

## Editorial

# Complex wounds, new approaches for this growing problem

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**For referencing** Cowin AJ. Complex wounds, new approaches for this growing problem. *Wound Practice and Research* 2019; 27(3):108.

**DOI** <https://doi.org/10.33235/wpr.27.3.108>

Diabetes is a leading cause of disease burden and the reality is that the prevalence of diabetes will explode in the future. According to the US Center for Disease Control (CDC), around 30.3 million people in the United States have a type of diabetes and many of these people develop wounds that are slow to heal, do not heal well or never heal.

Currently diabetic wounds cost the Australian healthcare system \$600M per year and complications associated with diabetic wounds, including infection, gangrene and neuropathy, lead to one major amputation every 30 seconds with high follow-up mortality rates of 39%-80% at five years.

The factors that contribute to wound chronicity in diabetic foot ulceration are overviewed in the article by Tehan and colleagues as well as a research protocol aimed at assessing factors that contribute to healing outcomes in people with DFUs. Negative pressure wound therapy (NPWT) is rapidly becoming the therapy of choice for complex hard to heal wounds and Cordova and colleagues describe a case series that highlight the effect of NPWT on complex wounds with tendon exposure in an outpatient setting when reconstruction may not be possible. Not all patients can

be treated with NPWT so given the increasing prevalence of diabetic and other chronic wounds, the development of advanced wound therapies for treating these hard to heal wounds is desperately needed.

One of the difficult aspects of researching wound healing is their complex nature and the lack of *in vitro* and *in vivo* wound models that fully recapitulate all the physiological responses that occur in people with impaired healing. A laboratory-based study by Beevi and colleagues aimed to develop an *in vitro* chronic wound model to assess the effect of proteins secreted by stem cell and cord blood platelets. They show the potential beneficial effects that these cell-based products may have on stimulating cellular activities in wounds in the future however further research is required to advance these studies into potential new approaches for treating patients with non-healing wounds.

Another new approach for treating chronic wounds is proposed by Miles and colleagues who describe a study protocol for the application of glyceryl trinitrate (GTN) which

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donates nitric oxide into wounds. The protocol will be used to provide proof-of-concept data for the potential use of GTN for the treatment of venous leg ulcers.

Finally, a review of age-related skin tears is provided by Rayner and colleagues and a new definition for skin tears is proposed based on the authors findings and a review of the literature. When taken individually, all these studies may seem like small steps in a marathon where the finish line is a long way off. However together these studies help

to build our knowledge and develop new approaches, new protocols and new definitions for complex wound problems that will ultimately help our understanding and develop new treatments for patients with hard to heal wounds.

**Professor Allison J Cowin**  
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