

Using PICO™ 7 for Patients with Complicated Diabetic Foot Ulcers: An Economic Perspective

This is a brief summary of a presentation at the annual fall conference of Wounds Canada, in London, Ontario, on November 10, 2018. It has been produced with the financial support of Smith & Nephew. The presenter was Andrew Sharpe, BSc (Hons), MSc, MCPod, HCPC, a podiatrist and lecturer at the University of Huddersfield, England.



Introduction

In the United Kingdom, an estimated 4.5 million individuals live with diabetes, whether diagnosed or undiagnosed—meaning approximately one in 15 people is affected by this disease. Current projections estimate that the number of people with diabetes will surpass 5 million by 2025, increasing the burden on the health-care system. Unfortunately available personnel trained to care for these patients will not increase at the same rate. Researchers and clinicians are now asking: “How can we do more with less?”

Impact on Health Care

In 2012–13, some 169,000 diabetic foot ulcers (DFUs) were recorded, which translates to 5% of adult diabetic patients.¹ The lifetime risk of developing a DFU was calculated at 15 to 25%.² Furthermore, in England, 60,000 to 75,000 people have an active DFU any given week.³

The Role of Negative Pressure Wound Therapy

- Creates an active (not passive) dressing
- Results in fewer dressing changes
- Improves microcirculation
- Stimulates blood flow and oxygenation
- Provides effective mechanical wound cleansing
- Forms a bacterial barrier
- Biochemically reduces fluid concentration of proteases that impair wound healing
- Removes excess fluid
- Reduces area with edge of wound retraction
- Reduces interstitial edema

The NHS England, an executive non-departmental public body of the Department of Health and Social Care, spends \$1.66 to \$1.93 billion on foot ulceration and amputation per year: a cost of \$4.52 to \$5.27 million per day. Cost per diabetic foot ulcer can range from \$3,650 for a healed wound to \$15,000 for an unhealed wound. The cost of amputation for one diabetes-related wound is \$28,500. The economic cost of wound care is expected to rise by 39% over the next four years.

In the UK between 2013 and 2016, there were 8,500 amputations per year. This translates to 160 amputations per week, or 23 amputations per day. The costs of social care for DFUs and amputations have been estimated at \$23.71 billion.⁴

Cost-effective Management

Cost-effective management of DFUs should aim to promote rapid and complete wound closure and should return the patient to their pre-ulcerative state. Standards of care for DFUs include offloading to manage pressure, control of ischemia to manage arterial disease, and control of foot infection, wound debridement and dressings to manage infection. While no one dressing is a fix-all solution, the key components of a wound dressing include:

- Supporting progression toward wound healing
- Maintaining a balanced wound environment that is not too moist or too dry

PICO™ 7 Wound Dressing: Unique by Design

The innovation of the PICO™ 7 is within the dressing, and a key part of this is the patented AIRLOCK™ technology layer, which stabilizes the healing process by:

continued . . .

- Ensuring pressure is distributed in a uniform way across the wound bed
- Ensuring consistent delivery of negative pressure wound therapy (NPWT) over the seven-day duration of therapy
- Managing fluid from the wound through absorption and transpiration, thereby reducing the risk of maceration

Furthermore, the AIRLOCK™ layer, in combination with the Superabsorber layer, prevents up to 99.9% of bacteria movement to the wound contact layer.

The PICO™ 7 empowers patients with its new dressing-full indicator, which is designed to detect when the dressing filter has become blocked and visually indicate to the user within two hours of occlusion that a dressing change may be required. This is designed to ensure dressings are only changed when necessary, not because of a routine.

The PICO™ 7 is also designed with clinician confidence in mind; the pump is more than twice as effective at dealing with air leaks. This means improved performance on hard-to-seal wounds, allowing the clinician to address a wider range of wounds, and reducing dressing checks done “just in case.”

PICO™ 7 Clinical Evaluation

The PICO™ 7 device was tested for its potential to do more with less. Researchers were interested in whether the PICO™ 7 could reduce the resource burden of complicated DFUs, and at the same time improve wound outcomes. The pump was tested using case studies of four complicated DFUs cases. Investigators measured the number of weekly contacts and the healing trajectory (percentage of reduction in wound area). Table 1 provides a summary of the patient demographics for these four case studies.

Table 1: Case Study Demographics

Details	Case 1 86 y.o. male	Case 2 81 y.o. male	Case 3 51 y.o. male	Case 4 65 y.o. male
DFU location	Right forefoot amputation	Left 5th toe amputation	Right posterior heel	Left posterior heel
Dimension (area)	2.5 x 0.4 cm (1 cm ²)	1.2 x 0.6 cm (0.72 cm ²)	6 x 10.5 cm (63.5 cm ²)	2.5 x 4.5 cm (11.25 cm ²)
SINBAD (0–6)	3 (I, N & A)	3 (I, N & D)	3 (S, N & A)	4 (S, N, B & A)
Length of PICO™ 7 treatment	4 weeks	12 weeks (4 weeks PICO™ 7, 2 weeks break, 8 weeks PICO™ 7)	5 weeks	6 weeks
Dimension post-PICO	2.3 x 0.3 cm (0.69 cm ²)	0.4 x 0.8 cm (0.32 cm ²)	5 x 6 cm (30 cm ²)	2 x 2.5 cm (5 cm ²)
Percentage reduction	31%	56%	53%	56%

Table 2 shows the decrease in contacts per week and clinician time per week recorded during the case studies.

Table 2: Clinician Contacts and Time per Week

Case	Clinician Contacts Per Week		Clinician Time (minutes per week)	
	Pre-Pico® 7 Treatment	During Pico® 7 Treatment	Pre-Pico® 7 Treatment	During Pico® 7 Treatment
1	3	1	93	62
2	2	1	62	31
3	7	2	217	155
4	3	2	93	31

Results of Clinical Evaluation

Using PICO™ 7, the number of contacts decreased from an average of 3.75 to an average of 1.5 per week. Furthermore, a total of 279 minutes (4 hours, 39 minutes) was saved in clinician time per week of treatment. Patients in this study saw a mean wound area reduction of 49% following treatment with the PICO™ 7 (range 31–56%).

Summary

Facilities working with patients with diabetic foot ulcers can realize significant potential cost savings through the use of the innovative PICO™ 7 dressing in conjunction with standard of care treatment.

References

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