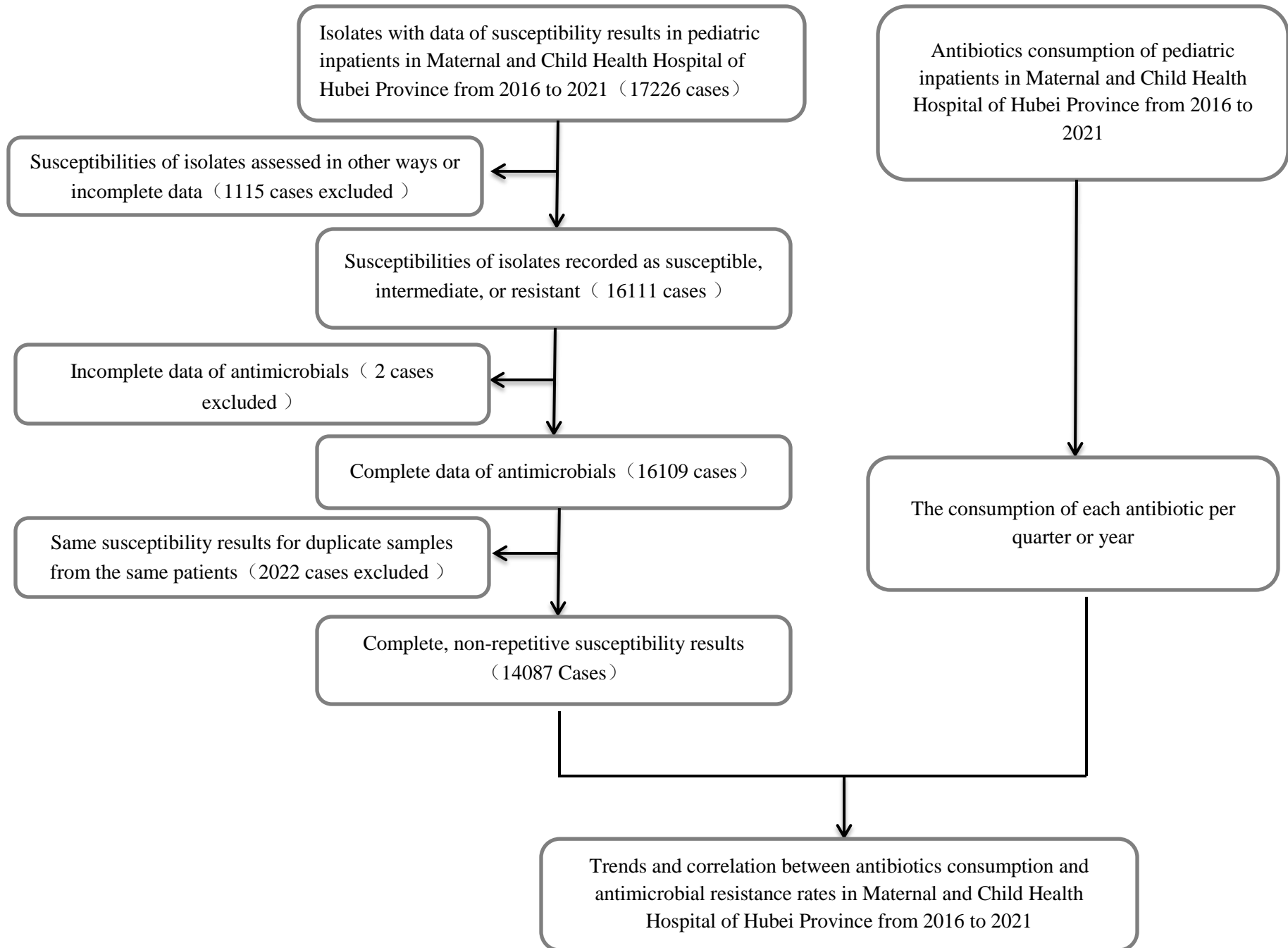
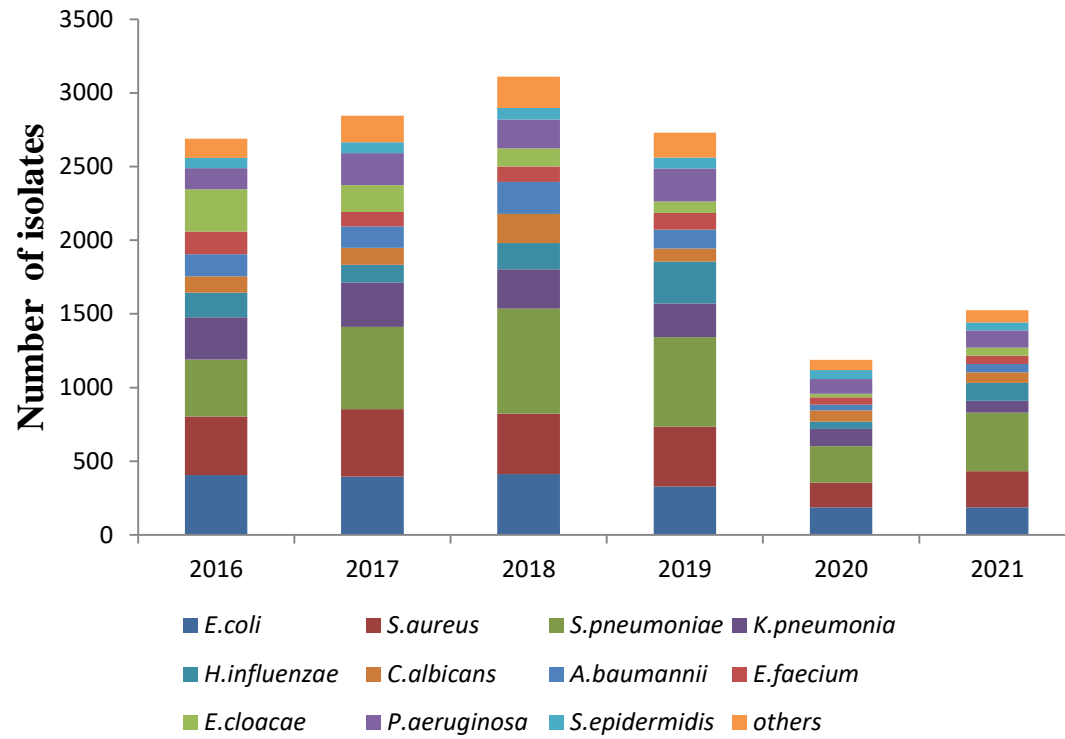


Supplementary Figure 1 The flow diagram of this study



Supplementary Figure 2 Frequency of the isolated species in the Specialist Children's Hospital during 2016–2021



Supplementary Table 1 Selected general characteristics of patients from 2016 to 2021

Selected general characteristics of patients	2016	2017	2018	2019	2020	2021
Number of inpatients treated with antibiotics	19088	19641	20194	21016	12843	14676
Sex (male/ female)	11242/7846	11471/8170	12318/7876	12798/8218	7628/5215	8823/5853
Age(years, Mean± standard deviation)	2.10±2.44	2.19±2.47	2.19±2.51	2.35±2.63	2.18±2.84	2.73±2.82
Respiratory system infection [No. (%)]	11697(61.28)	12558(63.94)	11836(58.61)	12813(60.97)	6893(53.67)	8753(59.64)
Bloodstream infection [No. (%)]	2995(15.69)	2216(11.28)	3088(15.29)	2367(11.27)	2028(15.79)	1832(12.48)
Digestive system infection [No. (%)]	1580(8.28)	1430(7.28)	1755(8.69)	1501(7.14)	1062(8.27)	1023(6.97)
Urinary system infection [No. (%)]	1073(5.62)	1023.2961(5.21)	925 (4.58)	1112(5.29)	814(6.34)	788(5.37)
Central nervous system infection [No. (%)]	613(3.21)	453.7071(2.31)	765(3.79)	1465(6.97)	904(7.04)	768(5.23)
Other (including infection of circulatory system, skin, soft tissue, catheter, and unknown origin etc.) [No. (%)]	1130(5.92)	1960.1718(9.98)	1826(9.04)	1757(8.36)	1142(8.8)	1513(10.31)

Supplementary Table 2 Annual consumption of each antibiotic in the Specialist Children's Hospital during 2016-2021

Categories of antibiotics	Annual antibiotics consumption (DDDs/1000 patient-days)					
	2016	2017	2018	2019	2020	2021
Penicillins (except for P/BLI combinations)	19.98	24.77	17.11	21.51	48.96	42.81
JO1JB06	1.93	3.94	2.38	1.65	9.68	9.02
J01CE01	0.57	1.10	0.08	0.03	5.74	8.00
J01CA01	2.13	2.51	3.03	4.35	7.88	12.45
J01CA04	0.36	0.07	0.02	0.00	0.06	0.07
J01CF04	1.44	2.17	0.13	0.06	1.11	0.83
J01CF05	12.13	11.97	11.43	15.38	22.48	12.44
J01CA16	1.42	3.01	0.03	0.04	2.00	0.00
P/BLI combinations	1.11	0.29	0.67	0.65	0.79	2.37
J01CR02	0.53	0.01	0.35	0.37	0.21	0.25
J01CR05	0.58	0.28	0.32	0.28	0.58	2.12
First-generation cephalosporins	1.19	0.82	0.73	1.37	1.39	3.41
J01DB12	0.61	0.54	0.50	1.04	0.67	3.41
J01DB06	0.58	0.28	0.23	0.33	0.72	0.00
Second-generation cephalosporins	3.04	2.48	4.1	1.78	2.15	3.48
J01DC04	0.01	0.01	0.04	0.03	0.57	0.33
J01DC07	0.07	0.02	0.01	0.33	0.18	0.00
J01DC05	1.74	1.75	3.45	1.10	0.84	0.33
J01DC01	0.02	0.00	0.00	0.00	0.00	0.00
J01DC09	1.20	0.70	0.59	0.33	0.56	2.82
Third-generation cephalosporins	4.24	5.31	6.81	7.27	5.99	18.99
J01DD15	0.02	0.07	0.01	0.02	0.07	0.07
J01DD08	0.14	0.08	0.33	0.26	0.19	0.14
J01DD13	0.07	0.00	0.00	0.00	0.00	0.00
J01DD04	3.00	2.52	3.97	3.18	1.60	11.33
J01DD01	0.00	0.00	0.00	0.00	0.00	0.00
J01DD02	0.29	0.82	0.26	0.27	1.25	7.45
J01DD07	0.72	1.82	2.23	3.54	2.87	0.00
Fourth-generation cephalosporins	0.01	0	0	0.03	0	0
J01DE01	0.01	0.00	0.00	0.03	0.00	0.00
Cephalosporins (except for C/BLI combinations)	8.47	8.61	11.64	10.45	9.53	25.88

C/BLI combinations	55.79	58.04	64.42	62.18	99.58	209.11
J01DD62	32.51	38.08	37.65	33.58	58.28	103.71
J01DD63	5.66	2.15	3.14	2.68	6.50	42.60
J01DD51	17.62	17.82	23.63	25.91	34.80	62.81
BL/BLI combinations	56.9	58.33	65.09	62.83	100.37	211.48
Carbapenems	7.82	6.41	6.99	7.57	12.32	17.25
J01DH02	6.67	5.36	5.54	4.98	8.46	13.67
J01DH51	1.15	1.05	1.45	2.59	3.86	3.58
Monobactams	1.82	2.61	2.81	2.86	3.41	7.16
J01DF01	1.82	2.61	2.81	2.86	3.41	7.16
Macrolides	95.12	77.54	74.05	73.56	41.4	66.32
J01FA01	76.15	61.85	59.97	58.11	32.70	37.76
J01FA10	18.97	15.68	14.08	15.44	8.70	28.57
Glycopeptide antibacterials	1.72	1.48	1.11	0.94	2.98	4.2
J01XA01	1.68	1.46	1.11	0.94	2.98	4.20
J01XA02	0.04	0.02	0.01	0.00	0.00	0.00
Oxazolidinone	7.87	4.94	2.44	4.96	3.13	2.57
J01XX08	7.87	4.94	2.44	4.96	3.13	2.57
Imidazole derivatives	2.34	3.39	4.13	3.26	2.21	3.45
J01XD02	0.00	0.01	0.00	0.00	0.00	0.00
J01XD03	0.07	0.25	0.42	0.10	0.00	0.00
J01XD01	2.27	3.13	3.71	3.16	2.21	3.45
Quinolones	0.03	0.21	0.26	0.25	0.14	0.47
J01MA02	0.01	0.16	0.06	0.11	0.01	0.05
J01MA14	0.00	0.01	0.06	0.01	0.00	0.00
J01MA12	0.02	0.04	0.14	0.12	0.13	0.42
Antifungal drugs	5.44	18.9	5.81	5.71	4.01	6.08
J02AC03	2.20	13.73	3.43	2.39	0.24	1.41
J02AC01	2.87	3.15	1.75	2.03	2.31	3.14
J02AX04	0.00	0.74	0.08	0.01	0.04	0.22
J02AX05	0.38	1.27	0.55	1.28	1.41	1.32
Sodium fusidate	0.63	0.3	0.13	0.2	0.24	0.27
J01XC01	0.63	0.29	0.13	0.20	0.24	0.27
Aminoglycosides	0.1	0	0	0	0.01	3.66
J01GB03	0.10	0.00	0.00	0.00	0.00	3.59
J01GB06	0.00	0.00	0.00	0.00	0.01	0.06
Nitrofurans derivatives	0	0	0	0	0	0.04
G01AX06	0	0	0	0	0	0.04

Sulfonamides and trimethoprim, Lincosamides, Streptogramins and Tetracycline	0.00	0.00	0.00	0.00	0.00	0.00
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Abbreviations: BL/BLI, β -lactam/ β -lactamase inhibitor; C/BLI, cephalosporin/ β -lactamase inhibitor; P/BLI, penicillin/ β -Lactamase inhibitor; DDDs, defined daily doses.

Supplementary Table 3. Resistance trends of ten frequent isolated species in this Specialist Children's Hospital during 2016–2021

isolated species to various antibiotics		Resistant number and rates of isolated species [n (%)]						Linear regression	
		2016	2017	2018	2019	2020	2021	Slope (β)	<i>P</i>
<i>E.coli</i>	Ampicillin	312(78.0)	316(80.0)	342(83.4)	267(81.4)	161(87.0)	153(82.3)	1.157	0.119
	Ampicillin/sulbactam	192(47.9)	184(46.7)	215(52.2)	188(57.5)	118(64.1)	87(46.3)	1.414	0.468
	Piperacillin/tazobactam	7(1.7)	4(1.0)	4(1.0)	4(1.3)	0(0.0)	4(2.1)	-0.20	0.922
	Ceftazidime	57(14.0)	51(12.9)	48(11.6)	50(15.2)	25(13.6)	15(8.0)	--0.694	0.297
	Ceftriaxone	184(45.3)	159(40.4)	192(46.5)	137(41.8)	88(47.1)	63(33.5)	-1.246	0.364
	Cefepime	28(7.0)	33(8.4)	39(9.5)	35(10.7)	16(8.9)	25(13.3)	0.977	0.036
	Cefotetan	9(2.2)	6(1.6)	2(0.6)	4(1.4)	1(0.5)	2(1.2)	-0.214	0.181
	Aztreonam	86(21.5)	83(21.0)	91(22.0)	71(21.6)	36(19.8)	20(11.1)	-1.600	0.110
	Meropenem	/	0(0.0)	/	/	0(0.0)	0(0.0)	-	-
	Imipenem	7(1.8)	3(0.8)	3(0.7)	2(0.6)	0(0.0)	0(0.0)	-0.329	0.008
	Amikacin	5(1.2)	4(1.0)	2(0.5)	4(1.4)	0(0.0)	0(0.0)	-0.231	0.112
	Gentamicin	99(24.8)	116(29.5)	114(27.6)	95(29.2)	43(23.6)	59(31.7)	0.526	0.534
	Tobramycin	18(4.5)	18(4.5)	24(5.8)	14(4.5)	4(2.1)	0(0.0)	-0.886	0.066
Ciprofloxacin	105(25.9)	105(26.7)	126(30.7)	100(30.6)	47(25.5)	74(40.2)	1.937	0.158	

	Levofloxacin	100(24.6)	98(24.9)	119(28.8)	100(30.5)	46(25.0)	58(30.9)	0.957	0.202
	Trimethoprim/Sulfamethoxazole	182(45.0)	173(43.9)	177(42.9)	142(43.8)	80(43.5)	95(50.5)	0.777	0.294
	Nitrofurantoin	18(4.4)	9(2.4)	2(0.5)	7(2.2)	6(3.3)	0(0.0)	-0.503	0.241
	Carbapenems	7(1.8)	3(0.8)	3(0.7)	2(0.6)	0(0.0)	0(0.0)	-0.329	0.008
<i>H.influenzae</i>	Ampicillin	141(86.5)	98(81.7)	145(82.4)	236(82.5)	42(85.7)	89(88.1)	0.574	0.422
	Amoxicillin/clavulanate	28(17.3)	29(24.8)	40(22.2)	51(18.0)	0(0.0)	20(19.8)	-1.889	0.429
	Cefuroxime	56(33.9)	42(35.9)	78(43.3)	116(41.0)	7(14.3)	27(32.5)	-2.117	0.450
	Cefotaxime	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-	-
	Cefaclor	65(49.2)	51(42.9)	101(57.1)	157(55.5)	16(32.0)	66(61.1)	0.720	0.813
	Rifampicin	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-	-
	Ciprofloxacin	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-	-
	Ofloxacin	0(0.0)	0(0.0)	0(0.0)	1(0.3)	0(0.0)	0(0.0)	0.009	0.805
	Chloramphenicol	9(5.5)	3(2.7)	7(3.9)	15(5.5)	0(0.0)	2(1.6)	-0.743	0.178
	Tetracycline	11(6.6)	3(2.7)	7(3.9)	15(5.5)	4(9.5)	2(2.4)	0.029	0.970
<i>K.pneumonia</i>	Ampicillin/sulbactam	149(52.1)	170(56.7)	127(47.9)	93(41.7)	69(59.5)	19(23.8)	-3.980	0.234
	Piperacillin/tazobactam	59(20.6)	95(31.8)	33(12.4)	16(7.3)	27(23.3)	5(6.5)	-2.889	0.267
	Ceftazidime	97(34.0)	123(40.9)	72(27.0)	39(17.2)	42(36.2)	13(16.9)	-3.126	0.227

	Ceftriaxone	142(49.8)	164(54.7)	121(45.5)	94(41.8)	65(56.5)	18(23.4)	-3.723	0.230
	Cefepime	78(27.4)	114(38.0)	54(20.4)	51(22.7)	39(33.9)	12(15.6)	-1.971	0.388
	Cefotetan	57(20.1)	93(31.1)	26(9.9)	16(7.0)	21(18.1)	3(4.8)	-3.383	0.171
	Aztreonam	97(33.9)	130(43.5)	90(33.8)	61(26.9)	52(45.2)	19(23.8)	-1.494	0.529
	Meropenem	0(0.0)	/	26(9.8)	/	0(0.0)	/	-	-
	Ertapenem	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	3(4.0)	0.571	0.158
	Imipenem	36(12.8)	101(33.7)	27(10.2)	57(25.2)	20(18.9)	24(29.6)	1.560	0.547
	Meropenem	31(10.8)	98(32.5)	26(9.8)	50(22.4)	17(15.6)	18(24.3)	0.840	0.734
	Amikacin	47(16.9)	68(22.5)	14(5.2)	6(2.6)	12(10.3)	5(6.5)	-2.606	0.172
	Gentamicin	92(32.1)	78(25.9)	46(17.4)	24(10.6)	13(11.2)	16(19.8)	-3.211	0.110
	Tobramycin	50(17.4)	72(24.1)	23(8.8)	14(6.2)	18(15.7)	11(14.3)	-1.237	0.480
	Ciprofloxacin	54(18.9)	86(28.9)	40(15.2)	31(13.8)	28(24.1)	11(14.3)	-1.109	0.511
	Carbapenems	36(12.8)	101(33.7)	27(10.2)	57(25.2)	20(18.9)	24(29.6)	1.560	0.547
<i>E.cloacae</i>	Piperacillin/tazobactam	/	5(2.7)	9(7.7)	10(13.9)	4(18.2)	7(13.0)	-	-
	Ceftazidime	29(10.4)	29(16.2)	30(24.8)	21(26.6)	7(31.8)	10(21.7)	3.003	0.097
	Ceftriaxone	74(26.0)	34(18.8)	37(30.8)	12(15.4)	5(20.8)	7(17.9)	-1.426	0.353
	Cefepime	17(6.2)	9(5.4)	13(10.8)	28(35.4)	4(18.2)	2(4.2)	1.500	0.654

	Aztreonam	50(17.7)	29(16.2)	30(25.4)	7(10.9)	8(36.4)	10(20.4)	1.703	0.487
	Meropenem	/	0(0.0)	/	/	/	0(0.0)	-	-
	Ertapenem	0(0.0)	0(0.0)	0(0.0)	6(8.1)	0(0.0)	6(11.3)	1.846	0.141
	Imipenem	3(1.0)	5(2.7)	8(6.9)	/	3(13.6)	4(8.3)	-	-
	Amikacin	0(0.0)	0(0.0)	0(0.0)	1(1.3)	2(9.1)	0(0.0)	0.817	0.408
	Gentamicin	6(2.1)	8(4.5)	1(0.8)	2(2.5)	2(9.1)	0(0.0)	0.143	0.878
	Ciprofloxacin	3(1.0)	0(0.0)	1(0.8)	2(2.5)	0(0.0)	0(0.0)	-0.094	0.733
	Levofloxacin	3(1.0)	0(0.0)	0(0.0)	1(1.3)	0(0.0)	0(0.0)	-0.106	0.524
	Trimethoprim/Sulfamethoxazole	23(8.3)	15(8.8)	14(11.5)	10(12.7)	4(18.2)	7(13.0)	1.511	0.062
	Carbapenems	3(1.0)	5(2.7)	8(6.9)	6(8.1)	3(13.6)	6(11.3)	2.440	0.005
<i>P.aeruginosa</i>	Piperacillin	12(8.8)	20(9.3)	4(2.0)	/	0(0.0)	0(0.0)	-	-
	Piperacillin/tazobactam	10(7.2)	6(2.9)	4(2.4)	6(2.9)	0(0.0)	14(12.5)	0.523	0.679
	Ceftazidime	6(4.1)	4(1.8)	4(2.0)	14(7.2)	7(7.3)	10(8.9)	1.306	0.049
	Cefepime	10(7.2)	4(2.2)	3(1.8)	3(1.6)	1(1.0)	1(0.9)	-1.009	0.060
	Imipenem	8(6.0)	53(24.8)	4(2.5)	25(11.2)	7(7.1)	18(15.9)	0.146	0.949
	Meropenem	12(8.5)	24(11.1)	4(2.0)	23(10.6)	5(5.6)	16(14.3)	0.603	0.621
	Amikacin	9(6.2)	3(1.5)	0(0.0)	0(0.0)	0(0.0)	2(1.8)	-0.757	0.218

	Gentamicin	9(6.2)	0(0.0)	4(2.4)	1(0.4)	1(1.0)	0(0.0)	-0.857	0.146
	Tobramycin	9(6.2)	0(0.0)	3(1.8)	0(0.0)	1(1.0)	1(0.9)	-0.723	0.227
	Ciprofloxacin	0(0.0)	0(0.0)	2(1.2)	2(1.2)	0(0.0)	0(0.0)	-	-
	Levofloxacin	0(0.0)	0(0.0)	0(0.0)	2(1.2)	0(0.0)	0(0.0)	0.034	0.805
	Carbapenems	12(8.5)	53(24.8)	4(2.5)	25(11.2)	7(7.1)	18(15.9)	-0.211	0.924
<i>A.baumannii</i>	Ampicillin/sulbactam	54(38.0)	43(31.2)	111(51.2)	60(50.4)	15(38.5)	22(40.7)	0.989	0.649
	Ceftazidime	55(38.7)	46(31.5)	111(51.6)	62(48.1)	15(38.5)	6(15.0)	-2.886	0.416
	Ceftriaxone	56(40.0)	43(31.2)	111(51.6)	60(50.4)	14(36.8)	13(31.7)	-0.740	0.769
	Cefepime	55(38.7)	46(31.5)	103(50.5)	62(48.1)	/	19(35.8)	-	-
	Imipenem	35(24.8)	24(19.2)	63(28.9)	39(30.2)	15(38.5)	22(48.9)	5.134	0.012
	Meropenem	/	23(16.7)	/	23(20.4)	/	9(18.8)	-	-
	Tobramycin	42(30.0)	35(24.0)	99(46.0)	46(36.2)	2(5.1)	6(15.0)	-4.043	0.297
	Ciprofloxacin	47(33.3)	33(24.3)	99(49.7)	57(44.2)	5(12.8)	9(15.8)	-3.643	0.367
	Levofloxacin	6(4.0)	6(4.1)	14(6.7)	23(22.8)	5(12.8)	0(0.0)	0.634	0.785
	Trimethoprim/Sulfamethoxazole	61(42.7)	50(36.8)	112(52.1)	42(41.6)	12(30.8)	6(15.0)	-4.771	0.118
	Carbapenems	35(24.8)	24(19.2)	63(28.9)	39(30.2)	15(38.5)	22(48.9)	5.134	0.012
<i>S.pneumoniae</i>	Penicillin G	1(0.3)	0(0.0)	0(0.0)	1(0.2)	0(0.0)	0(0.0)	-	-

	Gentamicin	20(5.1)	23(5.1)	24(5.9)	23(5.8)	10(6.0)	7(2.9)	-0.240	0.450
	Rifampicin	2(0.6)	4(0.9)	4(1.0)	3(0.9)	1(0.6)	0(0.0)	-0.114	0.225
	Ciprofloxacin	14(3.7)	17(3.8)	17(4.1)	20(4.9)	6(3.6)	7(2.9)	-0.109	0.551
	Levofloxacin	14(3.7)	18(3.9)	17(4.2)	20(5.0)	7(4.2)	10(4.2)	0.120	0.305
	Moxifloxacin	11(2.9)	13(2.8)	15(3.6)	15(3.7)	6(3.6)	7(3.0)	0.086	0.441
	Trimethoprim/Sulfamethoxazole	38(9.5)	46(10.1)	40(9.9)	44(11.0)	20(11.9)	19(7.8)	-0.057	0.885
	Clindamycin	200(50.5)	232(50.9)	209(51.4)	221(54.3)	84(50.3)	117(48.0)	-0.326	0.565
	Erythrocin	218(54.9)	251(55.0)	225(55.6)	230(56.5)	88(52.4)	125(51.2)	-0.726	0.146
	Linezolid	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-	-
	Vancomycin	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-	-
	Chloramphenicol	/	0(0.0)	/	/	0(0.0)	0(0.0)	-	-
	Tetracycline	74(18.7)	55(12.0)	58(14.2)	51(12.6)	20(11.9)	33(13.6)	-0.783	0.233
<i>E.faecium</i>	Penicillin G	151(98.1)	75(98.7)	97(96.0)	110(98.2)	42(97.7)	35(97.2)	-0.151	0.567
	Ampicillin	150(97.4)	75(98.7)	101(96.2)	110(98.2)	42(97.7)	35(97.2)	-0.057	0.815
	High concentration of gentamicin	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-	-
	High concentration of streptomycin	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-	-
	Ciprofloxacin	109(72.2)	53(70.7)	87(83.7)	95(86.4)	36(83.7)	51(89.5)	3.663	0.019

	Levofloxacin	95(61.7)	46(61.3)	71(70.3)	79(70.5)	34(79.1)	28(60.9)	1.417	0.479
	Erythrocin	139(91.4)	63(84.0)	86(86.0)	93(88.6)	28(65.1)	40(70.2)	-4.574	0.055
	Nitrofurantoin	6(4.0)	4(5.3)	7(6.7)	7(6.3)	3(5.9)	2(3.5)	-0.031	0.931
	Linezolid	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-	-
	Vancomycin	1(0.6)	2(2.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-	-
	Tetracycline	108(70.1)	64(65.3)	81(80.2)	82(81.2)	30(69.8)	45(78.9)	1.671	0.348
<i>C.albicans</i>	Amphotericin B	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-	-
	5-Fluorocytosine	2(1.8)	3(2.6)	1(0.5)	1(1.1)	0(0.0)	1(1.6)	-0.234	0.350
	Fluconazole	12(10.8)	4(4.1)	3(1.5)	0(0.0)	2(2.6)	0(0.0)	-1.714	0.061
	Itraconazole	17(15.6)	10(9.8)	4(2.0)	0(0.0)	1(1.3)	2(2.8)	-2.614	0.057
	Voriconazole	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-	-

Abbreviations: *E.coli*, *Escherichia coli*; *S.aureus*, *Staphylococcus aureus*; *S.pneumoniae*, *Streptococcus pneumonia*; *K.pneumonia*, *Klebsiella pneumonia*; *H.influenzae*, *Haemophilus influenza*; *C.albicans*, *Candida albicans*; *A.baumannii*, *Acinetobacter baumannii*; *E.faecium*, *Enterococcus faecium*; *E.cloacae*, *Enterobacter cloacae*; *P.aeruginosa*, *Pseudomonas aeruginosa*.

Supplementary Table 4 The correlation between antimicrobial resistance rates and antibiotic consumption in the Specialist Children's Hospital from 2016 to 2021

Resistance rates	Consumption of antimicrobial agents	Correlation coefficient (<i>r</i>)	<i>P</i>
<i>E.coli</i> to cefepime	Penicillins (except for P/BLI combinations)	0.111	0.606
	P/BLI combinations	0.156	0.466
	First-generation cephalosporins	0.079	0.715
	Second-generation cephalosporins	-0.22	0.920
	Third-generation cephalosporins	0.114	0.596
	Cephalosporins (except for C/BLI combinations)	0.044	0.837
	C/BLI combinations	-0.128	0.550
	BL/BLI combinations	-0.124	0.562
	Carbapenems	0.103	0.633
	Monobactams	0.039	0.857
	Macrolides	-0.006	0.977
	Glycopeptide antibacterials	0.115	0.593
	Oxazolidinone	-0.074	0.733
	Imidazole derivatives	0.251	0.238
	Quinolones	0.313	0.137
	Antifungal drugs	0.056	0.797
Sodium fusidate	0.126	0.558	
<i>E.cloacae</i> to carbapenems	Penicillins (except for P/BLI combinations)	0.034	0.875
	P/BLI combinations	0.115	0.593
	First-generation cephalosporins	0.132	0.539
	Second-generation cephalosporins	-0.009	0.966
	Third-generation cephalosporins	0.084	0.697
	Cephalosporins (except for C/BLI	0.190	0.374

	combinations)		
	C/BLI combinations	0.675	<0.001
	BL/BLI combinations	0.684	<0.001
	Carbapenems	0.417	0.043
	Monobactams	0.507	0.011
	Macrolides	-0.324	0.123
	Glycopeptide antibacterials	0.106	0.623
	Oxazolidinone	-0.252	0.234
	Imidazole derivatives	0.358	0.086
	Quinolones	0.175	0.413
	Antifungal drugs	-0.100	0.642
	Sodium fusidate	-0.136	0.527
<i>P.aeruginosa</i> to ceftazidime	Penicillins (except for P/BLI combinations)	0.126	0.557
	P/BLI combinations	0.215	0.313
	First-generation cephalosporins	0.320	0.127
	Second-generation cephalosporins	-0.220	0.302
	Third-generation cephalosporins	0.281	0.183
	Cephalosporins (except for C/BLI combinations)	0.367	0.078
	C/BLI combinations	0.625	0.001
	BL/BLI combinations	0.632	0.001
	Carbapenems	0.753	<0.001
	Monobactams	0.227	0.285
	Macrolides	-0.138	0.520
	Glycopeptide antibacterials	0.237	0.265
	Oxazolidinone	-0.160	0.454
	Imidazole derivatives	-0.239	0.260
	Quinolones	0.186	0.385
	Antifungal drugs	-0.354	0.090

	Sodium fusidate	-0.100	0.642
<i>A.baumannii</i> to carbapenems	Penicillins (except for P/BLI combinations)	0.012	0.955
	P/BLI combinations	0.248	0.243
	First-generation cephalosporins	0.293	0.165
	Second-generation cephalosporins	-0.123	0.568
	Third-generation cephalosporins	0.357	0.087
	Cephalosporins (except for C/BLI combinations)	0.401	0.053
	C/BLI combinations	0.763	<0.001
	BL/BLI combinations	0.770	<0.001
	Carbapenems	0.806	<0.001
	Monobactams	0.557	0.005
	Macrolides	-0.391	0.059
	Glycopeptide antibacterials	0.176	0.412
	Oxazolidinone	-0.272	0.198
	Imidazole derivatives	-0.065	0.762
	Quinolones	0.382	0.066
	Antifungal drugs	-0.309	0.142
Sodium fusidate	-0.351	0.092	
<i>S.pneumoniae</i> to ceftriaxone	Penicillins (except for P/BLI combinations)	-0.074	0.730
	P/BLI combinations	0.045	0.834
	First-generation cephalosporins	0.207	0.333
	Second-generation cephalosporins	-0.064	0.765
	Third-generation cephalosporins	0.036	0.867
	Cephalosporins (except for C/BLI combinations)	0.109	0.613
	C/BLI combinations	0.323	0.124
	BL/BLI combinations	0.323	0.124

	Carbapenems	0.197	0.357
	Monobactams	0.142	0.509
	Macrolides	0.040	0.851
	Glycopeptide antibacterials	0.037	0.862
	Oxazolidinone	-0.217	0.308
	Imidazole derivatives	-0.064	0.765
	Quinolones	-0.038	0.859
	Antifungal drugs	-0.193	0.366
	Sodium fusidate	0.037	0.864
<i>E.faecium</i> to ciprofloxacin	Penicillins (except for P/BLI combinations)	0.337	0.108
	P/BLI combinations	0.276	0.191
	First-generation cephalosporins	0.221	0.299
	Second-generation cephalosporins	-0.107	0.620
	Third-generation cephalosporins	0.293	0.165
	Cephalosporins (except for C/BLI combinations)	0.324	0.123
	C/BLI combinations	0.325	0.122
	BL/BLI combinations	0.337	0.108
	Carbapenems	0.174	0.417
	Monobactams	0.067	0.754
	Macrolides	-0.225	0.290
	Glycopeptide antibacterials	0.116	0.589
	Oxazolidinone	-0.007	0.976
	Imidazole derivatives	0.040	0.853
	Quinolones	0.373	0.073
	Antifungal drugs	0.228	0.285
	Sodium fusidate	-0.230	0.280

Abbreviations: BL/BLI, β -lactam/ β -lactamase inhibitor; C/BLI, cephalosporin/ β -lactamase inhibitor; P/BLI, penicillin/ β -Lactamase inhibitor; DDDs, defined daily doses; *E.coli*, *Escherichia coli*; *S.pneumoniae*, *Streptococcus pneumonia*; *A.baumannii*, *Acinetobacter baumannii*; *E.faecium*, *Enterococcus faecium*; *E.cloacae*, *Enterobacter cloacae*; *P.aeruginosa*, *Pseudomonas aeruginosa*.

