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## **Extent of disagreement and difference between tissue and swab samples from infected diabetic foot ulcers: the CODIFI Study**

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### **Background and aims:**

A common complication of diabetic foot ulceration is a wound infection. Treatment with antibiotics is usually started immediately as spreading infection can lead to amputation. At the same time, however, a sample is usually taken for microbiologists to advice on the types of organisms in the wound, and what antibiotics they are sensitive to. Clinical practice guidelines state that tissue samples are the best way to collect samples of wound bacteria for the microbiological analysis, but wound swabs are commonly used. The CODIFI (concordance in diabetic foot infection) study set out to determine whether the results from wound swab and tissue samples taken from the same ulcer 'agree' with each other.

### **Materials and methods:**

Consenting patients with an infected diabetic foot ulcer had both swab and tissue samples taken from their ulcer for microbiological analysis (plating and culture). Agreement was assessed between techniques based upon the reported presence of 'likely pathogens'. We reported overall prevalence, Kappa statistic, and McNemar's test to investigate patterns of disagreement

### **Results:**

We recruited 401 patients from 25 centres (2011 - 2013). They had a median age of 63 years; 79% were male; 85.5% had type 2 diabetes; 27.5% presented with a recurrent ulcer; and 45.5% had a neuro-ischaemic ulcer, 50.5% neuropathic ulceration, and 3.5% ischaemic ulceration. Swab and tissue reports were available for 395 patients. We found many 'likely pathogens' -the most prevalent were Gram Positive Cocci (70.4%), Gram Negative Bacilli (36.5%), Staphylococcus Aureus (35.7%), Anaerobic Cocci (20.5%), Coagulase-Negative Staphylococcus (12.2%), Gram Positive Bacilli (11.1%), Streptococcus (16.7%), Enterococcus (14.9%), Corynebacterium (9.4%), Pseudomonas (8.6%), and Methicillin-resistant S. Aureus (MRSA, 8.1%). With the exception of Staphylococcus Aureus, MRSA and Pseudomonas (for which identical discordance was observed), each isolate was reported in significantly more tissue samples than the swab (p-value <0.05) by between 3.3% (Streptococcus) and 13.4% (Gram Positive Cocci).

### **Conclusion**

Overall, significantly more isolates are reported from tissue samples than swab samples in patients with infected diabetic foot ulcers. This has potential implications for choice of sampling technique in practice.

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