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Response to: Release of gentamicin and vancomycin from temporary human hip spacers in two-stage revision of infected arthroplasty

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Keywords: antibiotic combinations, antibiotic-loaded cement, drug delivery systems, surgical wound infections, topical administration

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Sir,

A recent article by Bertazzoni Minelli *et al.*[1] proposes new treatment options for the increasing problem of implant infection caused by resistant strains and describes the release of gentamicin and vancomycin from poly-methyl-methacrylate (PMMA) spacers.

However, their interpretation that 'a high clinical response rate' would support the clinical potential of these devices seems to overlook several factors. (i) The small number of positive pre-operative cultures (nine of the 20 patients treated), and the lack of specificity of blood-tests and radiographs[2] undermine the clinical evidence of infection that was stated by the authors. (ii) The effect of local treatment with the spacers is obscured by concomitant antibiotic treatment in all patients, because a combination of parenteral and oral therapy may result in a 84–91% success rate.[3] (iii) The low combined antibiotic release (0.2 mg/g) does not meet the minimal release requirements (2 mg/g) described by Kühn[4] and might ultimately induce resistant strains.[5] The higher release reported from antibiotic beads and biodegradable carriers (up to 90%) would favour these treatment modalities over spacers.[6,7]

The release pattern described—high initial followed by low, but constant release—is not clearly apparent from the *in vitro* data. (i) Only one control spacer was included per antibiotic group—assuming a low sample variation—contrariwise, the removed spacers seem to indicate a large initial variation in antibiotic release. (ii) Measurements after 72 and 240 h were extrapolated to allow addition of seven datapoints to the existing three. This gives the impression of a constant release from 96 to 240 h and possibly masks elution of subinhibitory antibiotic quantities during later stages of this interval. Therefore, the conclusions on similar kinetics of removed and control spacers, and on constant release kinetics after 24 h appear preliminary.

Additionally, the choice of last-resort antibiotics in these patients appears in contradiction with the expressed concern for the emerging problem of antibiotic resistance and does not seem to comply with recommendations for orthopaedic surgeons.[8]

To conclude, the additional effect of antibiotic-containing spacers remains unproven and the release pattern was incompletely characterized. Therefore, the low antibiotic release reported in this study would indicate preferential use of established treatment modalities such as PMMA beads or antibiotic-containing fleeces.[7]

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Reply

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Sir,

We appreciate the comments on our paper by Stallmann *et al.*[1] as they raise a number of important questions relating to