



Higher aminoglycosides resistance in *Proteus* spp. and *Providencia* spp. as measured by the Phoenix compared to the VITEK2 automated antibiotic susceptibility test system

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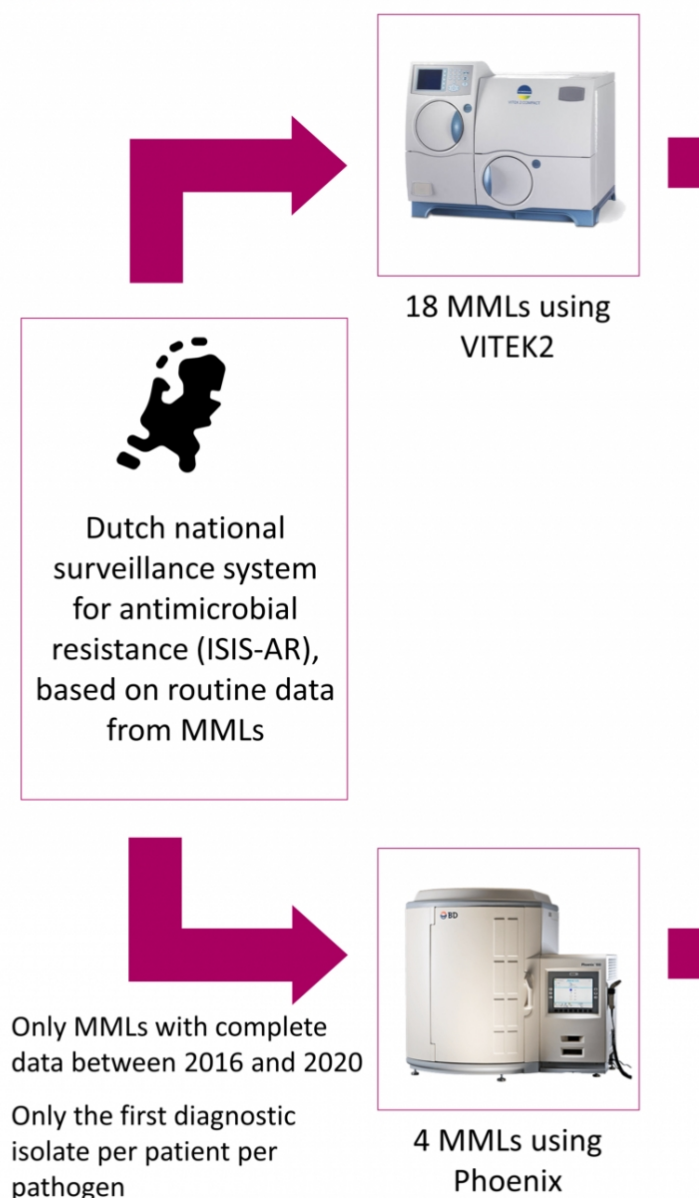
Conclusion

Additional to monitoring trends in antibiotic resistance and supporting guidelines, national surveillance of AST may help to improve laboratory quality. In this descriptive analysis higher aminoglycoside MIC-values were observed for *Proteus* spp. and *Providencia* spp. as measured by the Phoenix compared to the VITEK2 automated AST system. BD is informed of these findings and research into the cause of these findings has been started.

Background

In the Netherlands, the majority of antimicrobial susceptibility testing (AST) in medical microbiology laboratories (MMLs) is performed using the automated systems VITEK2 (BioMérieux, Marcy l'Etoile, France) or Phoenix (Becton, Dickinson and Company [BD], Franklin Lakes, New Jersey, United States [US]). In 2020, one of the MMLs using the Phoenix noted a high percentage of gentamicin resistance in *P. mirabilis* compared to national resistance data. Therefore, data from the Dutch national surveillance system for antimicrobial resistance (ISIS-AR) was used to perform a descriptive analysis on gentamicin AST for all *Enterobacteriales*, *Pseudomonas aeruginosa*, and *Staphylococcus aureus*, using data from all MMLs that delivered complete data for 2016 to 2020.

Methods



Results

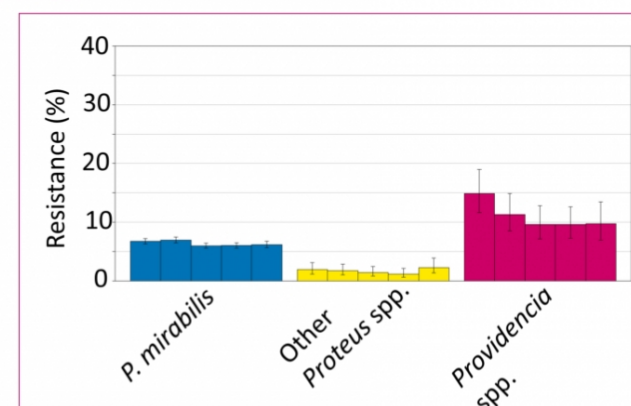


Figure 1. Trends in gentamicin resistance (from left to right 2016 to 2020) among diagnostic isolates of *P. mirabilis*, other *Proteus* spp. and *Providencia* spp., measured in MMLs using VITEK2

In *Proteus* spp. (especially *P. mirabilis*) and *Providencia* spp. resistance percentages for gentamicin were significantly higher in MMLs using Phoenix than those using VITEK2 from 2018 onwards. Comparable differences between MMLs using VITEK2 or Phoenix were found for tobramycin, although there was no clear increase over the years in MMLs using Phoenix (data not shown). No significant differences or time trends were found for other *Enterobacteriales*, *P. aeruginosa*, and *S. aureus*.

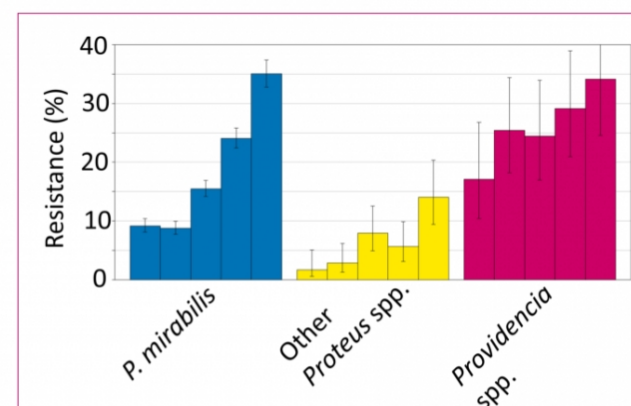


Figure 2. Trends in gentamicin resistance (from left to right 2016 to 2020) among diagnostic isolates of *P. mirabilis*, other *Proteus* spp. and *Providencia* spp., measured in MMLs using Phoenix

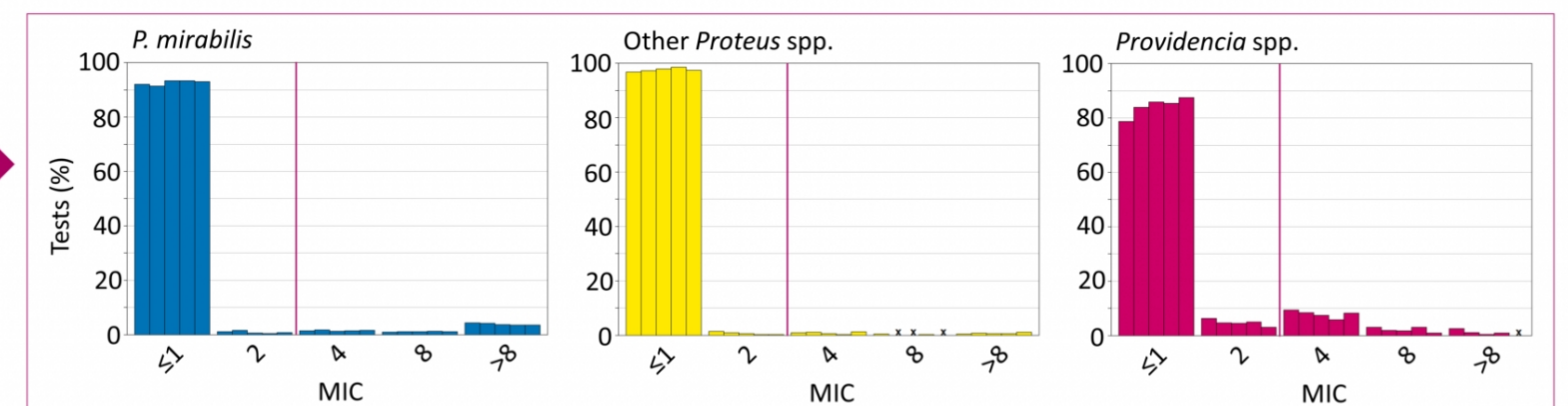


Figure 3. Trends in MIC distribution (from left to right 2016 to 2020) among diagnostic isolates of *P. mirabilis*, other *Proteus* spp. and *Providencia* spp., measured in MMLs using VITEK2, with the EUCAST 2021 R cut-off value as reference line

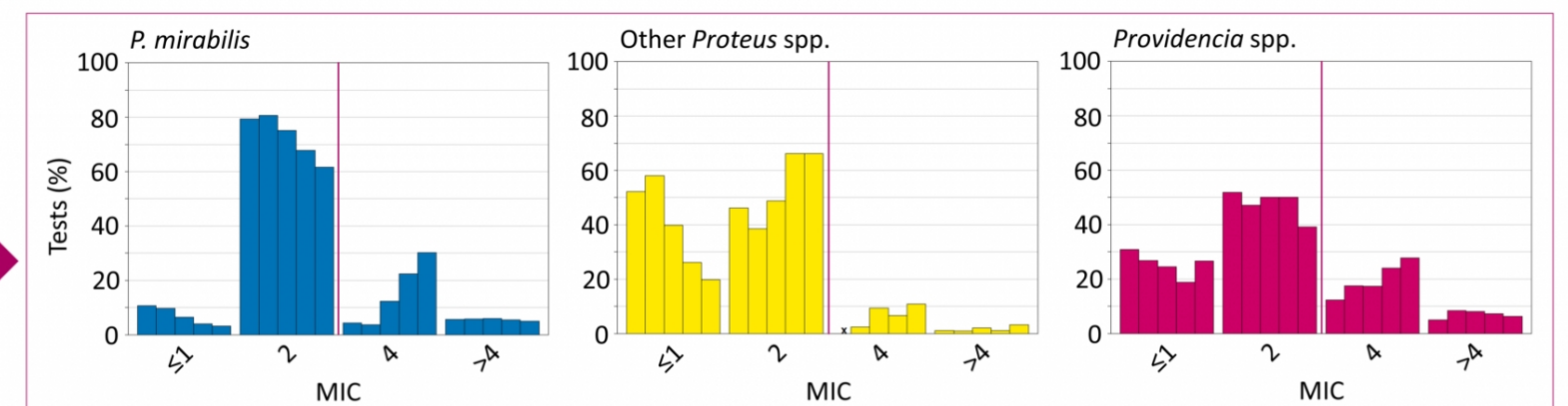


Figure 4. Trends in MIC distribution (from left to right 2016 to 2020) among diagnostic isolates of *P. mirabilis*, other *Proteus* spp. and *Providencia* spp., measured in MMLs using Phoenix, with the EUCAST 2021 R cut-off value as reference line