Case Report 1 (Complete Healing Costs)

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A 50 year old man had a below knee amputation as a result of osteomyelitis which he had had for the preceding 20 years following a car accident. He was referred to Advanced Wound Care Services one month following amputation surgery to ‘resolve the stump infection’. Doctors planned to shorten the bone and use new skin flaps to cover the site two weeks later. Prior to the amputation the patient was a healthy active self employed man.

Initial examination and assessment: Stump covered with necrotic flap (Figure 1).

Treatment: Patient was experiencing excruciating phantom limb pains and as a result was suffering from insomnia. His doctor was consulted, Lyrica® (pregabalin, Pfizer) was prescribed. Pain was controlled and insomnia resolved within the first week of treatment.

Wound care was commenced with the primary dressing being an antibacterial, desloughing agent with film as the secondary dressing.

The wound responded immediately and by the third dressing necrotic tissue had been removed revealing a large haematoma. The secondary dressing was then changed to absorbent foam. Dressings...
continued for two weeks being changed every 48 – 72 hours (Figure 2). After a further two weeks dressings were changed to an alginate covered with a foam absorbent dressing for moisture control with dressing changes every 4-5 days (Figure 3).

A silver impregnated dressing followed from weeks 4-6 with dressing changes every three days to facilitate granulation (Figures 4, 5).

At eight weeks the wound was fully closed and coning of the stump was initiated. A prosthesis was successfully fitted on week 12 following referral to AWCS.

Cost Comparison

Wound clinic (AWCS)
- Total cost at wound clinic R9 944.66 over eight weeks
- No swabs were necessary
- Doctor supervised the wound at the clinic (no doctor's fees during the eight weeks)
- Further surgery was avoided.

Hospital
- Initial surgery
- Amputation originally cost the medical aid a per diem rate R21 585 (M8646) (theatre time 45min, 5 days in hospital)
- Additional cost i.e. doctors, x-rays, laboratory etc estimated at R15 000

Additional intended surgery (had the patient been treated surgically)
Additional surgeries i.e. debridement plus skin graft or shortening and flap closure (per diem: R34 000) (theatre time 60 min, 10 days in hospital). Additional costs ie doctors, x-rays, laboratory, physiotherapist: R15 000. Wound clinic may still have been necessary if there were any complications.

Summary

Within eight weeks the patient had completely healed and returned to work.

He attended the clinic 25 times.

This particular medical aid negotiated a per diem rate for the initial amputation instead of fee for service. Rand value for additional surgery was calculated on a per diem rate.

Cost saving to patient’s medical aid is estimated at R39 000

This calculation does not take into account the potential problems with prosthetic fit and functionality should the leg have needed to be shortened.

Case Report 2 (Complete Healing Costs):
Ann Levenberg R.N. (Advanced Wound Care Services, AWCS LINKSFIELD)

Mr K, a 69 year old male patient presented with a septic venous leg ulcer on his left lower leg. A type 2 diabetic and hypertensive, Mr K was being treated on Glucophage and anti-hypertensives.

On presentation the ulcer measured 9.1cm x 4.9cm (figure 1). The tendon and bone were both exposed. His ulcer had been present for approximately 22 months. He had been treated for this by various specialists with no success. He had recently consulted a general surgeon, who had advised him that his only option would be below knee amputation.

A friend had advised him to attend the wound clinic. On initial assessment a wound swab was sent for microscopy, culture and sensitivity. A Doppler study was carried out to rule out any arterial insufficiency.

Oral antibiotics were prescribed, sharp debridement of obviously necrotic...
tissue was carried out, a dressing of hydrogel combined with a silver impregnated foam was applied.

After an initial two weeks of this therapy, the wound was deemed to be free of infection, foam dressings were applied and compression bandaging was initiated.

Over the following six weeks, this regime was followed – significant shrinkage and re-epithelialisation had occurred (Figure 2) and treatment was continued with a hydrocolloid dressing and compression bandaging. This regimen was continued until full healing 12 weeks following initial assessment. (Figure 3)

These costs include a six day hospital stay in a general ward. These costs would be comparable if the patient underwent a surgical debridement and skin grafting (if another surgeon deemed the leg to be salvageable). Costs also exclude any potential peri-operative complications.

In view of the background venous disease, it is likely that the patient would be referred for compression therapy application (wound clinic) and advice following skin graft surgery.

Additionally, had the patient undergone amputation as recommended, further costs for coning, fittings, prosthesis, rehabilitation and loss of earning would have at least doubled projected costs (The average cost for a below knee prosthesis is R30 000).

Either way, ambulatory therapy in a Wound care facility proved to be extremely cost effective to patient and insurer.

**Case Report 3 (Complete Healing Costs)**

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President of the Wound Healing Association of Southern Africa (WHASA)

**Introduction**

Chronic venous leg ulcers are often associated with an emotional battlefield, not only for the patient, but also for the healthcare giver. Various psychosocial issues affect concordance and we may see that manifest as signs of clinical depression, anxiety, social isolation, lay beliefs and also professional/patient conflict. Practitioners should therefore be sensitive to the needs of these patients, even though they themselves may feel impotent and anxious and that they are failing in their professional career.

**Case history**

Mr N is a 38 year old male patient with a history of bilateral leg ulcers for the past 12 years. Various treatment methods were followed during this period of time including visits to a traditional healer. He also had several skin grafts and periods of wound care. His working conditions were not conducive towards healing due to standing most of the day. No known allergies or medical conditions influenced wound healing. Clinical and psychosocial risk factors include: long ulcer duration of longer than six months (12 years in this case), large ulcer size, reduced mobility, fixed ankle joint, severe pain (9/10), male gender.

On presentation the bilateral ulcers were extremely painful and the patient had difficulty walking. The vascular examination done by the vascular surgeon at the clinic indicated adequate arterial blood flow and confirmed venous insufficiency. Skin pigmentation was present with high amounts of oedema present in both legs. Proposed treatment plan: antimicrobial dressings and compression therapy.
Consultation – 2007/11/23

Initiation of Coban 2 layer compression therapy system and Curasalt (20% hypertonic saline gauze dressing) on both legs. Left leg ulcer L = 85 mm W = 35 mm. Wound bed viable granulation tissue with fibrinous layer present. Surrounding skin intact with calloused wound edges. Right leg ulcer L = 20 mm W = 19 mm. Wound bed friable dark granulation tissue present. Surrounding skin intact with macerated wound edges.

10 days – 2007/12/04
Both leg ulcers improved rapidly within the first 10 days showing healthy granulation and epithelial tissue. Both decreased in size as seen in Figures 3 and 4.

63 days – 2008/02/06
Right leg ulcer completely closed. Transparent hydrocolloid dressing applied for protection underneath compression stocking. Left leg ulcer L = 10 mm W = 9 mm. Hydrocolloid dressing applied underneath compression bandages.

97 days – 2008/02/06
Both leg ulcers closed. Scar tissue visible. Patient wearing compression stockings on full time basis.

Cost comparison

Wound clinic out-patient
- Total cost at wound clinic over period of 97 days ± R14 500
  - This includes consultations, dressings and compression stockings
- No wound swabs were necessary – antimicrobial dressings chosen after clinical observation or the wound and patient.
- Attending vascular surgeon supervised treatment at the clinic; no further fees after initial consultation of R550
- Hospital admission and surgical debridement in theatre avoided

In-hospital treatment
(This is based on potential costs if the patient were to be admitted for debridement and skin graft in theatre without complications)
- Hospital and theatre day cost = ±R25 000
- Anaesthetics in theatre = ±R3 200
- Vascular surgeon fees consultation and theatre = ±R2 550
- Laboratory tests = ±R1 500

Total estimated cost in hospital = ±R32 250

Conclusion

Although 97 days ongoing treatment period seems extensive, the patient was able to go to work without any discomfort or pain. He attends the clinic on a weekly basis at minimal cost with no loss of income. No potential theatre complications concurred and the patient was still actively involved in his community. In this case ambulatory out-patient wound care proved to be cost effective not only to the medical aid but also to the patient. This patient, during his 12 year ulcer period, cost his medical aid more than R40 000.00 on a yearly basis depending on the procedure choice at the specific time.

The value of a multi-disciplinary effort is still underestimated in wound care and this specific case study involved the following health care professionals:
- The patient
- Vascular surgeon
- Wound care specialist nurse
- Orthotist
- Companies providing products

Case Report 4 (Ongoing treatment cost comparison)
Sr Rene Lessing Unitas Hospital Centurion

This patient had his knees virtually destroyed by the propeller blades of a microlight aeroplane. Bilateral gastrocnemius musculo-cutaneous flaps were performed on this patient to cover exposed knee joints bilaterally and the donor areas were skin grafted. The patient was immobilised completely after his accident and was wheelchair bound. The left leg had an external fixator applied and the right leg was splinted. Tendons around the left knee joint were almost totally destroyed and the patella was lost in both legs.

Following surgery, partial take of the skin grafts (infection was evident) necessitated ongoing dressings. (Figure 1) It was elected to continue treatment as an out-patient.
Dressings used on this patient included:
Dressing trays, Flexiban undercast padding, Melladerm Plus ointment, Acticoat and crepe bandages. Three weeks following initial out-patient treatment, almost complete healing had transpired (Figure 2).

Apart from major cost savings (Table), the patient has the benefit of being at home, psychologically he is well, the risk of acquiring a hospital acquired infection is minimum.

**Conclusion**

Case reports involving ambulatory wound care are presented. These are not exceptional cases but typical cases, chosen as these patients are now routinely managed by ambulatory facilities. Although the treatment can be protracted in some cases, the patients' lifestyle is minimally affected, there is immense cost saving in almost every case and the patient is not subjected to surgical risks and morbidity from donor sites, potential infections, etc. While attending these clinics, the patients are also educated in the art of compression, foot care, leg elevation where appropriate and dealing with the background disease appropriate to the presenting wound. Thus prevention of further wound occurrences is more likely.

It is important to note that we are not decrying the use of surgery where necessary – we still send many patients to specialists for surgical interventions and work closely with surgeons on the patient's management. We are pointing out however, that in many cases, previously thought to be impossible to treat on an out-patient basis, we have achieved success at a major cost saving and great convenience to the patient.

**Cost Estimation**

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<th>In Hospital</th>
<th>Wound Clinic</th>
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<tbody>
<tr>
<td><strong>Per Day Hospitalisation</strong></td>
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<tr>
<td><strong>Dressings</strong></td>
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<td>R826.38</td>
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<tr>
<td><strong>Totals</strong></td>
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<td>One week Outpatient</td>
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<tr>
<td><strong>One week in Hospital</strong></td>
<td>R15 363.47</td>
<td>R2 073.14</td>
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<tr>
<td><strong>Totals</strong></td>
<td></td>
<td>One month Outpatient</td>
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<tr>
<td><strong>One month in Hospital</strong></td>
<td>R61 453.88</td>
<td>R8 292.56</td>
</tr>
</tbody>
</table>

Apart from major cost savings (Table), the patient has the benefit of being at home, psychologically he is well, the risk of acquiring a hospital acquired infection is minimum.