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Colistin, SDD and resistance: *nihil novi sub sole*

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A reply to these comments can be found at doi:10.1007/s00134-014-3328-2.

Dear Editor,

We read with interest the article entitled 'What's new in antimicrobial use and resistance in critically ill patients?' by Bassetti et al. [1]. The authors claim that the spread of polymyxin E (i.e. colistin) resistance in carbapenemase-producing *Klebsiella pneumoniae* (KPC) can be related to the ecological effect of topical use in selective digestive decontamination (SDD) protocols in intensive care units (ICUs). The evidence on which they base their claim is the Oostdijk study [2]. In that study two cohorts of patients are lumped together: those from a large Dutch randomized multicentre study including 5,939 patients receiving standard care (SC), SDD, and selective oropharyngeal decontamination (SOD), and those from a single-centre study using only SDD in 3,195 patients. Only data from respiratory tract colonization were available for the comparison between SC, SDD, and SOD in the former cohort of patients. The authors demonstrated that respiratory tract acquisition rates of colistin-resistant aerobic Gram-negative bacilli (AGNB) were comparable during SC, SDD, and SOD, and that conversion rates to colistin resistance were low and comparable between SC and SDD. In patients using only SDD, the authors were able to identify some circumstances in which the risk of conversion is higher including the persistent intestinal AGNB carriage in spite of the use of SDD, i.e. not properly decontaminated patients.

Reported resistance against colistin amongst KPC could be caused by the administration of an inappropriately low enteral dose and/or a short period of SDD administration [3]. First, in the original SDD protocol 100 mg of colistin sulphate is administered four times a day (equivalent to about eight million international units of colistin per day). Early SDD studies have shown that high doses of enteral colistin are required to eradicate AGNB as colistin is moderately inactivated by faecal and food compounds [3]. Where the low colistin level in the intestine may kill sensitive bacteria, it may let a mutating one develop resistance. Second, time is pivotal in the ultimate effectiveness of SDD. SDD is considered effective if rectal swabs do not grow AGNB. A short duration of SDD administration is insufficient to clear AGNB from the gut. In SDD-treated patients cultures from rectal swabs still grow AGNB in 56 % of the patients at day 3, in 25 % of the patients at day 8, and in only 15 % of the patients at day 14 [4].

Finally, in a recent meta-analysis on the development of resistance and the use of SDD, no relationship between the use of SDD and resistance was reported [5]. In contrast, the use of SDD was associated with a significant reduction in colistin-resistant AGNB (odds ratio 0.58, 95 % confidence interval 0.46–0.72).

In conclusion, SDD might protect against the development of colistin resistance, and when present the incidence is very low. In addition, regular surveillance swabs, as one of the four components of SDD, can detect resistance early on.

Conflicts of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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