

ANSWERS TO QUESTIONS SUBMITTED BY TEXT DURING JOWC MASTER CLASS WEBINAR JULY 2021

1. How long has this type of therapy been in use?

Electrical stimulation therapy (EST) in general has been used for healing wounds for many years. There is a vast range of in vitro, molecular and clinical evidence to support its use. In fact, EST is arguably one of the most evidence-based therapies in wound management today, with 5 meta-analyses, 6 systemic reviews and over 30 RCTs, with the first publications about it appearing in the 1980s.

However, there are many different treatment modalities and formats of EST. For example, there may be a requirement for different parameters to be adjusted during application; the electrical current can be delivered directly to the wound or be incorporated in a dressing. Some modalities can deliver unpleasant sensations, while some devices are very large and therefore not suitable for use in a community setting. As a result, the use of EST has largely been restricted to specialist clinics and research practice.

Accel-Heal is a single use, automated EST device which delivers pre-programmed, low voltage pulsed current to the wound over a 12-day period. This enables clinicians to easily use EST in everyday practice. Accel-Heal has been developed in the UK over the last 12 years where it has been undergoing clinical trials and evaluations and, more recently, has become commercially available. Under new ownership, commercial availability is being extended to a greater number of countries and a larger number of evaluations and trials are also underway.

2. Can Accel-Heal be used after wound vac removal?

Yes, Accel-Heal can be used following removal of negative pressure wound therapy (NPWT) if the wound has remained stalled. In fact, unpublished case studies from the Middle East have demonstrated effectiveness when used simultaneously where NPWT was having insufficient effect. There are no contraindications to using the two therapies together, particularly if there are different objectives for therapy, such as wound drainage (through NPWT) and reduction of pain (through Accel-Heal).

3. How many patients in total were included in the RCTs?

What were the age groups and how chronic were the wounds?

There are 23 published articles, including 10 papers and 13 posters, which describe the effects of Accel-Heal. These articles published in clinical literature describe the results from 160 patients treated with Accel-Heal. For more details see [this web page](#).

4. Could Accel-Heal be used for pyoderma gangrenosum wounds?

There are no published case studies for use of Accel-Heal on pyoderma gangrenosum wounds. However, a number of clinicians have reported success in using Accel-Heal in this patient group, in view of the inflammatory nature of the wound and the fact that these wounds are invariably painful.

5. Is there a way for clinicians to measure that at least 40mmHg of compression is being provided?

Clinicians should contact the manufacturer of the compression products they are using for training on how to apply the prescribed level of compression.

6. What electrical stimulation parameters do you recommend? Is there a resource/guideline for this?

Accel-Heal is a low voltage biphasic and monophasic pulsed current device. In contrast to other electrical stimulation devices, Accel-Heal delivers a fixed and automatic, pulsed electrical stimulation therapy with a current varying from 40 to 500 micro Amps (μ A) at a frequency varying from 10 to 900 Hz during a 30-minute treatment program. The treatment program is repeated every 2 hours in the first 24 hours and every 4 hours in the second 24-hour period. Each Accel-Heal device provides the 48-hour cycle of electrical stimulation. Six individual, 48-hour devices are supplied in a treatment pack and are applied consecutively to deliver the 12-day therapy.

7. Have any skin allergies been experienced with the Accel-Heal pads?

To date, over 12,500 devices have been applied to patients and there have only been a handful of reports of reactions to the skin under the pads. The pads are hydrogel based and are therefore easily removed without causing skin trauma. In patients with known sensitivities, it is recommended to check the pads more frequently during early use, rotate the position of the pads during dressing changes, and, in the case of heavy exudate, ensure the pads are placed well away from the wound bed and positioned horizontally across the wound to avoid gravitational moisture. Where there is friable skin immediately adjacent to the wound, it is recommended the pads are placed farther apart. The device will automatically adjust to ensure the same level of current is supplied irrespective of the distance and individual skin conductivity.

8. Does the Accel-Heal electrode have to be placed on a non-weight bearing region of a diabetic foot ulcer?

High compression therapy can be applied over the two electrode pads. However, under compression, caution needs to be taken with the electrode wires connecting the pads to the device, which could cause pressure injury.

Therefore, the recommended placement of the pads on a diabetic foot ulcer should be away from a weight-bearing area such as the sole of the foot. Accel-Heal automatically adjusts the voltage to ensure the required current program is delivered, regardless of variables such as distance between the electrode pads, and individual patient characteristics such as hydration level of the skin. Therefore, even when the pads are placed at some distance from each other, the required electrical energy will still be delivered to the wound. The electrode pads can therefore be placed to the sides of the foot or the dorsum and the treatment to the wound is still effective. (See the [Accel-Heal application guide](#))

9. Can Accel-Heal be used on patients with arterial ulcers?

Yes, Accel-Heal can be used on patients with arterial ulcers. Some case studies being undertaken globally (unpublished) are demonstrating significant reduction in pain in patients with arterial ulcers who are awaiting vascular surgery. In addition, the patients' wounds did not deteriorate as would have normally been expected during this time.

10. What medical disciplines can apply and monitor the Accel-Heal therapy?

Accel-Heal is a single use, automated treatment that is activated by the push of a single button. As such it can be easily used and monitored by all medical disciplines, carers and patients undertaking self-care.

11. Is Accel-Heal available in the Channel Islands?

Accel-Heal is available in the UK and so can be supplied to the Channel Islands. Please contact customerservices@accelheal.com for further information.

12. Does Accel-Heal start to reduce a patient's pain immediately?

In some cases, Accel-Heal reduces the pain within a few hours after application. However, in the majority of patients who experience a significant reduction or complete removal of pain, this generally occurs within a few days of application. Pain reduction is normally sustained throughout and beyond the 12-day treatment period. (See <https://www.accelheal.com/resources-downloads/> for more details)

13. Is Accel-Heal available to buy online outside the UK?

Accel-Heal is a professional medical product and, as such, it is recommended that it is only used under appropriate clinical supervision. It is not, therefore, available to purchase online. We are progressively developing our global distribution to make it available through professional channels in more geographies.

14. How do you manage the wires under hosiery to stop pressure?

One commonly used method is to place a foam dressing or other cushioning dressing under the wires up to the top of the hosiery.

15. What does the therapy feel like? Do patients like it?

Accel-Heal delivers a sub-sensory level of pulsed current. Most patients have no sensation from the therapy. If some tingling is felt, this may be due to either the patient being dehydrated or the wound bed being very dry. Rehydrating the patient and the wound can be beneficial in these cases.

In general terms, patient feedback and concordance to treatment from patients when using Accel-Heal is excellent as they feel engaged in the treatment, happy to see their pain addressed and the healing of the previously stalled or slow healing wound, stimulated.

Links to patient videos:

[Video 1](#)

[Video 2](#)

15. Is Accel-heal available in the USA?

Accel-Heal is not currently available in the USA.

16. Does this treatment help with lymphedema associated with venous wounds?

Patients with lympho-venous disease require a multi-disciplinary approach to this long-term condition, which mainly involves compression therapy, intensive skin care and in some cases, manual lymphatic drainage or surgery. However, there is evidence that Accel-Heal can reduce peri-wound oedema and is a therapy that should be considered within the multi-disciplinary approach. ([See study here](#))

17. Is the wound dressing kept on for the 12-day duration?

Accel-Heal therapy is used alongside standard wound care, including compression therapy, so changing the dressings or bandages should be done based upon normal practice intervals. The electrode pads can either be left in place at dressing change (up to a maximum of 7 days) or changed at the same time. Sufficient electrodes are present in each 12-day therapy pack to allow for changes every 2 days if required. The 48-hour Accel-Heal device can be easily changed without disrupting the dressing or the electrodes by the patient, carer, or clinician. ([See here for application videos](#))

18. How does this work for patients that are arterial compromised and hence cannot have full compression or reduced compression applied? Does it have the same impact and results?

Accel-Heal can be applied to most types of chronic wounds including arterial or mixed venous-arterial ulcers. Ultimately, the arterial component of the wound needs to be addressed, but prior to this, in cases where patients have significant pain, Accel-Heal is likely to be very beneficial. Some case studies undertaken globally (awaiting publication) are demonstrating

significant reduction in pain in patients with arterial ulcers who are awaiting vascular surgery.

19. What frequency does Accel-Heal uses?

Accel-Heal is a low voltage biphasic and monophasic pulsed current device. Accel-Heal delivers a fixed automatic, pulsed electrical stimulation therapy with a current varying from 40 to 500 micro Amps (μ A) at a frequency varying from 10 to 900 Hz during a 30 min treatment program. The treatment program is repeated every 2 hours in the first 24 hours and every 4 hours in the second 24-hour period. Each Accel-Heal device provides the 48-hour cycle of electrical stimulation. Six individual, 48-hour devices are supplied in a treatment pack and are applied consecutively to deliver the 12-day therapy.

20. Is Accel-Heal useful in the prevention of leg ulcers?

There is no published evidence to support the use of Accel-Heal in the prevention of leg ulcers, as a substitute for interventions such as venous/arterial surgery and use of compression. In unpublished case studies there has been evidence of prevention of recurrence of venous leg ulcers in patients with a previous history of recurrence. However, further studies would be required before a firm recommendation could be provided.

21. What are the parameters used by the Accel-Heal product?

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22. Is Accel-Heal useful even if there is no pain? Such as for a wound on a paralyzed person, for example?

Yes, Accel-Heal has demonstrated faster healing of wounds as well as pain reduction, so it is still very appropriate to use in wounds that whilst not painful, are stalled and would benefit

from the therapy to re-initiate healing, or in other slow healing wounds to accelerate healing.

23. What type of electric energy does Accel-Heal deliver?

Is it similar to the current used in TENS devices?

Accel-Heal is a low voltage biphasic and monophasic pulsed current device. Accel-Heal delivers a fixed automatic, pulsed electrical stimulation therapy with a current varying from 40 to 500 micro Amps (μ A) at a frequency varying from 10 to 900 Hz during a 30 min treatment program. The treatment program is repeated every 2 hours in the first 24 hours and every 4 hours in the second 24-hour period. Each Accel-Heal device provides the 48-hour cycle of electrical stimulation. Six individual, 48-hour devices are supplied in a treatment pack and are applied consecutively to deliver the 12-day therapy.

Other types of electrical stimulation, for example TENS, are delivered at higher voltages above the threshold for sensory stimulation and in doing so interact with the nervous system to block pain signals. TENS can provide short-term pain relief while the TENS machine is being used. However, low voltage pulsed current electrical stimulation devices, such as Accel Heal, are sub-sensory, acting locally at the cellular level and so contribute to modulating the underlying healing process and reducing those factors causing pain, which continues long after the Accel-Heal device has been used.

24. Can accel-Heal be used alongside HBOT?

There is no reported experience of using Accel-Heal with hyperbaric oxygen therapy (HBOT) and there have been no safety assessments of its use within the hyperbaric oxygen chamber. Given the mode of action is different, it could conceivably be synergistic in accelerating healing and reducing pain if used in between hyperbaric oxygen therapy sessions, but further studies would be needed to validate this.

25. Is Accel-Heal available in South Africa?

Accel-Heal is currently not available in South Africa.

26. What is your research for the use of Accel-Heal for fungating wounds?

There is currently no evidence to support the use of the Accel-Heal in fungating wounds, and indeed it is contraindicated in patients with cancer in the wound as it

may stimulate tumour growth. However, if informed consent is obtained from the patient, and the benefits such as pain reduction and exudate reduction outweigh any potential risks, then it can be considered for palliative care.

27. Is Accel-Heal useable with pilonidal sinus wounds or is it just for leg ulcer therapy?

Accel-Heal is suitable for many types of wounds. However, there have been no published cases including pilonidal sinus to date. Accel-Heal is not contraindicated in children but users should proceed with caution as to date there have been no published studies or evaluations in children.

28. Can community TVNs prescribe Accel-Heal? What about GPs?

Accel-Heal is available on UK drug tariff in part 5a - appliances. Nurse prescribers and GPs in the UK are able to prescribe it on FP10.

29. Is a 12-day therapy with Accel-Heal enough for a patient who cannot tolerate compression therapy? Or we can repeat if the patient needs more therapy time?

One 12-day therapy is usually sufficient to reduce the pain to enable full strength compression therapy. The pain reduction should then be sustainable after the 12 days as wound healing moves forward. Should pain return then a second treatment may be appropriate based upon clinical judgement. Further work is ongoing to look at multiple sequential uses of Accel-Heal in certain patients with particularly recalcitrant non-healing wounds, and more guidance will be provided on this in the future.

30. Is it possible to use compression therapy for patients with chronic diseases of deep low limb veins, DVT for instance?

This question relates to compression therapy rather than electrical stimulation with Accel-Heal. Compression therapy is indicated for use to aid venous return, thereby preventing, or healing venous leg ulceration.

31. What would be the difference between using Accel-Heal and using any TNS unit?

Accel-Heal is a low voltage biphasic and monophasic pulsed

current device. Accel-Heal delivers a fixed automatic, pulsed electrical stimulation therapy with a current varying from 40 to 500 micro Amps (μ A) at a frequency varying from 10 to 900 Hz during a 30 min treatment program. The treatment program is repeated every 2 hours in the first 24 hours and every 4 hours in the second 24-hour period. Each Accel-Heal device provides the 48-hour cycle of electrical stimulation. Six individual, 48-hour devices are supplied in a treatment pack and are applied consecutively to deliver the 12-day therapy.

Other types of electrical stimulation, for example high voltage pulsed current (HVPC) and many forms of TENS are delivered above the threshold for sensory stimulation. Electrical stimulation therapy devices do not need to evoke such strong physical responses to stimulate the appropriate cellular effect in the wound bed. TENS can provide short-term pain relief while the TENS machine is being used. However, Accel-Heal will enable the wound to continue healing with pain reduction, even after the 12-day therapy.

32. Does Accel-Heal help with wounds which then becomes cellulitis?

Accel-Heal can potentially help with most chronic wounds to kick-start wound healing and reduce pain. It can be used in infected wounds alongside standard care. The cellulitis would need to be treated as clinically indicated with antibiotics, but the wound may improve and certainly any pain from the cellulitis may be reduced with Accel Heal.

33. What are the limitations of using Accel-Heal or electrical stimulation in general? What are the limitations in terms of diseases?

Accel-Heal is contraindicated for use in patients with active cancer, including any risk of malignancy in the wound. Patients with pacemakers should consult their medical practitioner and the device should not be placed near the chest wall in this patient group. Do not use near the head for patients with epilepsy. As a precaution, due to lack of evidence, patients who are pregnant or under 18 should consult their medical practitioner. Do not place the electrode pads over broken capillaries, varicose veins, or main arteries.

34. In which types of wounds do you see the fastest results?

Typically, smaller wounds with lower duration are more likely to respond faster in terms of healing and wound contraction. However, it has been used on larger wounds with a long duration equally successfully but wound contraction is understandably slower and the clinical presentation/changes maybe more subtle. Pain reduction can be seen in a range of different wound sizes and duration within a short period.

35. How often do you make a second or third treatment cycle with Accel-Heal?

Further research is being undertaken to identify the types of wounds/patients who may benefit from two or three 12-day periods of Accel-Heal therapy, but for the majority of chronic wounds one 12-day dose is generally sufficient to both reduce pain and kick-start the wound healing process. Should there be a good initial response to the therapy, but then the wound becomes stalled again, or the pain increases, then a second 12-day therapy can be considered to re-initiate healing and/or reduce the pain. This is more likely to be in particularly recalcitrant wounds or in patients with many underlying co-morbidities.

36. Are there any contraindications for using this product?

Accel-Heal is contraindicated for use in patients with active cancer, including any risk of malignancy in the wound. Patients with pacemakers should consult their medical practitioner and the device should not be placed near the chest wall. Do not use near the head for patients with epilepsy. As a precaution, due to lack of evidence, patients who are pregnant or under 18 should consult their medical practitioner. Do not place the electrode pads over broken capillaries, varicose veins, or main arteries.

37. Is Accel -Heal effective on sacral pressure ulcers or ischial pressure ulcers stage 4?

Accel-Heal can be used on any chronic wound and is only contraindicated in fungating wounds. The holistic needs of the patient need also to be considered, including factors such as nutrition and pressure off-loading. A Cochrane review of the use of electrical stimulation for pressure ulcers has been undertaken (Arora et al 2020) and it has been recommended

for use in recalcitrant category 2-4 pressure ulcers by NUPUAP 2014, with strength A evidence. Caution needs to be taken with the electrode wires, which could cause pressure injury if not protected. The recommended placement of the pads is away from any potential pressure points when the patient is sitting. Accel-Heal monitors current flow through the electrode pads and automatically adjusts the voltage to ensure the required current program is delivered, regardless of variables such as distance between the electrode pads, and individual patient characteristics such as hydration level of the skin. Therefore, even when the pads are placed at quite some distance from each other, the required electrical stimulation will still be delivered. The electrode pads could be placed on the outer buttocks or hips, and they would still be effective.

38. After the first treatment and, if working, should there be a gap between treatments? And, if so, how long?

Further research is being undertaken to identify the types of wounds/patients who may benefit from two or three 12-day periods of Accel-Heal therapy, but for the majority of chronic wounds one 12-day dose is generally sufficient to both reduce pain and kick-start the wound healing process. Should there be a good initial response to the therapy, but then the wound becomes stalled again, or the pain increases, then a second 12-day therapy can be considered to re-initiate healing and/or reduce the pain. This is more likely to be in particularly recalcitrant wounds or in patients with many underlying co-morbidities. The second 12-day treatment can be applied immediately especially if pain is a major consideration but generally, it is recommended leaving for a few weeks to see if healing re-starts without further intervention.

NB: Accel-Heal is currently not available in the USA.

QUESTIONS ASKED/ ANSWERED DURING THE WEBINAR:

Q. Can Accel-Heal be used for moderate and heavily exuding wounds?

It is important to determine the cause of the high exudate, whether it is due to the underlying aetiology such as venous/lymphatic drainage from the limb, infection, biofilm, heart disease, underlying fistula etc. The underlying aetiology needs to be addressed, such as compression therapy, wound infection management. However, due to a reduction in inflammation by the electrical stimulation, a marked reduction in exudate has been noted during and following Accel-Heal therapy. In the case of moderate or heavy exudate it is recommended to change the dressings more frequently, at least initially, in order to monitor the exudate levels and the electrode pads. Place the pads horizontally to avoid the pads becoming too wet from gravitational moisture.

Q. Does Accel-Heal reduce oedema with venous wounds?

See answer to Q18

Q. Can Accel-Heal be used with pyoderma gangrenosum?

The treatment of this disease needs a whole session! You need to ensure you have the correct diagnosis and biopsies. High doses of topical steroids are helpful. If you get a good result with those, then the patient may benefit from compression. It's never going to be a clear-cut definition of how to manage this disease, due to scattered numbers and not many people building up a vast experience of managing these wounds, but I think compression, topical steroids and if painful, Accel-Heal could be used as an enabler to have compression. Also, sometimes systemic steroids can be beneficial. Essentially, Accel-Heal could be an enabler. See also answer to Q 4.

Q. Are there any guidelines and recommendation in terms of indications for using Accel-Heal?

Accel-Heal is indicated for use in all types of recalcitrant wounds (apart from malignant wounds), to kick-start the healing process by replacing the reduced or absent electrical energy often found in chronic wounds. Endogenous bioelectric signals are important to orchestrate tissue repair by moving different cells into and across the wound,

stimulating cell proliferation and collagen synthesis and activating specific gene expression important in tissue repair. Accel-Heal is also indicated for use in painful wounds, which may be affecting a patient's quality of life and/or where a patient is unable to tolerate other necessary wound treatments such as debridement and compression therapy.

Q. Are there any potential allergy issues from the pads?

Clinicians sometimes report some redness under the pads, but often this is when the pads were placed too close to the wound edge which caused exudate leakage underneath it. See also answer to Q7.

Q. Can you use Accel-Heal on arterial or mixed aetiology ulcers?

Always try to re-vascularise through angioplasty or by-pass surgery where possible. If, however, the patient is not suitable or where there is a large venous component of the arterial insufficiency, then that is the only place where reduced compression can be truly justified. Many of these wounds can be very painful. I am not aware of any studies undertaken by Accel-Heal specifically yet on arterial ulcers, but I don't see why any of the science in terms of reduction in inflammation and gene expression which occurs, wouldn't be transferable to mixed aetiology wounds. See also response to Q9 and 20.

Q. Does the electrode need to be placed on a non-weight bearing area of a diabetic foot ulcer?

Try to place the electrodes either side of the wounds, with the wires away from any weight-bearing area. The pads themselves should not cause a problem just the wires connected to the pads. See also response to Q8 and 38.

Q. How would you use the product for patients with neuropathic foot ulcers or paralysis?

Accel Heal might help with painful neuropathy and well as painless neuropathy. If the wound is stalled, and/or there is a biochemical imbalance and if you have also addressed any underlying factors, then you can apply the device to see if

that starts the wound healing process. Pain reduction often happens very quickly and only needs one 12-day period of therapy. Similarly for treating a stalled or static wound, it is recommended to use it for the 12 days and wait and see. Often what you will find is a change in the healing trajectory from being plateaued, to being stimulated again with wound size reduction. Don't use it again unless you see another plateau. So, it's a very specific device to kick-start that wound in the next phase, it's not like a product that we are saying you use over a long period of time, which would be an increased cost. It's a short duration treatment for a specific need. See also response to Q23.

Q So even if the wound improves dramatically during the 12-day therapy – you still need to continue the treatment for the full 12 days?

You need at least 12 days to change the many chemical mediators that are below the wound. It is a 12-day therapy course, so the whole treatment pack needs to be used, similar to completing a 7-day antibiotic regime.

Q. Is there any research on fungating wounds for Accel-Heal or electrical stimulation?

Often, we are looking at palliative symptoms there, and I am assuming that is where the questioner is coming from. I haven't seen any published papers on it. See also response to Q26.

What about its use in paediatrics?

Accel-Heal is not contraindicated in children but users should proceed with caution as there have been no published studies or evaluations in children. See also response to Q27.

Q. How can you reassure patients about using Accel-Heal as they may be worried about using electrical stimulation?

Clinicians rarely experience barriers from patients to using the therapy. Explanations should be given to patients in language that they understand. "Getting patients to understand how electrical stimulation can stimulate wound healing is a huge challenge. - I have to scratch my head to understand the science behind all that. But I have never had a barrier from the

patient from a pain point of view." The non-medicated action of the treatment instead of taking pain killers is beneficial so I have not had any barriers to it. ([See a patient story here](#))

Q. What about its use in the acute sector and in community? Can it be used at home, in bed? What about removal for showering?

It can be used in all clinical settings. Accel-Heal is a novel electrical stimulation therapy, in that it is easy to use by patients, relatives, carers and health care professionals, as an adjunct to standard therapy, enabling the patient to continue with their normal routine and treatments. As with any electrical device, it should not come in contact with water. However, the device can be easily removed from the electrode pad wires, enabling showering, or the limb can be covered by a garment such as a Limbo to prevent the device becoming wet.