Supplemental materials

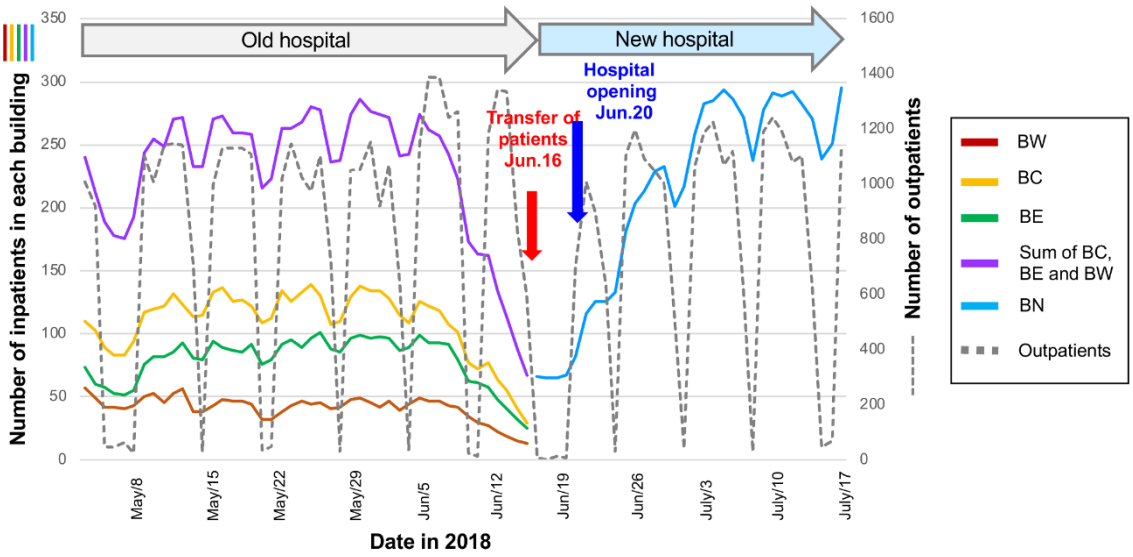

Figure S1. The transition of the number of outpatients and hospitalized patients.

Graph represents the transition of the number of outpatients and hospitalized patients from May 1 to July 17, 2018. The number of beds were 65, 0, 148, 106, and 319 for BW, BA, BC, BE, and BN, respectively. Due to the inauguration of the new hospital in June 2018, the number of hospitalized patients gradually decreased, and 67 hospitalized patients (BC: 29, BE: 25, BW: 13 patients) were transferred to the BN on June 16, 2018. The number of hospitalized patients reached the same number of patients as that in the old hospital two weeks after the opening of the new hospital. The number of outpatients at the old hospital was approximately 1000-1200 on weekdays. Outpatient treatment was suspended from June 16 to 19 before opening of the new hospital. The number of patients gradually recovered to the original number after re-opening.

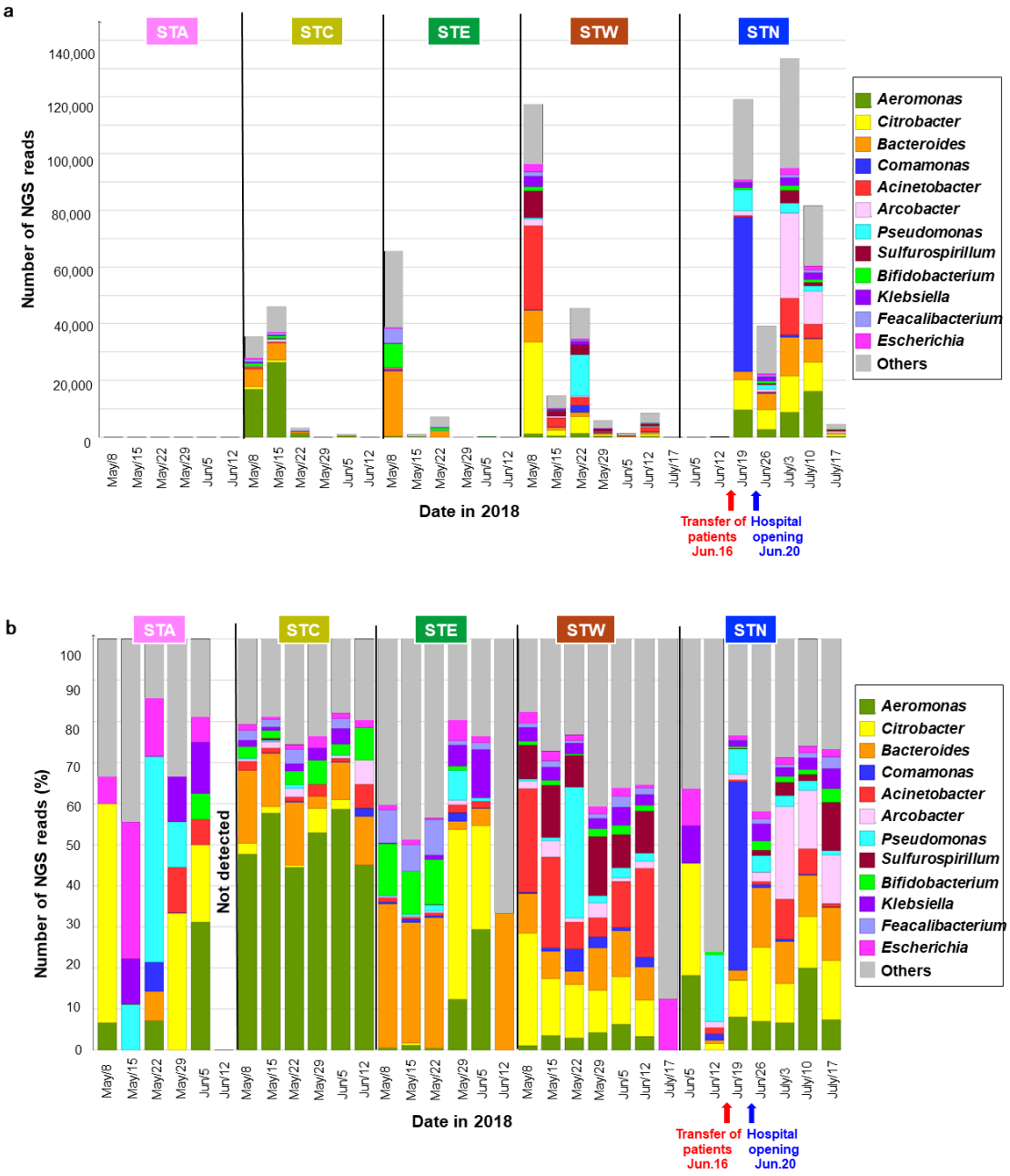

Figure S2. Metagenomic analysis of sewage samples in each building.

NGS reads were classified based on the bacterial genus taxonomy and the graph displayed actual NGS read counts (a) and relative proportion (b) of each bacterial genus. The actual NGS read counts were very low compared with other sewage samples in the sewage tank of BA (STA).

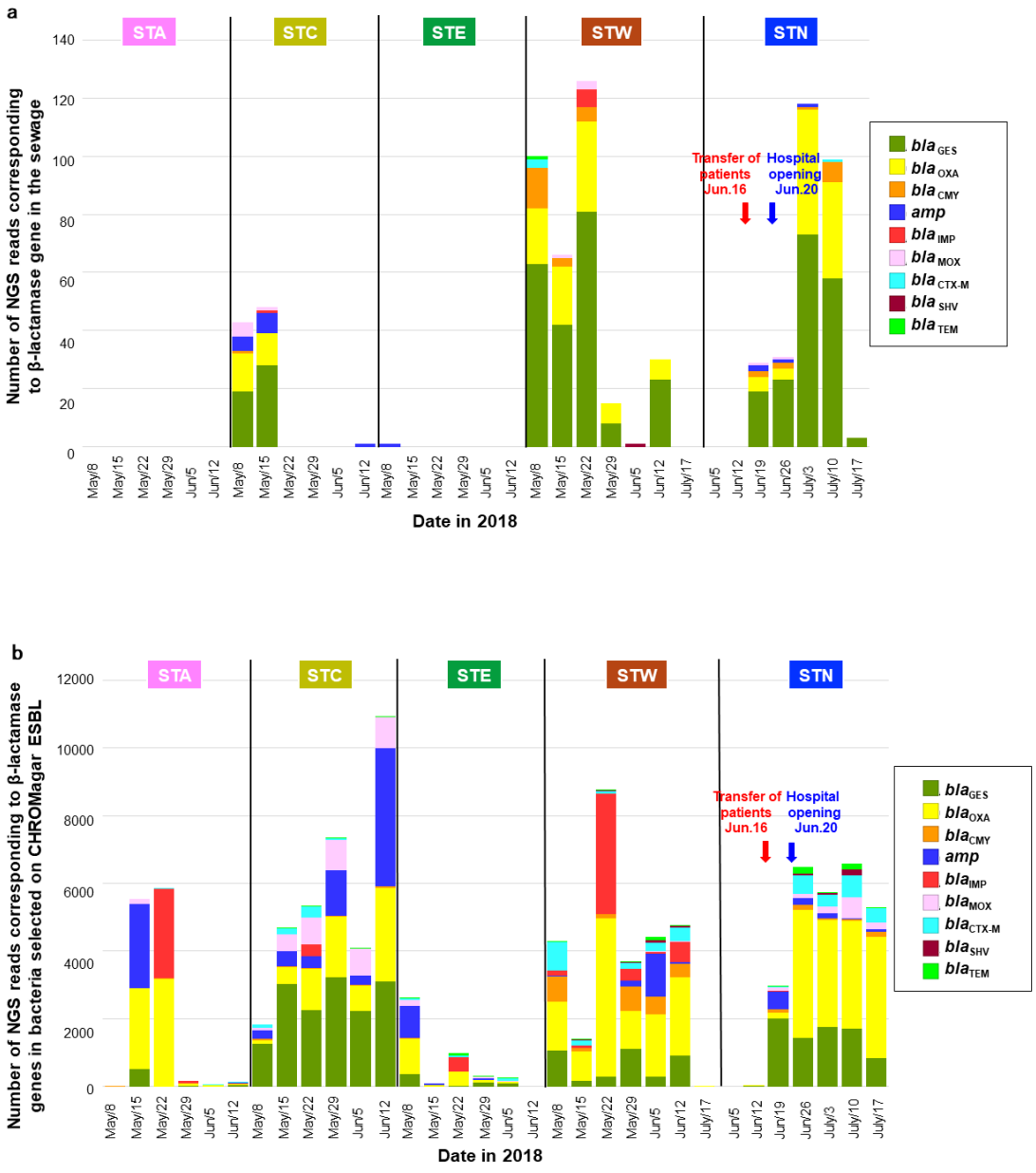

Figure S3. NGS read counts corresponding to β-lactamase genes in each sewage tank.

The metagenome read counts corresponding to β-lactamase gene of (a) the sewage samples and (b) that of the grown bacteria on CHROMagar ESBL is displayed. The read counts of *bla*$_{CTX-M}$ gene in original sewages were not significant (panel a), but selection on

CHROMagar ESBL resulted in increasing detection of CTX-M-positive organisms in STN, after relocation to the new building (June 20, 2018).

Table S1. Bacteria isolates growing on CHROMagar ESBL

Bacteria species	Hospital sewage tank		Clinical isolate[c]
	STW0522[a]	STN0717[b]	
Escherichia coli	1	20	16
Klebsiella pneumoniae	2		3
Klebsiella aerogenes		1	
Klebsiella michiganensis			1
Klebsiella quasipneumoniae	1		
Klebsiella variicola	1		
Klebsiella sp.	2		
Enterobacter kobei	21	2	
Enterobacter bugandensis		12	
Enterobacter hormaechei	3	1	
Enterobacter cloacae		3	
Enterobacter roggenkampii	1		
Citrobacter portucalensis	16	39	
Citrobacter freundii	20		
Achromobacter xylosoxidans	5		
Pseudomonas monteilii	3		
Raoultella planticola	1		
Stenotrophomonas maltophilia	1		

[a]STW0522: sewage tank of west building at 22th May 2018

[b]STN0717: sewage tank of new building at 17th July 2018.

[c]Clinical isolate: patients from 8, May 2018 to 17th July 2018

Table S2. Serotype of ESBL-producing *E.coli* in sewage and clinical isolate

Sequence type	Serotype	Hospital sewage tank		Clinical isolate[c]
		STW 0522[a]	STN 0717[b]	
ST12	O4:H1			1
ST38	O86:H18		5	3
ST73	O6:H1			1
ST131	O25:H4			5
ST224	O8:H23	1		
ST393	O15:H1		14	2
ST1011	O130:H10			4
ST9586	O8:H10		1	

[a]STW0522; sewage tank of west building at 22th May 2018

[b]STN0717; sewage tank of new building at 17th July 2018.

[c]Clinically isolate; clinically isolate from 8th May 2018 to 17th July 2018

Data Set S1. Metagenome DNA-Seq of sewage samples

Sample Name	BioProject	BioSample	Run
STA-180508	PRJDB9036	SAMD00195117	DRR199824
STA-180515	PRJDB9036	SAMD00195118	DRR199825
STA-180522	PRJDB9036	SAMD00195119	DRR199826
STA-180529	PRJDB9036	SAMD00195120	DRR199827
STA-180605	PRJDB9036	SAMD00195121	DRR199828
STA-180612	PRJDB9036	SAMD00195122	DRR199829
STC-180508	PRJDB9036	SAMD00195123	DRR199830
STC-180515	PRJDB9036	SAMD00195124	DRR199831
STC-180522	PRJDB9036	SAMD00195125	DRR199832
STC-180529	PRJDB9036	SAMD00195126	DRR199833
STC-180605	PRJDB9036	SAMD00195127	DRR199834
STC-180612	PRJDB9036	SAMD00195128	DRR199835
STE-180508	PRJDB9036	SAMD00195129	DRR199836
STE-180515	PRJDB9036	SAMD00195130	DRR199837
STE-180522	PRJDB9036	SAMD00195131	DRR199838
STE-180529	PRJDB9036	SAMD00195132	DRR199839
STE-180605	PRJDB9036	SAMD00195133	DRR199840
STE-180612	PRJDB9036	SAMD00195134	DRR199841
STW-180508	PRJDB9036	SAMD00195135	DRR199842
STW-180515	PRJDB9036	SAMD00195136	DRR199843
STW-180522	PRJDB9036	SAMD00195137	DRR199844
STW-180529	PRJDB9036	SAMD00195138	DRR199845
STW-180605	PRJDB9036	SAMD00195139	DRR199846
STW-180612	PRJDB9036	SAMD00195140	DRR199847
STW-180717	PRJDB9036	SAMD00195141	DRR199848
STN-180605	PRJDB9036	SAMD00195142	DRR199849
STN-180612	PRJDB9036	SAMD00195143	DRR199850
STN-180619	PRJDB9036	SAMD00195144	DRR199851
STN-180626	PRJDB9036	SAMD00195145	DRR199852
STN-180703	PRJDB9036	SAMD00195146	DRR199853
STN-180710	PRJDB9036	SAMD00195147	DRR199854
STN-180717	PRJDB9036	SAMD00195148	DRR199855
STA-CHROMagarESBL-180508	PRJDB9036	SAMD00195149	DRR199856
STA-CHROMagarESBL-180515	PRJDB9036	SAMD00195150	DRR199857
STA-CHROMagarESBL-180522	PRJDB9036	SAMD00195151	DRR199858
STA-CHROMagarESBL-180529	PRJDB9036	SAMD00195152	DRR199859
STA-CHROMagarESBL-180605	PRJDB9036	SAMD00195153	DRR199860
STA-CHROMagarESBL-180612	PRJDB9036	SAMD00195154	DRR199861
STC-CHROMagarESBL-180508	PRJDB9036	SAMD00195155	DRR199862
STC-CHROMagarESBL-180515	PRJDB9036	SAMD00195156	DRR199863
STC-CHROMagarESBL-180522	PRJDB9036	SAMD00195157	DRR199864
STC-CHROMagarESBL-180529	PRJDB9036	SAMD00195158	DRR199865
STC-CHROMagarESBL-180605	PRJDB9036	SAMD00195159	DRR199866
STC-CHROMagarESBL-180612	PRJDB9036	SAMD00195160	DRR199867
STE-CHROMagarESBL-180508	PRJDB9036	SAMD00195161	DRR199868
STE-CHROMagarESBL-180515	PRJDB9036	SAMD00195162	DRR199869
STE-CHROMagarESBL-180522	PRJDB9036	SAMD00195163	DRR199870
STE-CHROMagarESBL-180529	PRJDB9036	SAMD00195164	DRR199871
STE-CHROMagarESBL-180605	PRJDB9036	SAMD00195165	DRR199872
STE-CHROMagarESBL-180612	PRJDB9036	SAMD00195166	DRR199873
STW-CHROMagarESBL-180508	PRJDB9036	SAMD00195167	DRR199874
STW-CHROMagarESBL-180515	PRJDB9036	SAMD00195168	DRR199875
STW-CHROMagarESBL-180522	PRJDB9036	SAMD00195169	DRR199876
STW-CHROMagarESBL-180529	PRJDB9036	SAMD00195170	DRR199877
STW-CHROMagarESBL-180605	PRJDB9036	SAMD00195171	DRR199878
STW-CHROMagarESBL-180612	PRJDB9036	SAMD00195172	DRR199879
STW-CHROMagarESBL-180717	PRJDB9036	SAMD00195173	DRR199880
STN-CHROMagarESBL-180605	PRJDB9036	SAMD00195174	DRR199881
STN-CHROMagarESBL-180612	PRJDB9036	SAMD00195175	DRR199882
STN-CHROMagarESBL-180619	PRJDB9036	SAMD00195176	DRR199883
STN-CHROMagarESBL-180626	PRJDB9036	SAMD00195177	DRR199884
STN-CHROMagarESBL-180703	PRJDB9036	SAMD00195178	DRR199885
STN-CHROMagarESBL-180710	PRJDB9036	SAMD00195179	DRR199886
STN-CHROMagarESBL-180717	PRJDB9036	SAMD00195180	DRR199887

Data Set S2. Whole-genome information of antimicrobial resistance Proteobacteria isolated from sewage tanks and clinical patients.