THE SENSITIVITY AND SPECIFICITY OF SUPERFICIAL WOUND CULTURES AND THEIR UTILITY IN DIAGNOSIS, A META-ANALYSIS.

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ABSTRACT

Background: Superficial wound cultures are routinely used to guide therapy, despite a lack of clear supporting evidence—due in part to the ease with which surface cultures are obtained and the delay in obtaining deeper cultures. The Infectious Disease Society of America (IDSA) recommends culture of all diabetic infections before initiating empiric antibiotic therapy, despite a lack of clear supporting evidence.

Purpose: To conduct a systematic review of the correlation between superficial wound cultures and the etiology of skin and soft tissue infections.

Data Sources: Medline, EMBASE, CINAHL, Scopus

Study Selection: Two reviewers independently searched for articles published between January 1960 and August 2009 and abstracted information pertaining to microbiology of lower extremity wounds.

Data Extraction: Sensitivities, specificities, positive and negative likelihood ratios of superficial wound cultures and comparison cultures were calculated using article data and pooled using a random-effects meta-analysis model. The number of organisms isolated from superficial cultures and comparison cultures was derived by the Wilcoxon rank sum test.

Data Synthesis: Of 9,032 unique citations, eight studies met all inclusion criteria. Inter-rater reliability was substantial (Kappa = 0.78). Pooled test sensitivity for superficial wound swabs was 49% [95% CI, 37%, 61%], and specificity was 62% [95% CI, 51%, 74%]. The pooled positive and negative likelihood ratios were 1.1 [95% CI, 0.71, 1.5] and 0.67 [95% CI, 0.52, 0.82]. The median number of isolates for surface cultures (2.7, IQR 1.8, 3.2) was not significantly different than that for comparison cultures, (2.2, IQR 1.7, 2.9) (p = 0.75).

Conclusions: Very few studies show a strong relationship between superficial wound swabs and deep tissue cultures, and the current data demonstrates poor overall sensitivity and specificity. The positive and negative likelihood ratios were found to provide minimal utility in influencing pre-test probabilities. Results of this analysis show that wound cultures should not be used in lieu of local antibiograms to guide initial antibiotic therapies.