Introduction

Biofilm wound care is currently a subject area of great interest and debate. There is an increasing awareness that biofilm exists in the majority of non-healing wounds1-3, and that it is linked to both wound recalcitrance and infection4. Together with the presence of devitalized host tissue, biofilm is recognized as a component of the wound environment that requires removal to enable wound progression5-6. However, uncertainty exists amongst wound care practitioners regarding confirmation of the presence of biofilm, and how best to manage biofilm in wounds7. While recent efforts have been made to assist practitioners in the signs and symptoms of wound biofilm8,9, continuing research is required to characterize and confirm wound biofilm.

Method

Independent market research was conducted by Waggle Dance Marketing Research LLC in Europe and the US to better understand awareness and knowledge of wound care practitioners regarding confirmation of the presence of biofilm. (Table 1).

Table 1. The six questions posed to nurses regarding their knowledge and experience of wound biofilm

<table>
<thead>
<tr>
<th>Number</th>
<th>Question</th>
<th>Response type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How would you rate your knowledge of biofilms and their impact on wound healing?</td>
<td>Low awareness; Somewhat knowledgeable; Knowledgeable; Very knowledgeable</td>
</tr>
<tr>
<td>2</td>
<td>What is your experience of wound biofilm?</td>
<td>Open</td>
</tr>
<tr>
<td>3</td>
<td>How do you know if a wound contains biofilm?</td>
<td>Open</td>
</tr>
<tr>
<td>4</td>
<td>What impact does biofilm have on wound healing?</td>
<td>Open</td>
</tr>
<tr>
<td>5</td>
<td>Does biofilm delay wound healing?</td>
<td>Open</td>
</tr>
<tr>
<td>6</td>
<td>What actions are required to ensure clinicians are more aware of the effect of biofilm on wound healing?</td>
<td>Open</td>
</tr>
</tbody>
</table>

Results

Knowledge levels and experiences of wound biofilm varied by country, with US clinicians appearing most confident in their knowledge base (Figure 1). The theme that biofilm delays healing, needs removal, and can be tolerant to standard wound care approaches, was evident, independent of nurse knowledge level of biofilm (Figure 2). Certain wound characteristics were consistently described as being associated with the presence of biofilm. Visual signs such as slimy, shiny or coloured substances (Figure 3a), and indirect signs such as poor response to standard wound care, delayed wound healing, and signs of infection (exudate, odour, inflammation, etc.) (Figure 3b), were mentioned by the nurses questioned as indicators of wound biofilm.

Discussion & Conclusion

This study highlighted knowledge gaps on the topic of wound biofilm, particularly in the UK compared to the US. The need for further scientific and clinical research, and more widespread education opportunities, in this emerging subject was highlighted. However, there was a general consensus that biofilm can contribute to delayed healing, can be difficult to treat, and so therefore needs to be managed. This study also highlights the need for new and more effective anti-biofilm technologies and wound management strategies to help heal wounds more quickly and benefit patients, caregivers and healthcare systems.

Limitations of this study include the relatively small sample size of 81 nurses. The online format of the survey may have attracted those more interested and motivated nurses. Although the survey data was collected independently by Waggle Dance Marketing Research, it was subsequently analysed by employees of ConvaTec.

Acknowledgements

Waggle Dance Marketing Research LLC was paid by ConvaTec Ltd to conduct this study. Waggle Dance compensated all participants in the study for their time engaged in providing opinions. The participants who accepted the compensation understood that the study would be used for marketing purposes and that the findings would be used in the aggregate only.

References