Postoperative microscopy and culture screening following hip and knee arthroplasty - an unnecessary cost with no effect on clinical management?

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Background
The use of microscopy and culture screening to detect pathogenic micro-organisms followed by a decolonization protocol is a widely performed practice prior to elective hip and knee arthroplasty. In our centre, the routine care of hip and knee arthroplasty also involves postoperative screening including direct culture of the surgical site. The aim of this study was to assess the frequency of pathogen detection following these tests and to determine whether routine postoperative screening, with particular reference to postoperative surgical site culture, led to any change in clinical management of these patients.

Methods
A series of 1000 patients undergoing hip or knee arthroplasty at The Mater Hospital between January 2014 and December 2015 were identified from our arthroplasty database. Results of pre and postoperative microscopy and culture screening were reviewed by two independent researchers.

Results
Of the 1000 subjects, positive microscopy and culture results were identified in 88 patients (8.8%) preoperatively and 5 patients (0.5%) postoperatively. None of the 1000 postoperative surgical site swabs had a positive microscopy and culture screen. All of the 5 positive postoperative microscopy and culture screen results were in patients who had positive cultures preoperatively. There were no positive postoperative microscopy and culture screen results in patients who had had negative preoperative results. Postoperative screening was performed at a cost of AUS$213 per patient.

Conclusion
The results of our study do not support the routine use of postoperative surgical site culture, nor the practice of routine postoperative screening for subjects who return a negative result from preoperative screen. In the presence of a negative preoperative microscopy and culture screen is extremely unlikely to obtain a positive result postoperatively. The practice is therefore performed at an additional and unnecessary cost without any benefit to patient care. As well as this, performance of routine surgical site cultures potentially increase the risk of developing a postoperative infection given that the surgical site wound must be exposed to perform the test. We therefore continue to support the use of preoperative routine microscopy and culture screening to reduce the risk of postoperative surgical site infection but would recommend against the practice of routine postoperative surgical site culture in all patients as well as routine postoperative screening in those patients with negative preoperative tests.