxime</i>	J01DD01	207.50	0.01%	<0.01	Watch
38	<i>lincomycin</i>	J01FF02	206.00	0.01%	<0.01	Watch
39	<i>netilmicin</i>	J01GB07	167.43	0.01%	<0.01	Watch
40	<i>pefloxacin</i>	J01MA03	167.00	0.01%	<0.01	Watch
41	<i>rufloxacin</i>	J01MA10	120.00	0.01%	<0.01	Watch
42	<i>tobramycin</i>	J01GB01	107.71	0.01%	<0.01	Watch
43	<i>cefprozil</i>	J01DC10	81.00	<0.01%	<0.01	Watch
44	<i>josamycin</i>	J01FA07	72.00	<0.01%	<0.01	Watch
45	<i>telithromycin</i>	J01FA15	55.00	<0.01%	<0.01	Watch
46	<i>cefazolin</i>	J01DB04	35.67	<0.01%	<0.01	Access
47	<i>benzathine benzylpenicillin</i>	J01CE08	22.75	<0.01%	<0.01	Access
48	<i>oxacillin</i>	J01CF04	16.50	<0.01%	<0.01	Access
49	<i>erythromycin</i>	J01FA01	15.00	<0.01%	<0.01	Watch
50	<i>piperacillin</i>	J01CA12	14.43	<0.01%	<0.01	Watch
51	<i>ampicillin+sulbactam</i>	J01CR01	10.51	<0.01%	<0.01	Access
52	<i>metronidazole</i>	J01XD01	4.00	<0.01%	<0.01	Access
53	<i>cefoxitin</i>	J01DC01	2.50	<0.01%	<0.01	Watch

(c) Females

Rank	Antibiotic name	ATC 5 th level	DDD		DID	AWaRe Class
			N	%		
1	<i>amoxicillin+clavulanic acid</i>	J01CR02	607175.99	30.24%	4.88	Access
2	<i>levofloxacin</i>	J01MA12	285625.00	14.22%	2.3	Watch
3	<i>clarithromycin</i>	J01FA09	200494.00	9.98%	1.61	Watch
4	<i>azithromycin</i>	J01FA10	181193.00	9.02%	1.46	Watch
5	<i>ciprofloxacin</i>	J01MA02	142540.00	7.10%	1.15	Watch
6	<i>amoxicillin</i>	J01CA04	135937.61	6.77%	1.09	Access
7	<i>cefixime</i>	J01DD08	132065.00	6.58%	1.06	Watch
8	<i>fosfomycin</i>	J01XX01	101353.33	5.05%	0.81	Watch
9	<i>ceftriaxone</i>	J01DD04	35185.50	1.75%	0.28	Watch
10	<i>cefditoren</i>	J01DD16	30380.00	1.51%	0.24	Watch
11	<i>trimetoprim+sulfamethoxazole</i>	J01EE01	29479.00	1.47%	0.24	Access
12	<i>doxycycline</i>	J01AA02	19280.00	0.96%	0.15	Access

13	<i>prulifloxacin</i>	J01MA17	18680.00	0.93%	0.15	Watch
14	<i>norfloxacin</i>	J01MA06	13811.00	0.69%	0.11	Watch
15	<i>ceftibuten</i>	J01DD14	13393.80	0.67%	0.11	Watch
16	<i>cefalexina</i>	J01DB01	10600.50	0.53%	0.09	Access
17	<i>cefpodoxime</i>	J01DD13	9004.00	0.45%	0.07	Watch
18	<i>cefuroxima</i>	J01DC02	8928.00	0.44%	0.07	Watch
19	<i>spiramycin</i>	J01FA02	4664.00	0.23%	0.04	Watch
20	<i>moxifloxacin</i>	J01MA14	3885.00	0.19%	0.03	Watch
21	<i>roxithromycin</i>	J01FA06	3798.00	0.19%	0.03	Watch
22	<i>minocycline</i>	J01AA08	2508.00	0.12%	0.02	Watch
23	<i>pipemidic acid</i>	J01MB04	2480.00	0.12%	0.02	Watch
24	<i>lomefloxacin</i>	J01MA07	2410.00	0.12%	0.02	Watch
25	<i>bacampicillin</i>	J01CA06	2364.00	0.12%	0.02	Access
26	<i>cefaclor</i>	J01DC04	1882.00	0.09%	0.02	Watch
27	<i>miocamycin</i>	J01FA11	1260.00	0.06%	0.01	Watch
28	<i>amikacin</i>	J01GB06	1043.50	0.05%	0.01	Access
29	<i>ceftazidime</i>	J01DD02	998.13	0.05%	0.01	Watch
30	<i>lymecycline</i>	J01AA04	910.00	0.05%	0.01	Watch
31	<i>cefodizime</i>	J01DD09	647.50	0.03%	0.01	Watch
32	<i>cefepime</i>	J01DE01	534.75	0.03%	<0.01	Watch
33	<i>cefotaxime</i>	J01DD01	500.50	0.02%	<0.01	Watch
34	<i>clindamycin</i>	J01FF01	459.00	0.02%	<0.01	Access
35	<i>piperacillin+tazobactam</i>	J01CR05	442.00	0.02%	<0.01	Watch
36	<i>pefloxacin</i>	J01MA03	405.00	0.02%	<0.01	Watch
37	<i>flucloxacillin</i>	J01CF05	360.00	0.02%	<0.01	Access
38	<i>lincomycin</i>	J01FF02	349.33	0.02%	<0.01	Watch
39	<i>teicoplanin</i>	J01XA02	289.00	0.01%	<0.01	Watch
40	<i>cefprozil</i>	J01DC10	204.00	0.01%	<0.01	Watch
41	<i>tobramycin</i>	J01GB01	140.00	0.01%	<0.01	Watch
42	<i>josamycin</i>	J01FA07	99.00	<0.01%	<0.01	Watch
43	<i>netilmicin</i>	J01GB07	91.86	<0.01%	<0.01	Watch
44	<i>cefazolin</i>	J01DB04	62.33	<0.01%	<0.01	Access
45	<i>piperacillin</i>	J01CA12	38.57	<0.01%	<0.01	Watch
46	<i>erythromycin</i>	J01FA01	27.00	<0.01%	<0.01	Watch
47	<i>telithromycin</i>	J01FA15	15.00	<0.01%	<0.01	Watch
48	<i>metronidazole</i>	J01XD01	15.00	<0.01%	<0.01	Access
49	<i>benzathine benzylpenicillin</i>	J01CE08	13.50	<0.01%	<0.01	Access
50	<i>rufloxacin</i>	J01MA10	12.00	<0.01%	<0.01	Watch
51	<i>ampicillin+sulbactam</i>	J01CR01	6.66	<0.01%	<0.01	Access
52	<i>cefoxitin</i>	J01DC01	1.00	<0.01%	<0.01	Watch
53	<i>oxacillin</i>	J01CF04	0.00	0.00%	0.00	Access