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Improving patient outcomes through the implementation of a person-centred leg ulcer pathway

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Improving patient outcomes through the implementation of a person-centred leg ulcer pathway

Objective: To develop a holistic pathway for leg ulcer assessment and management, implemented within a local community organisation. The primary aim for this pathway was to reduce time-to-healing.
Method: A leg ulcer pathway was designed to be used in all care settings to support continuity, and contains quality of life (QoL) assessment tools, a treatment algorithm, guidance for use, a leg ulcer assessment form, and a wound treatment chart.
Results: Data analysis, carried out 12 months after implementation, compared pre- and post-averages for ulcer time-to-healing: 123.7 days (median: 84 days), n=46 pre-implementation, versus 69.1 days (median: 46 days), n=30 post-implementation, respectively, which demonstrated a minimum 44% reduction in time. Cost saving analysis demonstrated a minimum cost reduction of 45% in nursing time.
Conclusion: The implementation of a structured, person-centred leg ulcer pathway has provided many benefits to patients, clinicians and the hospital and community trust. Enhancing correct dressing product placement by ensuring the right dressing is used at the right time, in tandem with the correct compression regime, improved healing outcomes. The patient journey has become more streamlined providing the best chance to achieve full healing quickly.
Declaration of interest: E. Merlin-Manton works for Urgo Medical, who had no influence on the design of the pathway, the products used, the findings of the analysis or the writing of this paper.

leg ulcer • patient outcomes • person-centred • protease inhibitor • quality of life • treatment pathway

It is well documented that the prevalence of leg ulcers is increasing.[1] Data estimates that 1.5% of the adult population have an ulcer.[1] The results of a study conducted in 2012/13 confirmed that leg ulcers represent at least 34% of all wound types, making this condition the largest wound category in the UK.[1] Arterial leg ulcers represented <1%; mixed aetiology leg ulcers 1%; venous leg ulcers (VLUs) 13%, and the single highest category of all wound types is 'unspecified leg ulceration', equalling 19%.[1] During this study period the documented 13% of VLU was equal to patient numbers of 278,000,[1] whereas during 2005/06 VLU incidences were recorded as 108,600,[2] indicating a rate of growth that cannot continue without causing further burden on resources and increasing expenditure. The costs of treating leg ulcers are estimated to be within the region of £2 billion per annum in the UK, therefore it is essential that they are diagnosed and treated as soon as possible to achieve the best outcome for the patient,[3] and reduce the economic burden on the health-care system.

It is essential that, following holistic assessment of the patient, all planned care is patient-centric, and considers both the physical and psychological impact on the person's quality of life (QoL).[4,5] Due to the high number of patient referrals to the UK National Health Service (NHS) and only limited appointment availability, with a restricted appointment time, it is observed in practice that it is not always possible to implement a truly holistic approach. With this in mind, and to standardise the QoL considerations and documentation to achieve holistic practice, a clinical pathway for leg ulcer assessment and management was developed and implemented within a local community organisation. The primary aim for this pathway was to reduce time-to-healing using a treatment algorithm which would ensure patients received the most effective treatment as soon as possible and improved healing outcomes. The design of the pathway was based on nationally recognised leg ulcer guidance and focused on evidence-based practice, taking into account the national focus on the optimal pathway as in NHS England's RightCare scenario of Betty's story.[6] The pathway included wound care products already listed on the local formulary to give direct guidance and standardisation to the care of the local patient population suffering with leg ulceration. Clinical pathways need to be bespoke to support holistic patient care that is specific to local communities while also meeting explicit care needs.

Development

The challenge was to develop a standardised leg ulcer pathway to include cost-effective, evidence-based treatment strategies to facilitate the delivery of high-quality care, guiding clinicians to improve patient

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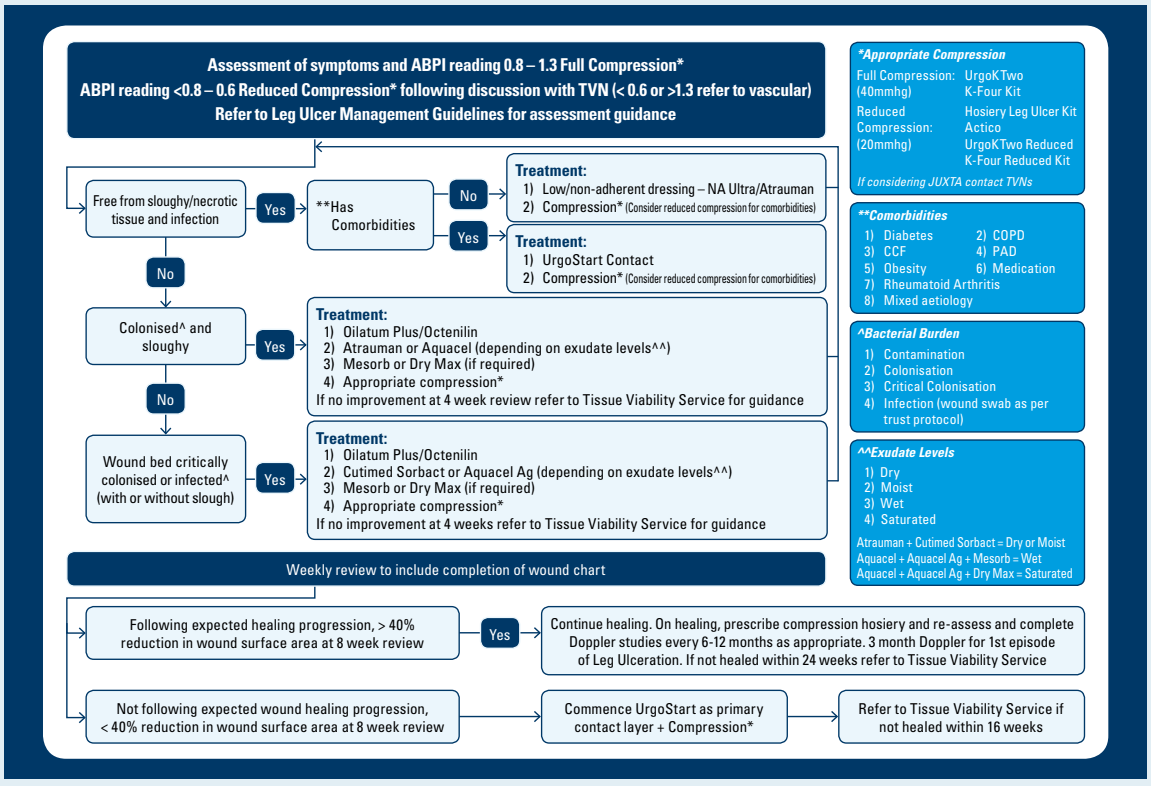
Fig 1. Treatment algorithm for leg ulceration



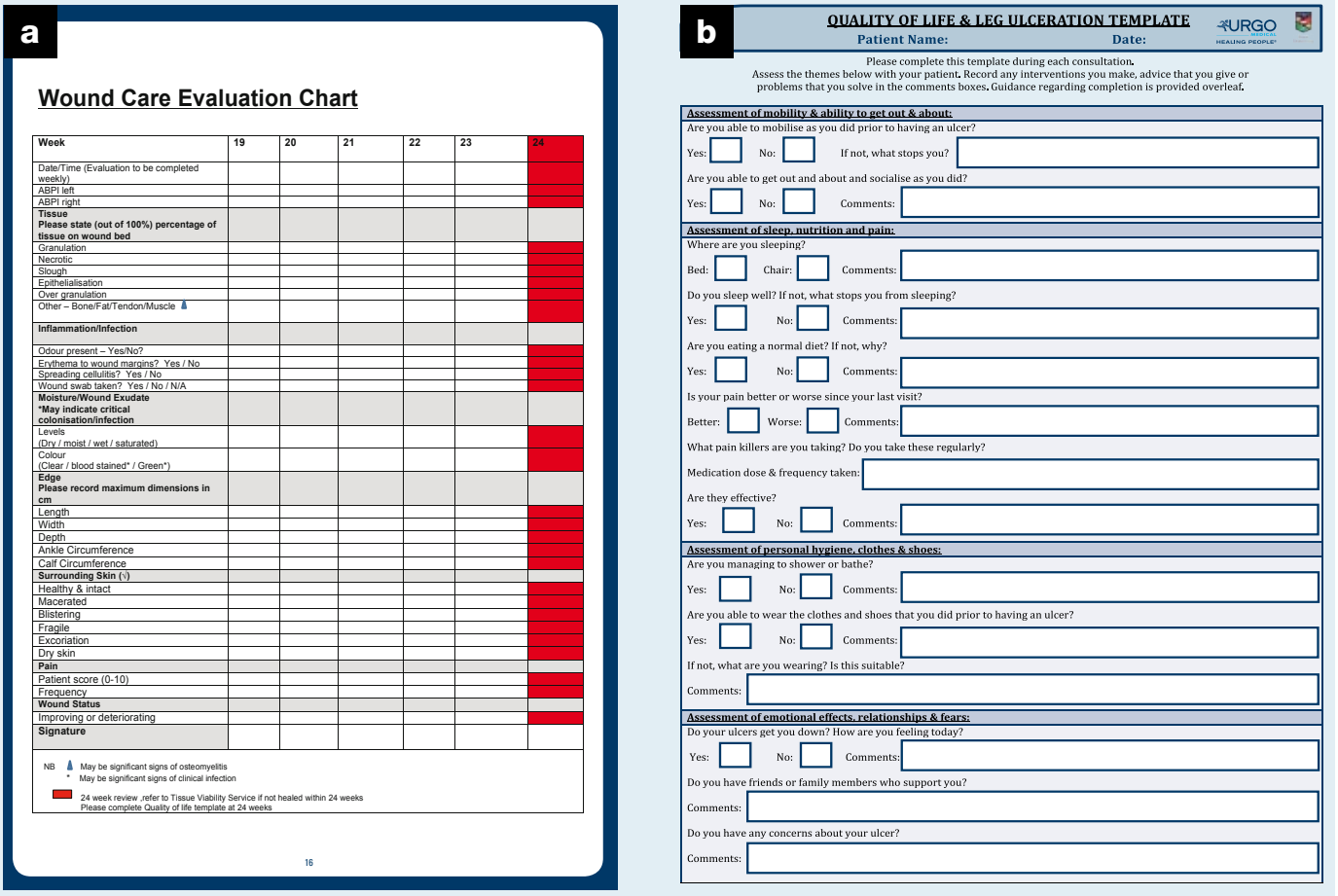
healing outcomes. Pathway development was undertaken by the tissue viability lead nurse and a leg ulcer clinical specialist. Additional rationale for development of this leg ulcer pathway included strategic drivers which were set locally by the hospital and community trust, focusing on cost efficiencies related to key performance indicators (KPI) and Commissioning for Quality and Innovation (CQUIN) targets. The wound assessment CQUIN target has put concise and clear documentation in the spotlight and will act as a catalyst in the use of clinical pathways to ensure high standards of care are achieved. Within this trust, the community leg ulcer clinics are commissioned by the Care Commissioning Group (CCG) via a block contract with tissue viability, and KPI determines a 24-week healing target for all VLUs. Following the lean principles[7] (the quickest and best way to achieve a desired outcome), a lean audit of the service was executed, to determine its efficiency and pertinence in all aspects of treatment and care. The audit highlighted that the waiting lists for clinic appointments were growing as existing patients were not always progressing or being referred in a timely manner. Best practice determines that a patient with a lower limb ulcer between the knee and the ankle in the presence of venous disease must be diagnosed and treated within two weeks.[3,8] It was apparent from the audit findings that there was no structured approach to managing leg ulcers, dressing regimes were ad-hoc with frequent regime changes, documentation did not always reflect the progression of the wound and some patients were kept in clinic for long periods of time without review of the differential diagnosis and escalation to other specialist services.

The use of 40mmHg compression therapy has been widely quoted in literature as the therapeutic level to treat and prevent VLUs.[9] The Cochrane collaboration conducted a meta-analysis of randomised controlled trials (RCTs) and the results showed that compression bandages are effective in the treatment of VLUs.[10]

Systematic pathways can assist with the development of policies, improve communication and assist with decision-making, formulating the cornerstones of effective care.[14] Local demographics were considered, including noting that the local hospital episode statistical (HES) data was above the national average, and a review of the practices and pathways of some other leg ulcer services was undertaken. Other health-care organisations' protocols and guidelines were also taken into account to compare with and benchmark against.

Measurable parameters from historic data and patient care practises allowed efficient auditing and analysis providing useable data as a comparison, enabling the effectiveness of the new pathway to be demonstrated after implementation. Formulary products were used

Fig 2. An example of the wound evaluation chart with red, amber green (RAG) rating prompts (**a**), and leg ulcer consultation tool for assessing quality of life (**b**)



a

Wound Care Evaluation Chart

Week	19	20	21	22	23	24
Date/Time (Evaluation to be completed weekly)						
ABPI left						
ABPI right						
Tissue Please state (out of 100%) percentage of tissue on wound bed						
Granulation						
Necrotic						
Slough						
Epithelialisation						
Over granulation						
Other – Bone/Fat/Tendon/Muscle						
Inflammation/Infection						
Odour present – Yes/No?						
Erythema to wound margins? Yes / No						
Spreading cellulitis? Yes / No						
Wound swab taken? Yes / No / N/A						
Moisture/Wound Exudate *May indicate critical colonisation/infection						
Levels (Dry / moist / wet / saturated)						
Colour (Clear / blood stained* / Green*)						
Edge Please record maximum dimensions in cm						
Length						
Width						
Depth						
Ankle Circumference						
Calf Circumference						
Surrounding Skin (√)						
Healthy & intact						
Macerated						
Blistering						
Fragile						
Excoriation						
Dry skin						
Pain						
Patient score (0-10)						
Frequency						
Wound Status						
Improving or deteriorating						
Signature						

NB May be significant signs of osteomyelitis
* May be significant signs of clinical infection

24 week review ,refer to Tissue Viability Service if not healed within 24 weeks
Please complete Quality of life template at 24 weeks

16

b

QUALITY OF LIFE & LEG ULCERATION TEMPLATE

Patient Name: **Date:**

URGO HEALING PEOPLE

Please complete this template during each consultation.
Assess the themes below with your patient. Record any interventions you make, advice that you give or problems that you solve in the comments boxes. Guidance regarding completion is provided overleaf.

Assessment of mobility & ability to get out & about:

Are you able to mobilise as you did prior to having an ulcer?
Yes: No: If not, what stops you?

Are you able to get out and about and socialise as you did?
Yes: No: Comments:

Assessment of sleep, nutrition and pain:

Where are you sleeping?
Bed: Chair: Comments:

Do you sleep well? If not, what stops you from sleeping?
Yes: No: Comments:

Are you eating a normal diet? If not, why?
Yes: No: Comments:

Is your pain better or worse since your last visit?
Better: Worse: Comments:

What pain killers are you taking? Do you take these regularly?
Medication dose & frequency taken:

Are they effective?
Yes: No: Comments:

Assessment of personal hygiene, clothes & shoes:

Are you managing to shower or bathe?
Yes: No: Comments:

Are you able to wear the clothes and shoes that you did prior to having an ulcer?
Yes: No: Comments:

If not, what are you wearing? Is this suitable?
Comments:

Assessment of emotional effects, relationships & fears:

Do your ulcers get you down? How are you feeling today?
Yes: No: Comments:

Do you have friends or family members who support you?
Comments:

Do you have any concerns about your ulcer?
Comments:

(as the local formulary was not due for review) and the products had originally been selected for their clinical efficacy and required embedding into practice.

Education and guidance for use was given to all wound care clinicians applying the pathway, ensuring full understanding of use and appropriate product selection at the ideal time, and for the correct duration. This was done with a pathway launch day and subsequent supportive visits from the tissue viability team and clinical specialist.

To support continuity, the leg ulcer pathway was designed as a booklet, for use by the caregiver in all settings, for example at home; in leg ulcer clinics; district nurse clinics. It contains QoL assessment tools, a treatment algorithm (Fig 1), guidance for use, a leg ulcer assessment form and a wound treatment chart).

Pilot project

An initial three month pilot project, led by a leg ulcer specialist nurse, commenced within the community leg ulcer clinics. These clinics were chosen as they fell under the remit of the Tissue Viability Team, and having the clinical expertise available within the team allowed for any adaptations to the pathway be made before full implementation. The pilot highlighted some amendments and it was deemed necessary to include a QoL assessment tool and a leg ulcer assessment chart (Fig 2). The evidence from published literature suggests patients are hesitant in disclosing to their nurse the extent of the difficulties they experience from living with a VLU,[15] and that many VLUs are present for more than 12 months.[15] QoL issues that occur due to VLUs are wide, varied and devastating for the individuals affected.[4] Routine monitoring and documenting of a patient's QoL in a structured process rarely occurs. Therefore, the leg ulcer consultation tool (LUCT) developed by Green[16] was incorporated within the leg ulcer pathway to be completed on initial presentation of the patient to the clinic, and thereafter completed at four-weekly intervals. This allowed for other actions to follow, such as pain management. Additionally, on some occasions, the information gathered help to guide the selection of compression systems or highlighted a required change in treatment.

Integral to the pathway was the inclusion of a 'red, amber and green' (RAG) rating which are visual triggers

Table 1. Time-to-healing and cost analysis pre- and post-pathway implementation

	Pre-pathway implementation period			Post-pathway implementation period		
	Range	Average per patient	Median	Range	Average per patient	Median
Time-to-healing (days)	14–769	123.7	84	12–270	69.1	46
% reduction					44.14%	45.24%
Cost of Band 5 nursing time	£53.48–£2937.58	£504.99	£320.88	£45.84–£1031.40	£266.51	£175.72
% reduction					47.22%	45.24%

to ensure that the essential actions for patient requirements were completed or escalated within a timely manner.

Method

The data used for the analysis had been routinely collected for many years by the tissue viability team on a leg ulcer proforma. Full verbal consent for treatment and use of data was gained from the patient. Any patient with a recurrence after a period of ≥2 weeks healed were included as a separate active ulcer. The inclusion criteria was any patient with a completed leg ulcer clinic proforma who met the referral criteria, had an active leg ulcer, and attended their appointments. The referral criteria included any leg ulceration and excluded varicose veins, lymphoedema, undiagnosed oedema, and any dermatological condition of unknown aetiology or differential diagnosis. As the referral criteria supports appropriate referral no additional exclusion criteria was required.

We compared two periods of 12 months, the first was before the development of the leg ulcer pathway, and the second was a period of 12 months from the implementation date of the pathway.

A separate leg ulcer clinic referral pathway was formalised >6 months before the implementation of the leg ulcer pathway. The referral pathway was created to ensure that patients who met the criteria had timely access to specialist treatment. Historically, all referrals for lower limb conditions were accepted into clinic. The outcome of allowing this increased the leg ulcer waiting lists significantly, delayed access for patients with active ulceration into the clinic and, in some cases, delayed the correct differential diagnosis for patients with other lower limb conditions, such as dermatological conditions. Simultaneously, as the appropriate referrals were enforced, patients were discharged from the leg clinic routinely if they did not attend their clinic appointment for two consecutive weeks without due cause, or had a total of three 'did not attends' (DNAs).

Ethical approval was not required as the analysis was not research and no data used included any patient identifiable information.

Results

Due to the pre-pathway period occurring before the implementation of the appropriate referral pathway, 39% (n=30) of the leg ulcer clinic patients did not have active leg ulcers and, consequently, only 46 of the 76 patients met the inclusion criteria for this period. During the implemented period, as the leg ulcer clinic was only accepting appropriate referrals, 32 of 39 patients met the inclusion criteria. Of those 32 patients, only 30 have been included in the analysis due to two patients commencing the pathway during the time period covered by this analysis but for <4 weeks. The excluded patient data (n=7) was lost to follow-up as patients moved out of the area, died or were admitted to hospital. Three patients had recurring ulcers and fall into both pre- and post-pathway implementation timeframes, and one patient commenced treatment in the pre-pathway timeframe and healed during the post-pathway timeframe. All ulcers were either mixed aetiology or VLUs.

The average time-to-healing for the initial period was 123.7 days (median: 84 days) whereas after the implementation of the leg ulcer pathway the average was 69.1 days (median: 46 days) (Table 1). The CCG set KPIs in relation to the treatment of VLUs; this local target states healing must be achieved within 24 weeks. All patients included on the pathway achieved healing before the target.

Due to the referral pathway being implemented separately, the full data set is not available for the first time period but the range of appointment wait time was 30–48 weeks. From referral criteria formalisation this reduced significantly, albeit gradually, with the range being from 19–4 weeks, with occasional increased fluctuations. Since implementation of the leg ulcer pathway there is no waiting list and the first appointment availability remains steady with immediate appointments being given. The referral pathway has streamlined access into the leg ulcer clinic and, coupled with the leg ulcer pathway, has assisted with this reduction of waiting lists.

Specialist leg ulcer clinic times are available and include 24 half-hour appointments per week, routinely managed by a band 6 specialist nurse, a band 5 nurse with the support of a band 3 healthcare assistant. All patients have an initial 60-minute assessment appointment. The 30-minute appointments accommodate removal of the bandages, washing of the limb, wound assessment, application of dressings and compression. The leg ulcer pathway booklet is

completed following the dressing application; inevitably the clinics run over, particularly if the patient has bi-lateral limb ulceration.

To generate an average, the cost analysis has been done solely based on nursing time for a band 5 nurse, as this is representative of the minimum level of nurse cover required for all the appointment slots. The cost for a band 5 nurse's time per 30-minute clinic appointment is £17.83, having taken into consideration all related costs and overheads[17,18] such as salary, equipment, cost of buildings and utilities etc. With this in mind, all cost reductions demonstrated signify the minimum savings made. The average cost per patient during the pre-pathway period was £504.99 (median: £320.88) and after the leg ulcer pathway implementation the average cost reduced to £266.51 (median: £175.72) (Table 1).

Although dressing variety and compression choices have been captured it is recognised that one of the highest percentage of overall NHS wound care spend is on nurses' time.[19] The treatment algorithm streamlined dressing choices to ensure the correct dressing type was chosen at the appropriate stage of healing ensuring standardisation (Fig 1). However, an estimated figure of 75% of patients presented at leg ulcer clinic with poor wound bed preparation (>30% slough present) causing a delayed use of the protease inhibitory dressing.

As historical data for the patient's QoL was not captured it is not possible to provide any comparative analysis. However, common themes from patient comments emerged relating to their pain and odour management, and their ability to have a shower and socialise. Due to the formalisation of the process, actions were routinely taken by the clinic lead to ensure that anything that enabled an improved QoL was addressed. i.e. the provision of a waterproof protector to allow showering. Anecdotally, for some patients concordance levels seemed improve with the extra psychological support provided.[20]

Discussion

The extent of the leg ulcer pathway's use is within the tissue viability and district nursing teams. With such positive results, it is planned to become standardised practice across all community settings. Within this leg ulcer pathway, a choice of appropriate compression systems were provided for patients with mixed aetiology or VLUs. However, the treatment algorithm that guided immediate use of the protease inhibitor for patients with comorbidities, to prevent the potential longevity of their leg ulceration,[5,11] could be used for all ulcer types.

As demonstrated by the results of this data analysis, implementation of the pathway has helped to improve patient outcomes and standardised care delivery for people with leg ulcers. Moving forward, it is hoped that referrals to the leg ulcer clinics will be reduced or expedited at a much earlier stage if specialist input is required. Further enhancements to the leg ulcer pathway document are planned, for ease of use. Further education will also be provided to support use of the pathway across a broader expanse of clinicians, reinforcing standardisation of leg ulcer care across the trust. Additionally, terminology will be revised to reflect new concepts within the wound infection continuum.[21]

As QoL information is being captured every four weeks for individual patients for >12 months analysis is now possible which has the potential to further influence future enhancements.

Conclusion

The implementation of a structured, person-centred leg ulcer pathway has provided many benefits to patients, clinicians and the hospital and community trust. The treatment algorithm has impacted on correct dressing product placement, ensuring the right dressing at the right time in tandem with the correct compression regime, improving healing outcomes. The use of a specific leg ulcer wound chart has allowed accurate monitoring of the wound status, the visual RAG triggers have acted as an aide memoir to the clinician to evaluate the effectiveness of the treatment plan, and address any psychological issues with the patient. Using a standardised approach to leg ulcer care, the results have shown that time-to-heal has been reduced and waiting lists have decreased. The patient journey has become more streamlined providing the best chance to achieve full healing quickly. **JWC**

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