

7.6 Enterococci

Enterococci belong to the normal gastrointestinal flora of humans and animals. As such, they are often considered commensals with low pathogenicity. However, they can also cause serious infections, mainly in hospital settings, such as urinary tract infections, bacteremia, endocarditis, and intra-abdominal infections in critical ill patients and immunocompromised hosts. The vast majority of enterococcal infections are caused by *Enterococcus faecalis* and *E. faecium*.

While *E. faecalis* isolates remain susceptible to most antibiotics, including aminopenicillins, *E. faecium* isolates, mainly detected in the nosocomial setting, are usually resistant to aminopenicillins. In addition, *E. faecium* shows higher resistance rates to aminoglycosides than *E. faecalis* (Table 7. j). Aminoglycoside resistance is still fairly low compared to the EU/EEA population weighed average (e.g., a gentamicin high-level resistance, HLR, in *E. faecalis* of 10.8% in Switzerland versus 29% in the EU/EEA in 2020) and has slightly,

but significantly, decreased during the last ten years. A decrease in gentamicin HLR in *E. faecalis* from 31.8% in 2016 to 29% in 2020 was observed on average in EU/EEA countries as well [2].

In contrast to the United States, vancomycin resistance in *E. faecium* was still rare in Switzerland (2.9% in 2020) and far below the EU/EEA average of 16.8% in 2020 [2]. However, large geographical differences exist within EU/EEA states. Importantly, a significant increase in vancomycin-resistant *E. faecium* was noted in Switzerland during the last ten years, due to a regional/national outbreak associated with the spread of the clone ST769 [11, 12]. Typical nosocomial strains currently observed include ST80 and ST117. Surveillance of vancomycin-resistant enterococci (VRE) is crucial since very few antibiotics remain active, and these are commonly associated with much higher toxicity than penicillin. Current cantonal data on VRE are updated monthly on the ANRESIS homepage.

Table 7. j: Resistance rates of invasive *Enterococcus faecalis* and *Enterococcus faecium* isolates in humans in 2021.

<i>Enterococcus faecalis</i>										2021	
Antimicrobial	West		North-East		South		Total			Trend	
	n	%	n	%	n	%	n	%	95% CI	4y	10y
Aminopenicillins	169	1.8	622	0	235	0	1,026	0.3	0.1–0.5	–	–
Gentamicin HLR ¹	75	18.7	332	8.4	28	17.9	435	10.8	9.3–12.3	–	↓
Tetracycline	16	31.2	103	74.8	46	100	165	77.6	74.4–80.8	↑	–
Vancomycin	208	0	687	0	235	0	1,130	0	0.0–0.0	↓	–
Linezolid	157	1.9	322	0.3	108	0	587	0.7	0.4–1.0	–	–

<i>Enterococcus faecium</i>										2021	
Antimicrobial	West		North-East		South		Total			Trend	
	n	%	n	%	n	%	n	%	95% CI	4y	10y
Aminopenicillins	112	71.4	294	70.1	89	38.2	495	64.6	62.5–66.7	↓	↓
Gentamicin HLR ¹	51	47.1	219	32.4	25	12	295	33.2	30.5–35.9	–	↓
Tetracycline	5	40	52	44.2	18	100	75	57.3	51.6–63.0	↑	↑
Vancomycin	135	2.2	369	2.2	89	1.1	593	2	1.4–2.6	–	↑
Linezolid	99	1	153	0	58	1.7	310	0.6	0.2–1.0	–	–

¹HLAR = high level aminoglycoside resistance

West (GE, NE, VD, JU, FR), South (TI), North-East (other cantons), according to linguistic regions. 95% confidence intervals (CI) were calculated by the Wilson score method, calculations of trends were performed by logistic regression. Trends were modeled with logistic regressions. Arrows represent a significant effect ($p < 0.05$) of the year on the corresponding outcome (increase, decrease).

Figure 7.1: Resistance rates of invasive *Enterococcus faecalis* and *Enterococcus faecium* isolates in humans between 2012 and 2021.

