

## 7.6 Enterococci

Enterococci belong to the normal gastrointestinal flora of humans and animals. As such, they are often considered as 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 seriously ill patients and immunocompromised hosts. The vast majority of enterococcal infections are caused by *Enterococcus faecalis* and *Enterococcus faecium*.

While *E. faecalis* isolates still remain susceptible to many antibiotics, including aminopenicillins, *E. faecium* isolates are usually resistant to aminopenicillins. In addition, *E. faecium* shows higher resistance rates to aminoglycosides as compared to *E. faecalis* (Table 7. j). Aminoglycoside non-susceptibility is still fairly low compared to the EU/EEA weighed average (e.g. a gentamicin high-level resistance (HLR) in *E. faecalis* of 9.9 % in Switzerland versus 27.1% in Europe) and has significantly decreased during the last ten years. A decrease in gentamicin HLR in *E. faecalis* was also observed in one third of all European countries [2]. In contrast to the United States, vancomycin resistance was still rare in Switzerland and far below the EU/EEA average of 17.3% in *E. faecium* in 2018 [2]. However, we have noted a significant increase in vancomycin resistant *E. faecium* during the last years, due to a regional/national outbreak associated with the spread of clone ST769 [7–8]. Surveillance of enterococci, particularly vancomycin-resistant enterococci (VRE), is crucial, since very few antibiotics remain active, and these are commonly associated with much higher toxicity than penicillin.

**Table 7. j:** Non-susceptibility rates of invasive *Enterococcus faecalis* and *Enterococcus faecium* isolates in humans in 2019.

<i>Enterococcus faecalis</i>										2019	
	West		North-East		South		Total		Trend		
Antimicrobial	n	%	n	%	n	%	n	%	95% CI	4y	10y
Aminopenicillins	158	0.0%	489	0.0%	48	0.0%	695	0.0%	0.0–0.0	–	–
Gentamicin HLR <sup>1</sup>	92	12.0%	284	9.2%	48	10.4%	424	9.9%	8.4–11.4	↓	↓
Streptomycin HLR <sup>1</sup>	2	0.0%	90	21.1%	0	0.0%	92	20.7%	16.5–24.9	–	↓
Tetracycline	52	59.6%	51	84.3%	0	0.0%	103	71.8%	67.4–76.2	–	–
Vancomycin	153	0.0%	543	0.6%	48	0.0%	744	0.4%	0.2–0.6	–	–
Linezolid	108	0.9%	258	0.0%	48	0.0%	414	0.2%	0.0–0.4	–	↓

  

<i>Enterococcus faecium</i>										2019	
	West		North-East		South		Total		Trend		
Antimicrobial	n	%	n	%	n	%	n	%	95% CI	4y	10y
Aminopenicillins	78	74.4%	243	70.4%	20	95.0%	341	72.7%	70.3–75.1	↓	↓
Gentamicin HLR <sup>1</sup>	46	39.1%	186	22.6%	20	40.0%	252	27.0%	24.2–29.8	–	↓
Streptomycin HLR <sup>1</sup>	1	0.0%	65	61.5%	0	0.0%	66	60.6%	54.6–66.6	–	↓
Tetracycline	29	41.4%	34	61.8%	0	0.0%	63	52.4%	46.1–58.7	–	↑
Vancomycin	78	0.0%	305	1.6%	20	10.0%	403	1.7%	1.1–2.3	–	↑
Linezolid	57	0.0%	145	0.0%	20	0.0%	222	0.0%	0.0–0.0	–	–

<sup>1</sup> HLR=high-level 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 modelled with logistic regressions. Arrows represent a significant effect ( $p < 0.05$ ) of the year on the correspondent outcome (increase, decrease).

**Figure 7. I:** Non-susceptibility rates of invasive *Enterococcus faecalis* and *Enterococcus faecium* isolates in humans between 2010 and 2019 (HLAR = High-level aminoglycoside resistance).

