Wounds UK, 2012

Preliminary results:
Testing for elevated protease activity in clinical practice

Let's Test®

Dr Tom Serena, Serena Group, Warren, Pennsylvania
Prof Keith Harding, Dept dermatology & Wound Healing, Cardiff University, UK
Douglas Queen, TraxMedica, Toronto, Canada
Dr Breda Cullen, Lorraine Nisbet, Molly Gibson, Louise Hambrook, Systagenix, Gatwick , UK

LET'S HEAL®

ABSTRACT

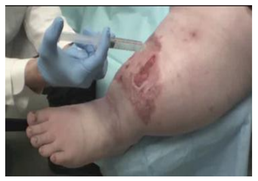
It is widely accepted that an elevated protease activity (EPA) in chronic wounds is associated with impaired healing. However, until the introduction of a rapid point of care (POC) test for protease activity*, there has been no practical way for clinicians to identify EPA in wounds. This POC test which determines protease activity status is an *in vitro*, visually read, immunochromatographic test for the qualitative assessment of inflammatory protease activity. Protease activity is assessed directly from wound fluid swabs taken from chronic wounds, and the test is completed in approximately 15 minutes.
The aim of this study was to determine if this simple, POC test, is clinically useful, in helping to identify a possible underlying cause of stalled wounds and guiding treatment, e.g. with protease modulating therapies.
The initial clinical studies were carried out across 4 wound healing centres in the USA where swabs were taken from various chronic wounds. In a follow up study additional clinical sites across Europe were included to ensure that results could be verified across different wound care communities.
These clinical studies have allowed us to determine the prevalence of EPA, with approximately 28% of non-healing wounds treated in wound clinics having EPA. This study summarises the prevalence of EPA across different wound care communities and examines the prevalence of EPA between chronic wound aetiologies. In summary, our knowledge of proteases, their role in chronic wounds and how treatments affect EPA clinically has been made possible by the introduction of this new POC test.

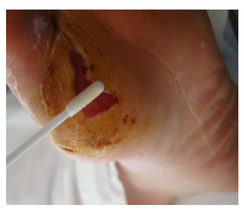
*WOUNDCHEK™ Protease Status, SYSTAGENIX

METHODS: How to test – Specimen Collection

Using a sterile swab provided in the kit, collect the wound fluid sample by swabbing the surface of the wound using the following procedure (Serena's technique):

1. Prior to swabbing, gently cleanse the wound with sterile saline to remove all loose debris, remains of therapeutic agents (e.g. enzymatic debriders, gels, dressings, etc.) and necrotic tissue. Do not perform sharp wound debridement prior to sample collection.
2. Ensure that complete hemostasis has been achieved before obtaining the specimen.
3. Apply additional saline to the wound area to be swabbed, such that the area is visibly moist. Care should be taken not to flood the wound with excessive saline. Avoid pooling of saline.
4. Avoid swabbing areas that contain blood, necrotic material, thick slough or fibrinous tissue.
5. Press the head of the swab flat against the base of the wound and gently roll it back and forth several times while applying pressure. Continue rolling the swab head until fully coated and discoloured (tan/yellow) by wound fluid.

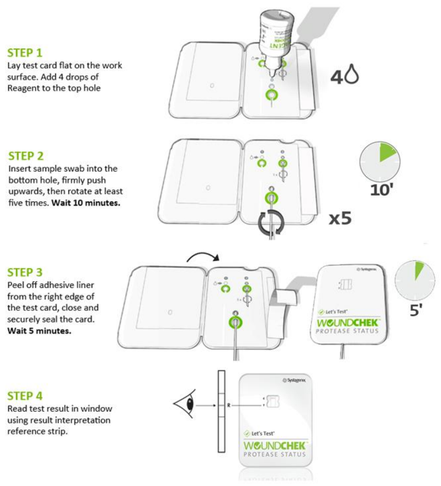




METHODS: How to test – WOUNDCHEK™ Protease Status

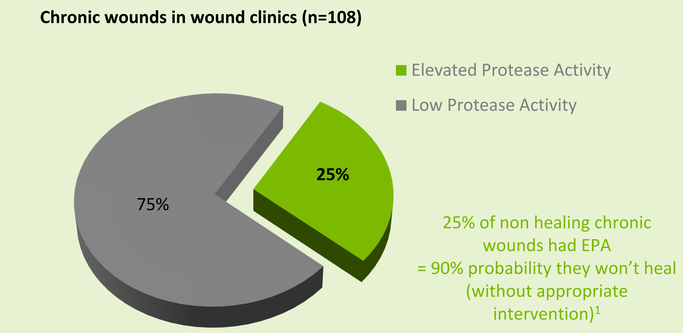
WOUNDCHEK™ Protease Status is an *in vitro, visually read,* immunochromatographic test for the qualitative assessment of human neutrophil-derived inflammatory protease activity directly from wound fluid swab samples taken from chronic wounds.

This simple, rapid point of care (POC) test takes approximately 15 minutes per sample to complete.



RESULTS:

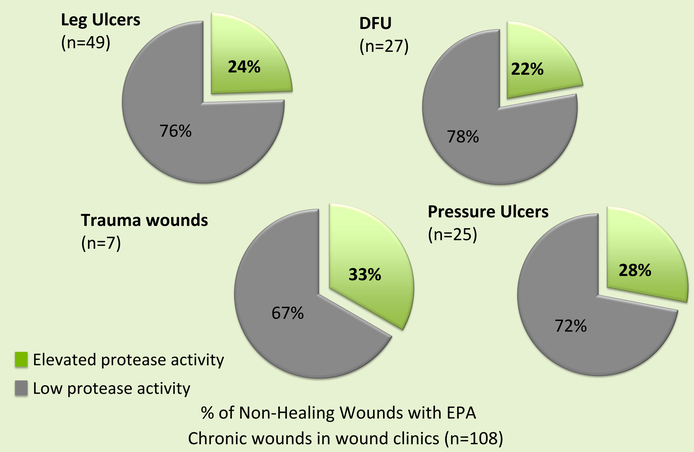
Prevalence of EPA in Non-Healing Wounds



25% of non healing chronic wounds had EPA
= 90% probability they won't heal (without appropriate intervention)[1]

Prevalence of EPA and Aetiology

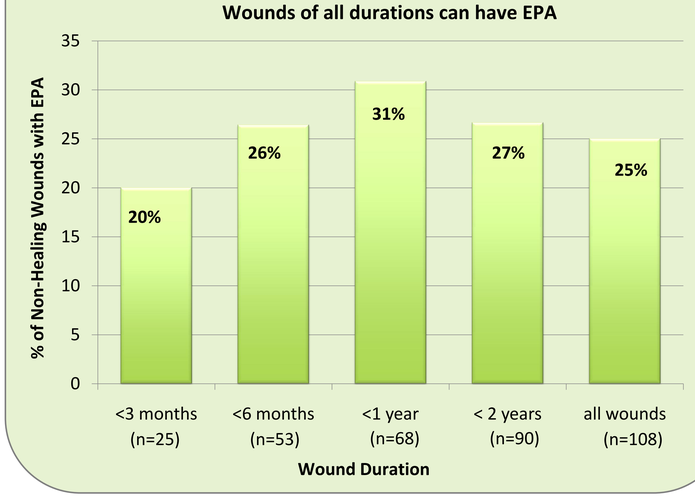
Wounds of all common chronic wound aetiologies can have EPA



% of Non-Healing Wounds with EPA
Chronic wounds in wound clinics (n=108)

Prevalence of EPA and Wound Duration

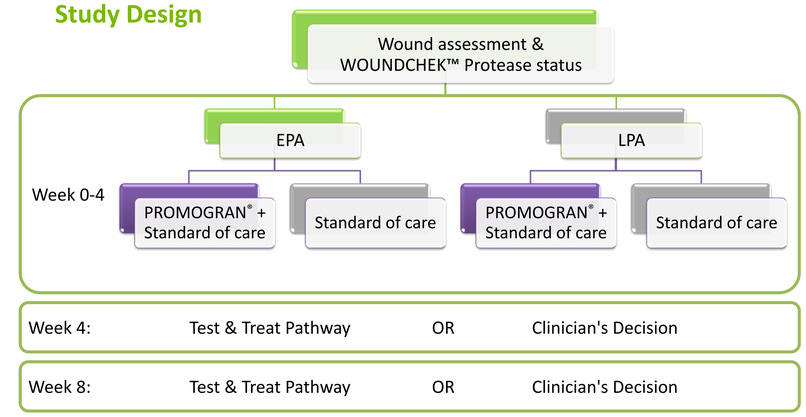
Wounds of all durations can have EPA



On-going Research

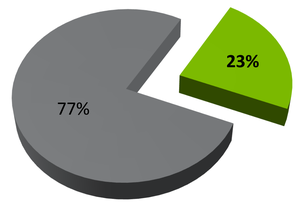
- 2 Randomised Controlled Trials involving sites across Europe and USA are ongoing. Each study will focus on a different wound aetiology; diabetic foot ulcers and venous leg ulcers. All test data will be recorded in a registry to enable capture of prevalence data.
- Patients will be followed for 12 weeks and outcomes will be:
  - Clinical efficacy in EPA wounds
  - Health economics
  - Reduction of protease activity in EPA wounds
  - Prevalence data across different clinical settings & wound types
- These studies will evaluate the clinical and economic efficacy of this simple, POC test in helping to identify a possible underlying cause of stalled wounds and guiding treatment, e.g. with protease modulating therapies.

Study Design



Week 4:	Test & Treat Pathway	OR	Clinician's Decision
Week 8:	Test & Treat Pathway	OR	Clinician's Decision

PRELIMINARY RESULTS



% of All Wounds with EPA
Venous leg ulcers (n=47)
6 sites across the UK, Germany and USA

Elevated Protease Activity
Low Protease Activity

CONCLUSIONS

- The prevalence of EPA in non-healing chronic wounds in these studies is not significantly different from the previously published values[(1)].
- Prevalence of EPA by wound aetiology has been assessed for the first time.
- Prevalence of EPA in venous leg ulcers has been assessed for the first time across 6 sites in UK, Germany and US as 23% of all wounds.
- There are no visual signs for EPA[(2)] and it does not correlate with wound duration. Currently, the only way to identify EPA wounds is to use the new POC Protease Status test.
- Our knowledge of proteases, their role in chronic wounds and how treatments affect EPA clinically has been made possible by the introduction of this new POC test.

1. Serena T. et al. Protease activity levels associated with healing status of chronic wounds. Poster, Wounds UK 2011.
2. Snyder R. et al. A survey: The importance of proteases in wound healing and wound assessment. Poster, Wounds UK 2011.

Systagenix