

EDITORIAL

Antibiotic resistance and selective decontamination of the digestive tract: a never-ending story?

E.H.R. van Essen

Department of Intensive Care, Leiden University Medical Center, Leiden The Netherlands

Correspondence

E.H.R. van Essen – e-mail: e.h.r.van_essen@lumc.nl

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Over the years, a pivotal point in the acceptance and application of selective decontamination of the digestive tract (SDD) has been the possible emergence of antibiotic resistance. This has led to low acceptance of SDD especially in areas with a high endemicity of resistant bacteria. Furthermore, the increasing world-wide clinical prevalence of multi-resistant gram-negative bacteria leads to increasing scrutiny of antibiotic usage especially in prophylactic settings. SDD, and its less invasive counterpart, selective oropharyngeal decontamination (SOD), constitute a prophylactic regime aimed at preventing ventilator associated pneumonias (VAP) in the intensive care unit (ICU). Ever since the introduction of SDD, staunch debate has been in place on the harm (i.e. potential increase in antibiotic resistance) versus benefit (i.e. decrease in VAP and attributable morbidity and mortality) ratio of this treatment. Studies over the years have provided ample evidence that SDD, and to a lesser degree SOD, constitute means of significantly decreasing morbidity and mortality in the ICU.^{1,2} In contrast to general beliefs, de Jonge et al. have reported for the first time that SDD resulted in a decrease in the resistance of bacteria colonizing the digestive tract in ICU patients.³ However, the major caveat is that the majority of studies that prove the efficacy of SDD were performed in areas of low baseline incidence of resistance. To address concerns on increasing antibiotic resistance secondary to the use of SDD, several analyses have been performed in the past that shed some light on this issue. In this issue of the *Netherlands Journal of Critical Care*, Muskiet analyses the evidence regarding the development of antibiotic resistance related to the use of SDD in the ICU.⁴ In his extensive description of the current literature on the subject, no conclusive substantiation of the worries regarding potential harm of long-term use of SDD can be found. On the contrary, the review elaborates on the somewhat counterintuitive finding that institution of SDD seems to result in lower rates of antibiotic resistance. Several factors could attribute to

this phenomenon of which the absolute reduction in the load of potentially pathogenic micro-organisms is probably the predominant factor. Currently available data do not seem to show a worrisome trend in time regarding the development of antibiotic resistance. Could it therefore be possible to close the book on the everlasting debate regarding the potential harm of SDD? Is it time to consider this treatment as standard-of-care in ICUs worldwide, bearing in mind the proven efficacy of SDD in preventing VAPs and their attributable morbidity and mortality? Not likely, and this is probably for the better. Outside the well investigated setting of the Netherlands, with a relatively low level of antibiotic resistance, SDD and SOD remain controversial treatments. If there is ever to be a closure of the debate on efficacy versus suggested side-effects, definitive studies on this issue need to be initiated. These studies need to focus on several key issues as follows. Does the seemingly present absence of major resistance problems as a result of long-term SDD use in areas of low endemicity of antibiotic resistance manifest itself also in areas of high endemicity of antibiotic resistance? Is the bactericidal potential of high enteral concentrations of antibiotics in the gut enough to overcome high acquisition rates of resistant gram negative pathogens? Furthermore, what are the effects of SDD in high endemicity areas on the acquisition rate of colistin resistance, with colistin being a key-component of the SDD-regime and also often a last resort antibiotic against resistant gram-negative bacteria? And finally, what happens after cessation of SDD on the general ward? Is there a price for the rigorous suppression of gram-negative bacteria in the ICU and could there be an increase in colonization and re-colonization with resistant gram-negative bacteria after patient discharge from the ICU?

Further studies need to focus on the issues outlined above before we can safely close the book on the controversy regarding SDD and antibiotic resistance.

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