Evidence and case studies

Support wound management from the inside out

A nutritional supplement specifically designed to assist with wound management

Information for healthcare professional use only.

The Evidence

ARGINAID® contains supplementary arginine and has been shown to significantly improve the rate of wound healing.[1–3]

- Arginine is an amino acid that plays an important role in wound healing[4,5]
- Arginine helps increase blood flow to the surface of wounds and also helps produce new skin[4]
- In good health, the body can produce sufficient arginine to meet requirements[4,5]
- During wound healing, arginine requirements can increase and supplementation may be required.[4]

Effect of an arginine-containing nutritional supplement on pressure ulcer healing in community spinal patients

Brewer S, et al., 2010[2]

Study Details

- Prospective observational intervention study
- 18 well-nourished spinal cord patients
- Stage 2, 3 or 4 pressure ulcers (PU)
- 2 x ARGINAID® sachets (providing additional arginine (9g), vitamin C and vitamin E) consumed each day until full wound healing occurred
- 17 historical controls of similar age, gender and pressure ulcer history.

Study Results

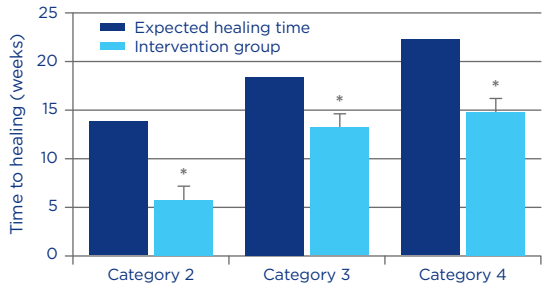
Intervention group consuming ARGINAID® demonstrated a two-fold, statistically significant, faster rate of time to healing than the control group. Intervention group demonstrated faster healing rates for all PU categories compared with 'expected time to healing' derived from the literature.

Study Conclusions

- ARGINAID® supplementation in well nourished spinal patients with pressure ulcers significantly improved the rate of healing compared with historical controls and expected healing times.

2 serves of ARGINAID® each day equated to an approximate 2-fold improvement in pressure ulcer healing in well nourished community spinal patients.

Comparison of time-to-full healing of pressure ulcers in patients in the intervention groups compared with the expected healing time reported in the literature.



*p<0.05 compared with the expected healing time.

Treatment with supplementary arginine, vitamin C and zinc in patients with pressure ulcers: A randomised controlled trial

Desneves K, et al., 2005[1]

Study Details

16 inpatients with stage 2, 3 or 4 pressure ulcers were randomised to one of:

- **Diet A:** Standard hospital diet
- **Diet B:** Standard hospital diet plus 2 high protein/energy supplements
- **Diet C:** Standard hospital diet plus 2 ARGINAID® Extra (high protein/energy with additional arginine (9g), vitamin C, vitamin E and zinc).

Study Results

Diet C (ARGINAID® Extra) was associated with the greatest improvements in Pressure Ulcer Scale for Healing (PUSH) score.

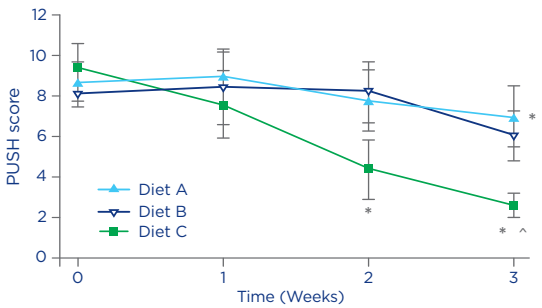
Study Conclusions

- ARGINAID® Extra supplementation in patients with pressure ulcers significantly improved the rate of healing.

2 serves of ARGINAID® Extra each day equated to an approximate 2.5-fold greater improvement in pressure ulcer healing after 3 weeks.

- Nutritional supplementation that promotes wound healing can significantly reduce the costs associated with wound management as well as helping to decrease patient pain and discomfort.

Change in patients' PUSH score over the study period with different dietary interventions.



*p<0.05 (compared to Week 0); ^p<0.05 (compared to Diet A or B).

Use of an arginine-enriched oral nutrition supplement in the healing of pressure ulcers in patients with spinal cord injuries: An observational study

Chapman B, et al., 2011[3]

Study Details

- Prospective observational intervention study
- 34 spinal cord injured in-patients with stage 2, 3 and 4 pressure ulcers (PU)
- 2 x ARGINAID® Extra were prescribed per day (high protein/energy with additional arginine (9g), vitamin C, vitamin E and zinc) until full wound healing occurred.
- PU healing was assessed with the Pressure Ulcer Scale for Healing (PUSH) Tool.

Study Results

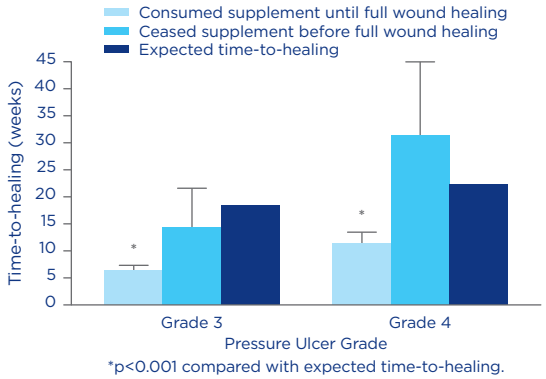
A 2.5 fold greater rate of healing observed in patients consuming the supplement until full healing (n=20) compared with those who ceased taking the supplement (n=14). The majority of patients in both groups were well-nourished.

Study Conclusions

- ARGINAID® Extra supplementation significantly improved the rate of pressure ulcer healing in spinal cord injury patients, compared to those who ceased the supplement before full healing and expected healing times.

2 serves of ARGINAID® Extra each day equated to an approximate 2.5-fold greater rate of healing in spinal-cord injured hospital inpatients.

Time-to-healing for grades 3 and 4 pressure ulcers



*p<0.001 compared with expected time-to-healing.

Only 1 patient with stage 2 PU in study, and they ceased supplement before full healing.

The Desneves and Chapman papers use ARGINAID® Extra, which is formulated with the same amount of L-Arginine as ARGINAID® (4.5g per serve) however contains additional nutrients. ARGINAID® Extra is not currently available in Australia.

ARGINAID®
Case Study 1

Diabetic Foot Ulcer

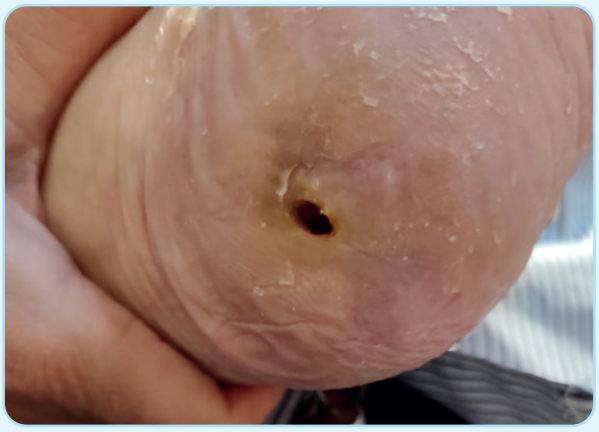
Name: Mrs R
Age: 74
Place of Residence:
Residential Aged Care Facility

Consultation with Nurse Practitioner, Wound Specialist

MEDICAL HISTORY

- Type 2 Diabetes Mellitus: managed with Metformin
  - BGLs: 7-12mmol/L post-prandial, 7-9mmol/L pre-prandial (well controlled).

Mrs R has pitting dependent oedema (legs swell due to gravity when legs go to the ground). She is wheelchair bound, non-ambulating however engages with all those around her.



WOUND HISTORY

Duration of wound present: 6 months.
Wound size: 1cm x 1cm (3cm deep).
Location: Left heel.

Mrs R has had a wound on her heel for 6 months, during which time it had almost healed and then opened again. It has a small opening however is very deep, which increases the risk of internal abscess and break down.

Swabs and bloods have been taken monthly and there have been no signs of infection.

Due to a language barrier (unable to speak English), there is limited understanding of the need to elevate the leg and use the pressure relief of a heel boot.

Wound care regimen: Dressings are changed 3 times per week (including packing with povidone iodine dressing and silicone foam with heel boot), and she wears a compression stocking. Dressing regimes have been changed various times in the past.

A duplex scan (imaging of the venous and arterial system) was suggested to the family, however this was not agreed upon at this point in time.

Impact of wound on patient: Mrs R is unable to ambulate independently. There has been a lot of pain associated with the heel and not being able to place it comfortably.

Additionally, as part of a spiritual belief, it is important not to have any wounds in the afterlife.

DIETARY HISTORY

Mrs R has a good oral intake and is not currently on any nutritional supplements.

ANTHROPOMETRY

No changes to weight reported.

INTERVENTION RECOMMENDED BY NURSE PRACTITIONER

ARGINAID® 2x sachets per day which provides:

- 9g of L-arginine
- Vitamins C & E to aid in wound healing.

ARGINAID® powder is also low in calories and carbohydrates to provide additional nutrition without negatively impacting blood glucose levels.

An information booklet *Nutritional Management for Wounds* was also provided to Mrs R and her family.

Progress

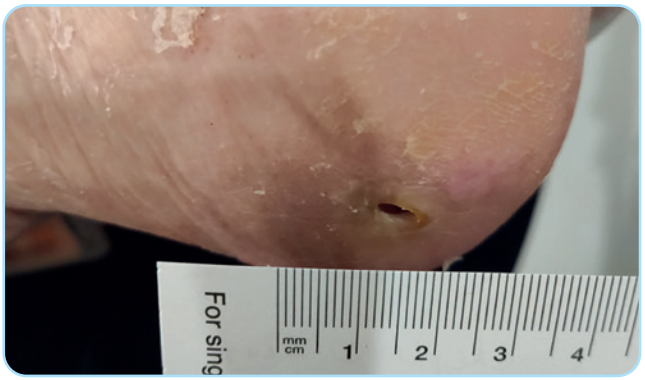
2 WEEK FOLLOW-UP

Significant healing has occurred. Wound margins have reduced, and depth has decreased making the wound base now visible.

Wound Size: approx. 0.5 x 0.5cm (1-2cm deep).

Wound dressings have been reduced to twice a week and the heel pain has subsided.

Mrs R was advised to continue with ARGINAID® twice daily.



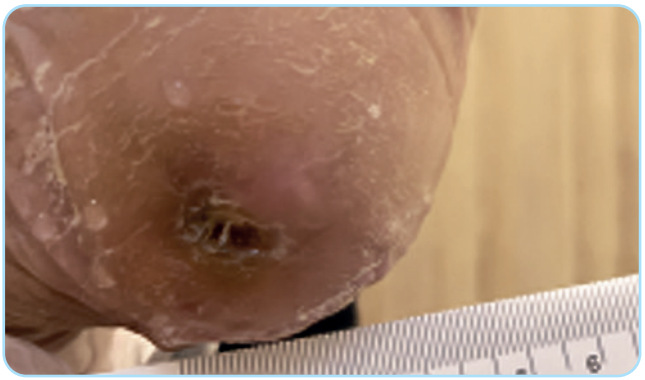
4 WEEK FOLLOW-UP

Healing continues to occur, as wound has now come to surface and almost closed over. It is less than half the size of the wound 4 weeks ago.

Wound Size: <0.5cm x <0.5cm (no depth).

At this stage, there are no signs that the wound will reopen.

Wound dressings have reduced to silicone foam only, twice a week.



Ongoing Recommendations

As positive results have been demonstrated with the consumption of ARGINAID®, Mrs R was advised to continue taking 2x ARGINAID® sachets per day on consultation with her GP to assist in the nutritional management of wound healing.

Patient Outcomes

Mrs R is very pleased that healing of her wound is being achieved, and that she requires less pain medication. Although not able to verbalise the full impact of the wound healing, she is socialising in the dining room more, and now smiles when the clinicians come to do her wound care, rather than being sad and nervous about the pain.

The family of Mrs R is also very appreciative of the improvements in her wound, as they can see that it is likely that she will not have a wound in the afterlife, which is very important to them.

Unfortunately, Mrs R is unable to verbalise her feedback on ARGINAID®, however she does not refuse it and consumes the required amount each day.

ARGINAID®
Case Study 2

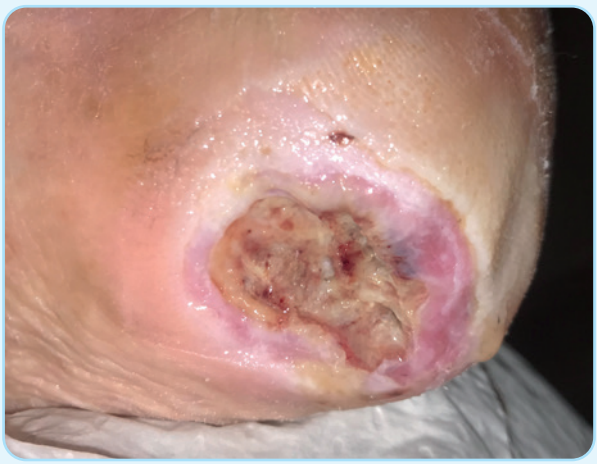
Diabetic Foot Ulcer

Name: Mr H
Age: 96
Place of Residence:
Home

Consultation with Nurse Practitioner, Wound Specialist

MEDICAL HISTORY

- Type 2 Diabetes Mellitus: managed with Metformin
  - HbA1c: 7.6% (reference range < 7%)
- Vitamin B12, D and Magnesium deficiencies: taking supplements
- Rheumatoid arthritis
- Depression
- Serum albumin: 32 g/L (reference range 32-45 g/L) – no evidence of malnutrition



WOUND HISTORY

Duration of wound present: 1 year.
Wound size: 5cm x 4cm (1.5cm deep).
Location: Left heel.

Wound care regimen: Mr H has been managed under the HARP (Hospital Admission Risk Program) team for the last 12 months and has daily wound dressings from a home visiting nurse. Despite this, the wound gradually became larger and has remained the same over the past 6 months. There have been no signs of infection, however no active improvement and it has become stagnant. Debridement of wound occurred fortnightly by the HARP team in the hope of stimulating new tissue growth.

Mr H and carers would like to explore other options to help with wound healing.

Impact of wound on patient: Mr H is unable to ambulate independently, and therefore has assistance from the visiting wound care nurse to shower and subsequently keep the wound area dry. This affects his ability to visit his wife who lives in a residential aged care facility as he must wait for the nurse.

DIETARY HISTORY

Mr H has a good appetite and there are no reported concerns with eating and nutritional status.
He suffers from constipation and has therefore been advised to drink more water.

ANTHROPOMETRY

No changes to weight reported.

INTERVENTION RECOMMENDED BY NURSE PRACTITIONER

ARGINAID® 2x sachets per day which provides:

- 9g of L-arginine
- Vitamins C & E to aid in wound healing.

ARGINAID® powder is low in calories and carbohydrates to provide additional nutrition without negatively impacting blood glucose levels.

An information booklet *Nutritional Management for Wounds* was also provided.

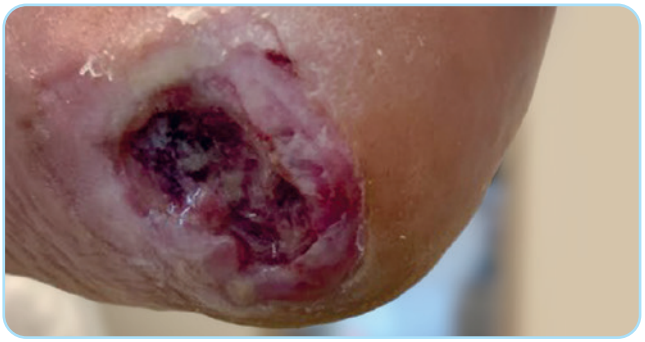
Progress

2 WEEK FOLLOW-UP

The wound is smaller in size and the margins have reduced, however the wound remains deep.

Wound dressings are no longer daily and have now stretched to 3 days apart. The wound exudate is less, therefore Mr H does not need to shower every day. This allows him to visit his wife more regularly as his time and ability to ambulate is no longer dictated by his wound. Mr H is getting some of his independence back.

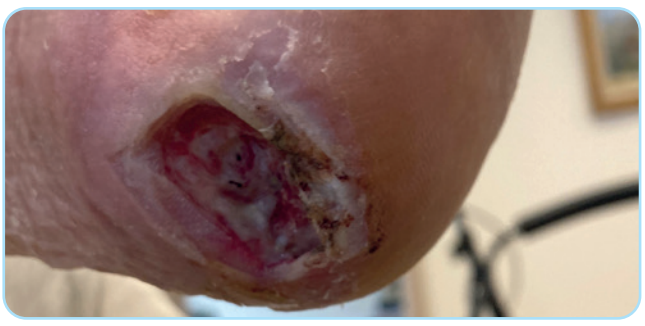
Mr H was advised to continue with ARGINAID® twice daily.



4 WEEK FOLLOW-UP

Wound healing has continued, with wound decreasing in size and depth (measurement unable to be taken). The wound was debrided by the HARP team, which exposed new and healthy epithelised tissue.

Wound dressings continued to be changed twice a week with a continued decrease in exudate. Debridement was changed to monthly instead of fortnightly.



Ongoing Recommendations

As positive results have been demonstrated with the consumption of ARGINAID®, Mr H was advised to continue taking 2x ARGINAID® sachets per day on consultation with his GP to assist in the nutritional management of wound healing.

Patient Outcomes

Mr H was very happy with the improvement in his wound. Prior to commencing on ARGINAID®, he had not seen any improvement in 6 months, and it was severely affecting his mental health. The thought that he may die with this wound was consuming him.

He has seen significant improvement in the last 4 weeks and is now optimistic his wound has the potential to heal.

He enjoyed the lemon flavoured ARGINAID® sachets, found them simple to prepare on his own and never missed a dose. He feels that he has more energy.

He also reports that his constipation has improved, likely due to the increased water intake from the prepared ARGINAID® drinks.

ARGINAID®
Case Study 3

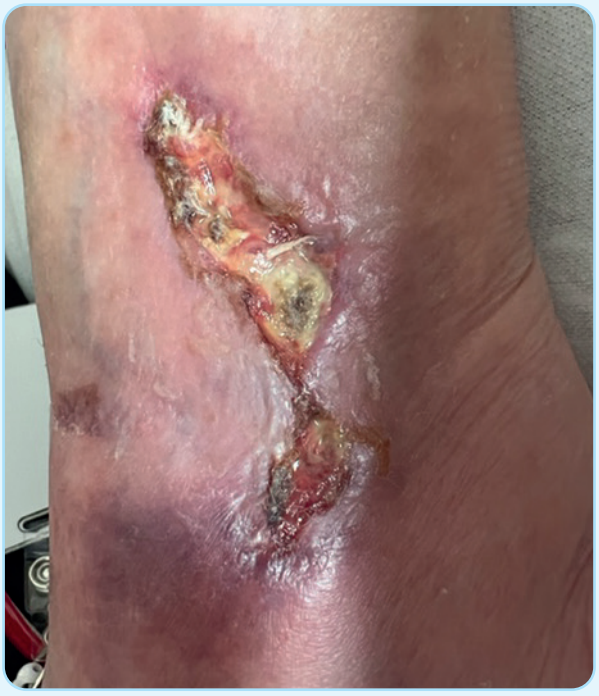
Surgical Wound

Name: Mrs A
Age: 105
Place of Residence:
Residential Aged Care Facility

Consultation with Wound Care Consultant

MEDICAL HISTORY

- Osteoarthritis
- Anxiety, Depression
- Atrial Fibrillation
- Hypertension
- Ischaemic Heart Disease



WOUND HISTORY

Duration of wound present: 3 weeks.
Wound size: 6cm length x 1.5 cm width.
Location: Lower front of right leg.

Mrs A fractured her tibia and fibula after falling at home on her own. Mrs A was operated on through internal fixation of the fracture (plate and screws).

Although Mrs A was being compliant with no weight-bearing and using a CAM boot (controlled ankle motion), the suture line opened up 1 week post-operation. A wound swab was taken and showed no infection, however Mrs A was put on antibiotics to prevent further complications with the metalware.

After 2 weeks (3 weeks post-operation), there was no improvement with the wound, and she was referred to a wound consultant.

Wound care regimen: Upon review at 3 weeks post-operation, silver dressings and tubigrip bandage (from toe to knee) were commenced, and exudate was managed with a superabsorbent dressing. Dressings were changed 3 times per week.

At 10 weeks post-operation, healing was minimal.

Impact of wound on patient: Mrs A was unable to walk or shower independently and became completely reliant on nursing staff. This caused her a lot of frustration as prior to her fall, she was completely independent.

Mrs A is also in a lot of pain and is unable to come out of the CAM boot and start rehab until the wound is healed.

DIETARY HISTORY

Mrs A was eating well with no dietary concerns. She was not on any nutritional supplements.

ANTHROPOMETRY

Healthy, stable weight. No concerns.

INTERVENTION RECOMMENDED BY WOUND CARE CONSULTANT

ARGINAID® 2x sachets per day which provides:

- 9g of L-arginine
- Vitamins C & E to aid in wound healing.

An information booklet *Nutritional Management for Wounds* was also provided.

Progress

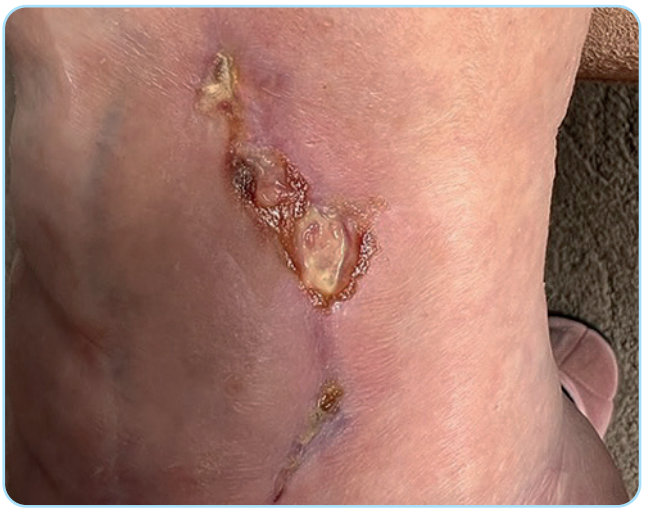
2 WEEK FOLLOW-UP

There has been significant healing. The wound is migrating rapidly and has divided into 2 smaller wounds.

Wound Size (of connecting wounds):
3.5cm length x 0.75cm width.

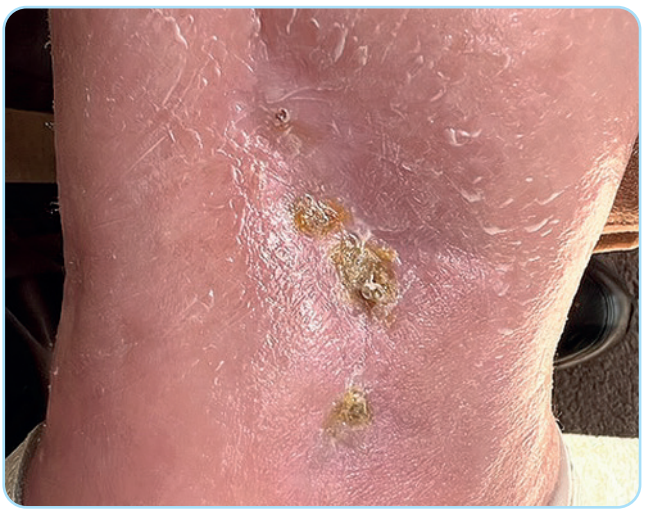
There was no change to wound dressing regime since commencing on ARGINAID®.

Mrs A was advised to continue with ARGINAID® twice daily.



4 WEEK FOLLOW-UP

After 4 weeks, the surgical wound had completely healed.



Ongoing Recommendations

There was no longer any need for dressings or the CAM boot.

ARGINAID® was no longer required due to full wound healing.

Patient Outcomes

With a completely healed wound, Mrs A was now able to walk again and progress with hydrotherapy and rehabilitation.

Mrs A was very thankful for being provided with ARGINAID® to assist with her wound healing and is so happy to be able to ambulate independently again. This allows her to socialise and do simple daily tasks including getting her own tea and coffee. She is also very pleased that she no longer requires antibiotics, and people have stopped "fussing over me".

The nursing staff were sceptical of the impact that ARGINAID® would have on an acute surgical wound, however, were pleasantly surprised.

Mrs A always consumed 2 x ARGINAID® per day as prescribed and found it easy to consume. She preferred to drink a bit at a time rather than consuming them all at once.

ARGINAID®
Case Study 4

Skin Tear

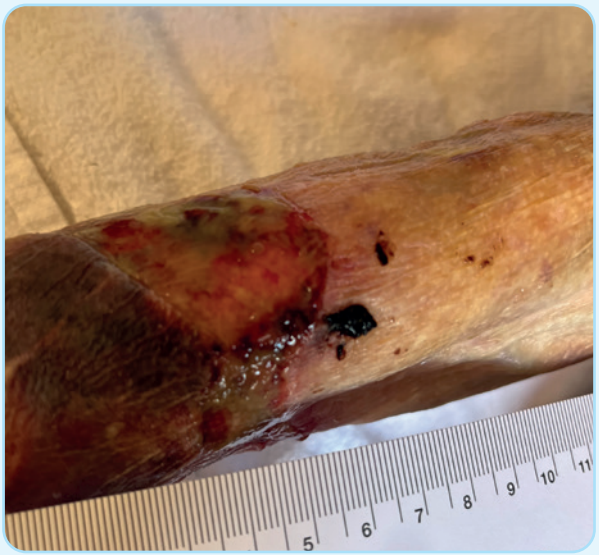
Type 3 (ISTAP classification)

Name: Mrs P
Age: 95
Place of Residence:
Residential Aged Care Facility
(recently moved from home)

Consultation with Wound Care Consultant

MEDICAL HISTORY

- Anticoagulant therapy
- Dementia
- Occupational therapy assessment: deemed supervision required when mobilising
- Mrs P is quite headstrong (described as 'non-compliant') often declining treatment, food, drink, recommended care and supervision



WOUND HISTORY

Duration of wound present: 7 weeks.
Wound size: 4cm x 5cm.
Location: Right forearm.

Mrs P had a fall in the shower at the aged care facility in the middle of the night, as she did not want to call for staff assistance. This resulted in a skin tear on her right forearm.

Mrs P is reportedly usually a good healer, however with a low BMI and thin skin, the skin tear is prolonged and has not begun to heal in the 7 weeks since the fall.

Mrs P's non-compliant behaviours have been further exacerbated with the wound associated pain. It is important for wound healing to begin to avoid infection and reduce further pain which may contribute to worsening her behaviours.

Wound care regimen: Mrs P has been receiving a variety of dressings, which are being changed 2 times per week. She has experienced issues with the dressing sticking to the wound, which have been soaked off with saline.

Impact of wound on patient: Due to the pain caused by the wound, Mrs P was unable to walk or shower properly, which was a big shock for this resident. However, her non-compliant behaviours have increased significantly since developing the wound. This suggests the impact of pain is more than what Mrs P is able to verbalise effectively.

DIETARY HISTORY

Mrs P reports 'eating like a bird' however this is normal for her. She occasionally has RESOURCE oral nutritional supplements when she doesn't feel like eating normal food.

ANTHROPOMETRY

Weight: ~45kg (low BMI, however weight stable)

- No reported recent weight changes.

Mrs P reports that she has always been a low weight, and does not like being bothered about it.

INTERVENTION RECOMMENDED BY WOUND CARE CONSULTANT

ARGINAID® 2x sachets per day which provides:

- 9g of L-arginine
- Vitamins C & E to aid in wound healing.

Facility staff encourage meals and snacks throughout the day and evening (food can be accessed at any time). Also, an information booklet on *Nutritional Management for Wounds* was provided.

Progress

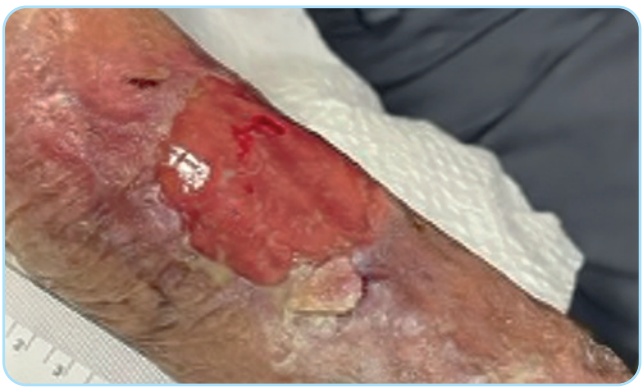
2 WEEK FOLLOW-UP

Since commencing on ARGINAID® the skin tear wound has begun to migrate. Prior to starting ARGINAID®, the wound was stagnant and not healing.

Mrs P was not receiving any other nutritional supplements or antibiotics.

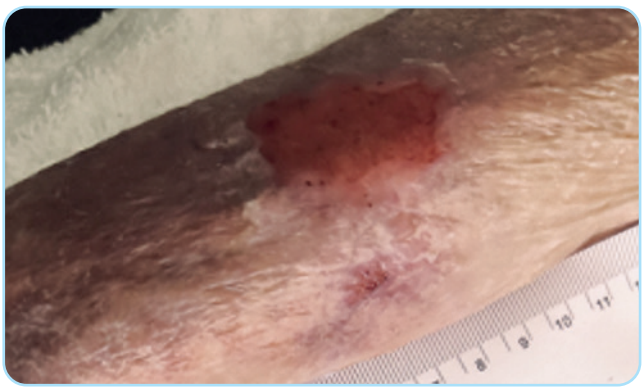
Wound Size: 4cm x 4cm.

Mrs P was advised to continue with ARGINAID® twice daily.



4 WEEK FOLLOW-UP

The skin tear has completely healed. Scar tissue has formed. Moisturiser is provided twice a day and tubular padding is worn to protect Mrs P's arms.



Patient Outcomes

Mrs P was no longer showing signs of pain. She was eating more, and allowing the wound consultant to review the wound, when usually she would only agree to show the wound to her favourite nurse. Her manner was more pleasant and engaging, and her non-compliance decreased.

Mrs P was happy to consume ARGINAID®. Due to her behaviours, she often refused new things however pleasantly surprised the staff with her willingness to have the drink twice per day.

ARGINAID®

2 serves of ARGINAID® daily equated to an approximate 2-fold improvement in well nourished patients.[2]

NUTRITION INFORMATION	
Per Single Serving	9.2g Sachet
Energy	30 kcal (126 kJ)
Protein	(Contains 4.5g per packet of the amino acid L-arginine – a key building block of protein)
- L-arginine	4.5g
Total Nitrogen	1.4g
Carbohydrate	5g
Fat	0g
Sodium	30mg
Vitamin C	156mg
Vitamin E	40.9mg

Refer to packaging for further nutrition information.

ORDERING INFORMATION

Product	Presentation	Units Per Case	Nestlé Product Code
ARGINAID® Orange	9.2g Sachet	14 x 9.2g	9517630
ARGINAID® Lemon	9.2g Sachet	14 x 9.2g	12166667

For more information, contact your Nestlé Health Science Account Specialist or visit www.nestlehealthconnect.com.au

References: 1. Desneves, KJ. et al. Clinical Nutrition, 2005;24:979-987. **2.** Brewer, S. et al. Journal of Wound Care, 2010;19(7):311-316. **3.** Chapman, B. et al. Nutrition & Dietetics 2011; 68: 208–213. **4.** Crowe T & Brockbank C. Wound Practice & Research, 2009:17(2);90-99. **5.** Wallace, E. British Journal of Nursing, 1994:3(13)662-667.

Evidence in the document includes both ARGINAID® and ARGINAID® Extra, both of which are specially formulated with L-Arginine. ARGINAID® is currently available in Australia.

Patient consent was obtained to participate in case studies and permission was received to use case study information in Nestlé Health Science materials.

ARGINAID® and ARGINAID® Extra are food for special medical purposes specifically formulated with L-Arginine for the nutritional management of wounds. Must be used under medical supervision. Not suitable for use as a sole source of nutrition. Contains Phenylalanine.

Information for healthcare professional use only. Printed in May 2024.

Nestlé HealthScience