Health Innovation Wessex

Evaluation of the Health Innovation Network Transforming Wound Care programme

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Date of Report:
19/11/2024

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Disclaimer

This report presents the findings of an independent evaluation of the Transforming Wound Care (TWC) programme, a real-world evaluation programme delivered by the Health Innovation Network (HIN). The findings of this independent evaluation are those of the authors and do not necessarily represent the views of the TWC programme.

Declaration of Interest Statement

Health Innovation Wessex supports innovators to bring their innovations to the NHS as well as provide an evaluation service more broadly to our members and others. On occasion, we evaluate innovations that we have also supported. While these evaluations are independent, for transparency we disclose our dual role where applicable. For clarity, Health Innovation Wessex were not involved in the implementation of the TWC programme.

Acknowledgements

We would like to thank Test and Evaluation Site (TES) patients and staff of the services, for their participation in this evaluation.

We would like to acknowledge the support of Health Innovation East in co-ordinating data collection for this evaluation. We also acknowledge the contribution of Unity Insights to this work.

We would like to acknowledge the HIN programme managers who supported communications and data collection with their respective TES.

The following are the eight TESs contributing to this evaluation and their shortened terms used throughout.

1. Bromley Health Care Community Interest Company (CIC) (Bromley Healthcare)
2. Central London Community Health and care NHS Trust – Merton Community Nursing Team (CLCH)
3. Cornwall Partnership NHS Foundation Trust (Cornwall)
4. Lincolnshire Community Health Services NHS Trust – Skegness and Mablethorpe Integrated Community Team (Lincolnshire)
5. NHS Frimley ICS – Yateley Medical Centre (Yateley)
6. Locala Health and Wellbeing Community Partnerships CIC (Locala)
7. Norfolk and Waveney ICS – East Coast Community Care (ECCH) and Norfolk Community Health and Care (NCH&C)
8. Sussex Health and Care ICS (Sussex).

List of Acronyms

NWCSP – National Wound Care Strategy Programme
TWC – Transforming Wound Care
TES – Test and Evaluation Site
FImpS – First Tranche Implementation Sites

Organisations/sites/locations
HIW – Health Innovation Wessex
HEE – Health Education England
HIE – Health Innovation East
ICS – Integrated Care System
ICB – Integrated Care Board
PCN – Primary Care Network

Wound care/Health care specific
LLRs – Lower Limb Recommendations
WMDS – Wound Management Digital Systems
CQUIN – Commissioning for Quality and Innovation
EMIS – Egton Medical Information Systems
SNOMED – Systematized Nomenclature of Medicine

Other
BI- Business Intelligence
IMD – Index of Multiple Deprivations
LSOA – N Lower layer Super Output Area
NoMAD Questionnaire – normalisation measure development
iPARiHS – integrated Promoting Action on Implementation Research in Health Services
NPT – Normalisation Process Theory

Health Innovation Wessex

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Executive summary

1. Overview of the TWC programme

In October 2022, the Health Innovation Network launched the Transforming Wound Care (TWC) programme. This built on the work of the National Wound Care Strategy Programme's (NWCSP) implementation of the Lower Limb Recommendations (LLRs) (developed by the NWCSP). The programme aimed to achieve:

- Faster healing of wounds.
- Improved quality of life for patients.
- Reduced likelihood of wound recurrence.
- More effective use of health and care resources.

Eight Test and Evaluation Sites (TES) were recruited to deliver the NWCSP LLRs through dedicated services. The LLRs cover: wound identification, immediate and necessary care, assessment, diagnosis and treatment, ongoing care, review of healing, and care following healing.

The eight TESs provided data from populations in urban, rural and coastal communities with different levels of deprivation and included both ambulatory and non-ambulatory patients. Various providers were represented including NHS trusts and community interest companies. A range of local implementation strategies were undertaken to implement the NWCSP LLRs.

This independent evaluation, conducted by Health Innovation Wessex, provides insights into how recruited TWC programme Test and Evaluation (TES) Sites implemented the NWCSP LLRs and the impact of the programme on wound healing, and patient and staff experience.

2. Evaluation approach and methods

The evaluation addressed the following questions:

1. How has the TWC pathway been implemented in different sites, including feasibility, level of fidelity, critical success factors and barriers?
2. How has the TWC pathway impacted on key outcomes, including wound healing rates and cost effectiveness?
3. How has the TWC programme impacted on health inequalities?

A set of standardised metrics supported by the TWC programme, was collected from all eight TESs to measure impact on care received and wound healing rates. Implementation and process data recorded how well the metrics data collection embedded into local TES systems. The experiences of patients and staff were understood through interviews, focus groups or surveys. Qualitative findings were synthesised using an implementation framework.

Seven of the eight TESs implemented the NWCSP LLRs during the evaluation period; one remained pre-implementation and therefore their impact data is not included in this programme level analysis. All other qualitative data and information includes all eight TESs.

3. Quantitative findings—the impact of the TWC programme

Findings on the impact of the TWC programme are based on data reported by seven of the eight TESs (eight providers) between October 2023 and March 2024 as this was the most complete and consistent data set to enable accurate comparisons between TESs. One TES did not implement the LLRs during the evaluation period. All impact data reported for six months reflects the latter part of the TWC programme implementation. Key impacts are reported in **Box 1**.

- 819 patients received a full assessment within 14 days for lower leg wounds; 21% were new referrals. Some TESs maintained full assessment rates of 81% and over. These increases in proportions were attributed to fewer new referrals for lower leg wounds and an increase in the number of full assessments conducted.
- 926 patients were identified as suitable for strong compression therapy; of these, 460 (50%) received strong compression therapy.
- 353 patients (recorded by five TES providers) and 1014 wounds (recorded by three TES providers) were recorded as healed for both lower leg and foot wounds.
- From October 2023 to March 2024 healing rates were reported either by patients healed (five providers) or wounds healed (three providers):
    - 65% of patients (353) were recorded as healed within 12 weeks over that period (five TES providers) (updated accordingly due to the error above).
    - 65% of wounds (1014) were healed within 12 weeks over that period (three TES providers).

Box 1 Summary of impact data

3.1. Data limitations

Data quality limited the possibility to combine data across TESs due to variability and inconsistency in the data reported by the TESs. It was not possible to determine, with a statistically significant threshold, whether wound healing rates improved as a result of the TWC programme to implement the NWCSP LLRs. Findings are reported without reference to a baseline because no suitable comparison was available.

3.2. Implementation of metrics

While metrics reporting improved over time across all TESs, providers were constrained by issues with IT systems, manual data extraction, uncertainty regarding metric definitions, and capacity constraints to collect data.

4. Qualitative findings—implementation of the TWC programme

Findings from surveys, interviews and focus groups express staff views on their successes and challenges of implementing NWCSP LLRs. These are summarised in **Box 2.**

Successes

- **TWC programme**: Staff expressed enthusiasm and commitment to the aims of the TWC programme to start patients in compression earlier and ensure consistent pathways and appreciated the continuous support from their local health innovation network and the TWC Central Team.
- **Training**: The need for staff training was acknowledged across all TESs. Staff gained more confidence in providing wound care and this included the added value of tissue viability nurse specialist training advice and support for colleagues.
- **Experiencing better care for patients**: Staff reported feeling confident patients were getting better care leading to faster healing, improved outcomes, reduction in recurrence of wounds and fewer appointments for patients.
- **Data**: Staff recognised that high-quality data could answer important questions about service delivery.
- **Technology**: The key impact of using technology (wound data management system (WMDS) or any other technologies) was the improved oversight of patient care with accurate and consistent clinical recording, improved quality of images, ability to upload images straight to patients' notes, and faster referral processes.
- **Meeting net zero**: Staff anticipated environmental net zero benefits would result from the new pathways e.g., fewer appointments for district nurses, fewer miles travelled etc. and cited some efficiency savings.

Challenges

- **Patient factors**: Lifestyle and general health factors can work against healing and treatment adherence (such as co-morbidities, obesity, low literacy) as well as resistance to strong compression for reasons of discomfort or lack of belief it will work. Building trust over time within the nurse-patient relationship can support the patient to overcome their reluctance to tolerate strong compression.
- **System challenges**: Related to engagement and involvement with the wider NHS system and include limited or reduced workforce capacity, supply of dressings, and financially challenged systems with competing priorities and the complex nature of wound management, that often involved several health and care providers to address patients with multiple comorbidities.
- **Technology**: These challenges focused on difficulties related to the collection of metrics and the implementation of WMDS.
- **Data**: Ensuring data accuracy and time required for data collation were the two most reported challenges with metrics reporting.

Box 2 Key points from staff interviews, focus groups and surveys

Findings from patient cases show that patients were particularly positive about the care received and their interactions with staff. **Figure 1** summarises the successes and challenges drawn from these patient cases.

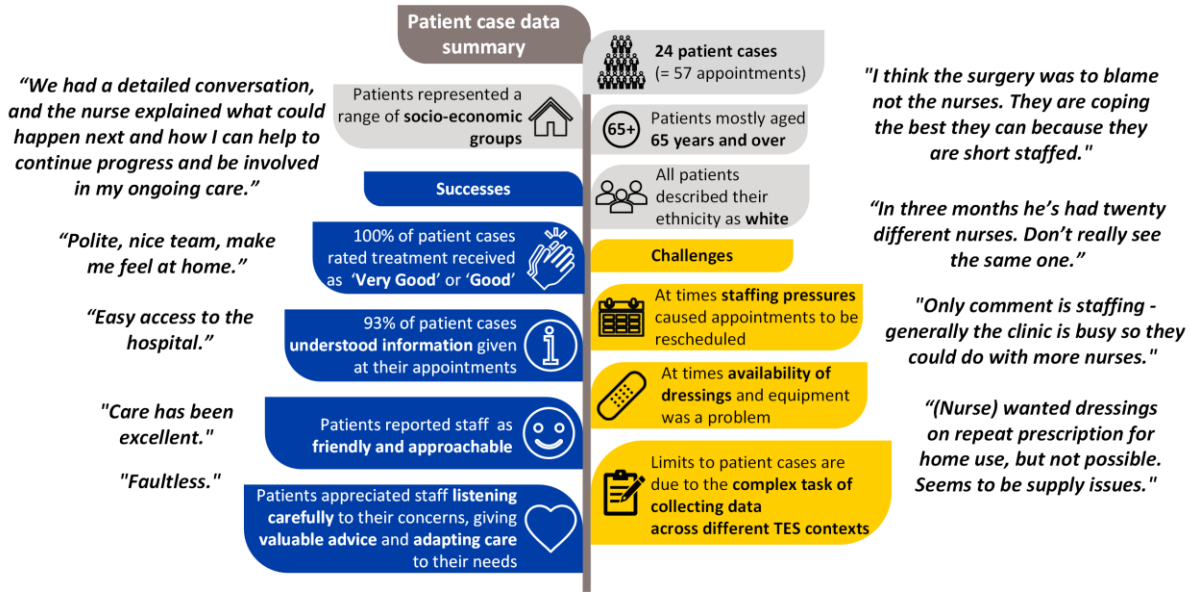

Figure 1 Summary of patient case data with quotes

4.1. Evaluation synthesis of qualitative findings

The TWC programme provided **expert facilitation** (as defined by the i-PARIHS framework, Harvey and Kitson, 2015[1]) **through the leadership and co-ordination** of the TWC Central Team. **Facilitation** is a key activity that integrates action around **innovation adoption** (NWCSP LLRs and recommendations for dedicated lower limb wound care services) within the innovation **context to those delivering or receiving the innovation** (staff and patients). Facilitation effort to support implementation of the TWC programme was restricted by TESs' financial restraints and workforce capacity to support changes to wound care services. Staff were enthusiastic about the support and opportunity of the TWC programme and patients indicated they were satisfied with the care they received. Nevertheless, known patient factors may have inhibited lower limb wound healing in some cases, and staff indicated that patients required more time for engagement to promote self-care of their wound and tolerance to compression to support lower limb wound healing. **Figure 2** proposes a tension between the implementation effort required to meet the challenges currently faced by the NHS in delivering lower limb wound care as demonstrated by this evaluation; however, it seeks to indicate progress made.

[1] Harvey, G., & Kitson, A. (Eds.). (2015). Implementing evidence-based practice in health and care: A facilitation guide. Routledge.

Figure 2 Progressing implementation efforts in NHS systems for lower limb wound care

5. Conclusions

Overall, the healing rate for wounds for the period October 2023 to March 2024 showed a steady increase in the number of wounds healed within 12 weeks. Patient healing rates varied between 53% and 78% recorded as healed within 12 weeks, showing no trend. Data quality issues and the lack of suitable baseline data meant that it was not possible to show a clear correlation between early assessment, application of strong compression and wound healing rates to support implementation of the proposed care pathways.

Other findings from qualitative data support successful implementation of the TWC programme. Staff were committed to its aims and had confidence in the programme, resulting in:

- Better care.
- Faster healing.
- Improved outcomes.
- Fewer appointments.
- Anticipated net zero benefits.
- The positive contribution of wound management digital systems (WMDSs).

Challenges identified included patient lifestyle and health factors that can delay healing and reduce ability to tolerate compression. Other challenges related to engaging the wider health system, staffing and financial pressures, and logistics associated with the collection of metrics data and implementation of WMDSs. Finally, resource costs for implementation are acknowledged here as requiring attention for future planning and the need to possibly continue investment to sustain change.

6. Implications of findings

Efforts made by expert implementation facilitation constrained by NHS systems and patient factors indicates the following implications of these evaluation findings for both practice and future evaluations.

6.1. Implications for lower limb wound care practice

1. The scale up and spread of the necessary improvements to wound care and the delivery of dedicated wound care services across the NHS requires a significant implementation effort, associated resources and sustained support over time to embed changes in practice. Exemplified by the TWC programme this includes strategic leadership; financial support; coordination of activities; community of practice; guidance and an implementation toolkit; and expert facilitation.
2. Staff willingness to deliver effective care was countered by contextual pressures that prevented wider engagement and delivery of best clinical practice. The extent to which an improvement programme is actively managed and facilitated was shown to be a critical factor in explaining implementation success.
3. Programme level findings indicate that patient factors can inhibit opportunities for effective lower limb wound care due to co-morbidities, intolerance for strong compression and the inability of some patients to support self-care. Greater effort and time to build trust with patients are strategies that staff employ to manage wound care in these cases, and therefore the need for greater staff capacity and time to manage this area of care is highlighted.
4. Programme level findings show that whilst supporting digital solutions such as WMDSs is viewed as providing benefits, they also present adoption challenges when integrating this technology at local systems' level. This indicates the need for further development and assistance to services in this area.
5. To ensure that investment in implementation is making a difference, data monitoring should be continued.
6. Automated data collection supported by point of care reporting needs to become embedded and routinised into local systems and may need more resources.

6.2. Implications for future evaluations and metrics data collection

1. To ensure implementation investment is making a difference, there is a need to embed automated data collection into local systems and in addition support provided to clinical staff collecting data during patient contacts.

2. Low patient participation in the evaluation resulted in an imbalance of patient perspectives. Purposive sampling of specific patient groups to better understand inequalities should be considered in future.
3. The collection of demographic data on patients receiving wound care would enable an assessment of the extent to which services are addressing inequalities.

Main report

1. Background

Within the UK, there are an estimated 3.8 million people living with wounds. Many of them experiencing long-term pain, discomfort and poor quality of life related to their wound. It is estimated that there are 739,000 leg ulcers in England with estimated associated healthcare costs of £3.1 billion per year[2]. Most leg ulceration occurs due to venous insufficiency for which there is robust evidence to support the use of strong compression therapy as first-line therapy to promote healing and prevent recurrence[3].

Commissioning equitable and accessible services for leg ulceration would reduce unwarranted variation of care, increase the use of evidence-based care and discourage the over-use of therapies for which there is insufficient evidence, resulting in improved healing rates and lower recurrence rates[4]. Unwarranted variation in leg ulcer care in England offers major opportunities to improve healing rates and thus reduce patient suffering, spend on inappropriate and ineffective treatments and the amount of clinical time spent on care[5]

The Transforming Wound Care (TWC) programme, led by Health Innovation East on behalf of the Health Innovation Network, facilitated delivery of the National Wound Care Strategy Programme (NWCSP) Lower Limb Recommendations (LLRs). Key to TWC programme delivery were staff training to ensure implementation of evidence informed clinical recommendations; promotion of dedicated lower limb wound care services; and improvements to the collection of key metrics to monitor progress. The Health Innovation Network adopted these lower limb, wound care improvements as a priority programme and launched the TWC programme in October 2022

1.1. The Transforming Wound Care (TWC) programme

The TWC programme aimed to support:

- Faster healing of wounds.
- Improved quality of life for patients.
- Reduced likelihood of wound recurrence.
- More effective use of health and care resources.

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[2] Guest, J.F., G.W. Fuller, and P. Vowden, *Cohort study evaluating the burden of wounds to the UK's National Health Service in 2017/2018: update from 2012/2013.* BMJ Open, 2020. **10**(12): p. e045253

[3] Shi C, Dumville JC, Cullum N, Connaughton E, Norman G. Compression bandages or stockings versus no compression for treating venous leg ulcers. Cochrane Database of Systematic Reviews 2021, Issue 7. Art. No.: CD013397. DOI: 10.1002/14651858.CD013397.pub2. Available at: https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD013397.pub2/full

[4] National Wound Care Strategy Programme (NWCSP). 2021. Preventing and Improving Care of Chronic Lower Limb Wounds: Implementation Case. https://www.nationalwoundcarestrategy.net/wpcontent/uploads/2021/04/NWCSP-Implementing-the-Lower-Limb-Recommendations-15.12.20-1.pd

[5] National Wound Care Strategy Programme (2024) Leg Ulcer Best Practice Bundle. **NWCSP-Best-Practice-Leg-Ulcer-Bundle-v1.0-04.04.24.pdf**

Health and care commissioners and providers were invited to submit expressions of interest to become a Test and Evaluation Site (TES) and receive funding support. Eight TESs across England were recruited to implement the NWCSP LLRs and develop dedicated lower limb services. Six were recruited to the TWC programme in April 2022 (phase 1) and a further two sites were recruited in May 2023.

1.2. The National Wound Care Strategy Programme (NWCSP)

The rationale for the development of the NWCSP in 2018 arose from the observation that use of evidence-based care in wound care services was lacking, and over-use of ineffective practices remained. The NWCSP sought to improve lower limb wound healing rates, prevent harm, increase staff productivity, and produce cost savings in line with the NHS Long Term Plan[6] as well as address significant variation in wound care services across England. The NWCSP Lower Limb workstream focused on standardisation of clinical practices to enhance the overall quality and outcomes of wound care and provides Lower Limb Recommendations for wound care and resources to support delivery of those recommendations (National Wound Care Strategy Programme | NWCSP). This included the Leg Ulcer Best Practice Bundle[7] to monitor improvements to lower limb wound care. Lower limb refers collectively to lower leg and foot wounds, which require different care pathways. Key objectives to improve lower limb care were:

- Change the model of care provision to allow more people with lower limb wounds to receive equitable care in dedicated chronic lower limb services, staffed by clinicians with appropriate time, knowledge, and skills and with established referral routes to escalate care.
- Increase the delivery of evidence-based care for chronic lower limb wounds.
- Support clinical decision-making and quality improvement through data collection and monitoring.

NWCSP LLRs[8] [9] cover wound identification, immediate and necessary care, assessment, diagnosis and treatment, ongoing care, review of healing and care following healing. Treatment can include mild graduated and strong graduated compression. To further understand compression for lower leg wounds, see Annex 1 (page 56) of this document.

NWCSP recruited seven First Tranche Implementation Sites (FImpS) to implement, test, and validate their LLRs. A recent evaluation (PA Consulting, 2024)[10] of the implementation of the NWCSP LLRs at the seven FImpS found 52% of leg wounds healed at 12 weeks, rising to 69% at 24 weeks and 84% at 52 weeks following implementation of the LLRs. Cost analysis based on outcomes achieved provided

[6] NHS Long Term Plan
[7] National Wound Care Strategy Programme (2024) Leg Ulcer Best Practice Bundle.
[8] Lower limb summaries (nationalwoundcarestrategy.net), National Wound Care Strategy Programme (2023). – leg ulcers
[9] Lower limb summaries (nationalwoundcarestrategy.net), National Wound Care Strategy Programme (2023). – foot ulcers
[10] NWCSP Evaluation: Implementing the Lower Limb Recommendations, https://www.nationalwoundcarestrategy.net/lower-limb/

a benefit-cost ratio of 27.6[11]. PA Consulting evaluators reported the following limitations to their evaluation:

- Due to gaps in data collection, PA Consulting evaluators were unable to fully analyse the relationship between timely assessment, strong compression and wound healing rates.
- Reporting of total caseload figures was also not possible and therefore proxy measures such as denominators for assessment and healing rates were used to provide an estimate on caseload.
- PA Consulting reported that the overall application of strong compression therapy in suitable patients was low. Some issues that may have impacted on this were suggested to be the recording of information, patient preference, time and techniques used, and clinical experience.

1.3. TWC programme Test and Evaluation Site profiles

The first six TESs located in Bromley, Cornwall, Lincolnshire, Yateley, Norfolk and Waveney, and Sussex and were launched in September 2022. Two further sites, Merton (delivered by CLCH) and Kirklees (delivered by Locala) joined the TWC programme in May 2023. There are substantial differences between the contexts of the eight TESs and in the scale and scope of their implementation. **Table 1** provides details on each TES provider, population and scope of implementation. Key differences between the TESs included:

- **Geographical locations and communities**: Representation included urban and densely populated areas to rural and coastal communities.
- **Socio-demographic patient populations**: Either predominantly affluent with pockets of deprivation or with more widespread socio-economic deprivation, with residents facing higher levels of health inequalities and associated challenges.
- **Implementation approaches**: Some aimed for a system-wide implementation of the NWCSP LLRs; others undertook a roll-out approach starting with pilot sites.
- **Types of providers:** TESs included NHS trusts and community interest companies as well as ICBs leading the adoption of NWCSP LLRs in their locality(ies).

Table 1 TES profiles

Provider and supporting HIN	Key TES location characteristics	Scale of implementation
Bromley Healthcare Community Interest Company Ltd Supported by Health Innovation Network South London	A London borough with a relatively prosperous area with some areas of higher deprivation.	• Identification, assessment, treatment and maintenance of lower limb wounds for non-ambulatory (housebound) patients via TES's four district nursing teams.

[11] For every 1 pound spent, the health and care entity is expected to receive 27.6 pounds in benefit.

		• Pathway was implemented in tissue viability clinics for ambulatory patients' pre-pilot.
Provider	**Key TES location characteristics**	**Scale of implementation**
Central London Community Health and Care Trust – Merton Community Nursing Team Supported by Health Innovation Network South London	London borough within an affluent area with some areas of deprivation to the east of the borough.	• Started in two district nursing teams, with wider roll out ongoing. • Identification, assessment and treatment for lower limb wounds. • Non-ambulatory patients.
Provider	**Key TES location characteristics**	**Scale of implementation**
Cornwall Partnership NHS Foundation Trust Supported by Health Innovation Southwest	Large geographic patch with high proportion of rural and coastal areas and areas of high deprivation. Isolation and lack of transport links problematic in remote locations.	• System-wide identification, assessment, treatment and maintenance of lower limb wounds. • Non-ambulatory and ambulatory patients.
Provider	**Key TES location characteristics**	**Scale of implementation**
Lincolnshire Community Health Services NHS Trust and Skegness and Mablethorpe Integrated Community Team Supported by Health Innovation East Midlands	Both a coastal and rural area, with significant deprivation. This area has a higher proportion of older people than elsewhere in Lincolnshire and a higher rate of premature mortality.	• Single team and area of community nursing in the First Coastal PCN area (Skegness and Mablethorpe). • Identification, assessment and treatment of lower leg wounds. • Non-ambulatory patients.
Provider	**Key TES location characteristics**	**Scale of implementation**
NHS Frimley ICS – Yateley Medical Centre Supported by Health Innovation Oxford and Thames Valley	Town situated in North East Hampshire. Predominantly affluent area.	• Hub and spoke model, focused on weekly clinic at Yateley Medical Centre (Hub) with a planned spread to other PCNs (spoke). • Ambulatory patients in primary care and non-ambulatory patients in care homes. Referral

		pathway in development for district nursing team for non-ambulatory patients.
Provider	**Key TES location characteristics**	**Scale of implementation**
Locala Community Partnership Community Interest Company Supported by Health Innovation Yorkshire and Humber	Locala is situated within Kirklees, a metropolitan borough of West Yorkshire.	• Identification, assessment, treatment and maintenance of lower limb wounds within a targeted population - the most vulnerable and underserved communities, including patients experiencing substance misuse or homelessness who are not accessing their GP provider for wound care. • Non-ambulatory and ambulatory patients.
Provider	**Key TES location characteristics**	**Scale of implementation**
Norfolk and Waveney Integrated Care System – Norfolk Community Health and Care Trust and East Coast Community Health Supported by Health Innovation East	Rural, coastal areas with high levels of deprivation. Isolation and lack of transport links problematic in remote locations.	• Services improvement starting with three pilot sites, with a further rollout planned. • Concentrated on improvements to the existing system by combining two provider pathways, development of an early intervention pathway in primary care, and upskilling community nursing staff. • Ambulatory and non-ambulatory patients.
Provider	**Key TES location characteristics**	**Scale of implementation**
Sussex Health and Care Integrated Care System Supported by Health Innovation Kent Surrey Sussex	Mix of rural and urban areas and some areas of social deprivation.	• Pre-implementation stage during evaluation with the aim of a system-wide approach to the implementation of NWCSP LLRs across Sussex. • Ambulatory and non-ambulatory patients.

2. Evaluation approach and methods

The real-world evaluation of the TWC programme was commissioned by Health Innovation East. Health Innovation Wessex undertook the real-world evaluation and Unity Insights Limited gathered a set of pre-specified metrics from the TESs for analysis by Health Innovation Wessex.

Evaluation questions were:

1. How has the TWC pathway been implemented in different sites, including feasibility, level of fidelity, critical success factors and barriers?
2. How has the TWC pathway impacted on key outcomes, including wound healing rates and cost effectiveness?
3. How has the TWC programme impacted on health inequalities?

Two core activities underpinned the evaluation plan:

1. The analysis of the TWC programme standardised metrics to measure the impact and success of the implementation of the NWCSP LLRs via the Transforming Wound Care programme.
2. An in-depth analysis of the implementation of the TWC programme, both its challenges and successes to provide insights for ongoing national programme delivery.

2.1. TWC programme quantitative metrics

A full account of the methods and analytical approach of the metrics are reported in technical report 6. Supported by Health Innovation East and Unity Insights, metrics data was collected from the eight TESs. Each TES extracted metrics data either by automation, manually or a mix of both and then submitted it to Unity Insights. TESs transferred their data to Unity Insights who created a dashboard to monitor data received from the TESs using a standardised Excel template. This quantitative data was subsequently sent to Health Innovation Wessex for quality assurance, cleaning and analysis.

The TWC programme had 16 metrics and 35 data collection points at the start of the programme (eight additional data collection points were added in January 2024). Thus, TESs were asked to collect a total of 16 metrics and 43 data collection points. In September 2023, the TWC central team identified that, due to the data collection challenges experienced within in the TES, there was a need to identify key areas of focus able to best demonstrate patient impact. Therefore, from the total set of metrics, six key areas of focus ('critical metrics') with 17 data collection points were agreed and requested. These critical metrics were:

1. Number of patients with a lower limb wound currently on the caseload within community or primary care services.
2. Number of new referrals for foot wounds and lower leg wounds each month.
3. Number of new referrals for foot wounds and lower leg wounds receiving full assessment in line with NWCSP LLRs each month.
4. Number of new referrals for foot wounds and lower leg wounds receiving full care in line with NWCSP LLRs each month.

5. Number of adult patients with a lower leg wound and adequate arterial supply, where no aetiology other than venous insufficiency is suspected, being treated in strong compression (40mmHg) each month.
6. Proportion of patients recorded as healed within 12 weeks, between 12 and 24 weeks, between 24 and 52 weeks, and after 52 weeks each month.

TESs confirmed that the metrics they collected were either in scope, out of scope or they were unable to provide data for other reasons. Out of scope means that the provider did not deliver the service as part of the real-world evaluation. A quality assurance process was undertaken to assess data quality before analysis. Due to a variety of data quality issues, a descriptive analysis was completed for metrics by individual TES (see TES case reports).

Aggregation at a programme level was undertaken for specific metrics only due to inconsistencies in the data and differences in how the TESs reported data collection points. For example, number of wounds healed was reported either by patient healed or wound healed. These metrics are not consistently measuring the same outcome as a single patient may have multiple wounds. As of March 2024, all TES providers gathered data consistently on critical metrics 1, 2 (for lower leg wounds only) and 6. Data for the remaining critical metrics were submitted by TES providers that have established their pathways and had capability to collect these metrics. During the data analysis, some TESs were excluded from aggregate analysis due to data limitations or availability issues. Finally, it was possible to aggregate the critical metrics 1, 2, 3 (for lower leg wounds only), 5 and 6 and it was not possible to aggregate critical metric 3 (for foot wounds), critical metric 4 due to low submission of data points.

For individual TES case reports, data is presented for the whole period that TES submitted data. The trend for number on the caseload each month is reported at a programme level only for sites that reported by number of patients. While some sites provided data prior to October 2023, all sites provided data sets from this month onwards and therefore the final six months of data collection – from October 2023 to March 2024 – were analysed. Metrics provided by each site were assessed for inclusion on an individual basis, with reference to data quality statements provided by each TES. Due to the challenges the TESs experienced with regards to data capture and staffing issues (reported by some TESs), which impacted their capacity to report metrics, not all submitted data were suitable for inclusion in programme level aggregation (see technical report 6).

2.2. Qualitative data collection to evaluate programme implementation

Qualitative data collection methods comprised a staff survey (technical report 1), patient cases that followed patients for up to three months (technical report 2) and staff interviews and focus groups (technical report 3). The staff survey included the NoMAD instrument (Finch et al 2015) based on Normalisation Process Theory. This asks a set of questions over four domains which were tailored to the specific context and circumstances of transforming wound care. It addresses how a new practice is mobilised into action, how staff participate and engage in that new practice, how the practice is organised and how staff reflect, appraise and accommodate the new practice. For further information see technical report 1.

Two approaches were used to gain insights into implementation processes involved in delivering the TWC programme. First, an implementation tracker was used to track key TES specific service delivery

milestones over a period of three to four months, set by the individual TES (technical report 4). These key milestones were identified through an initial site visit and a participatory mapping exercise by a member of the evaluation team. Second, the TWC programme introduced a set of standardised metrics across all eight TESs (see paragraph 2.1, and technical report 6). Data to evaluate the impact of the NWCSP LLRs across TESs and within the TES locality was important for the ongoing sustainability of providing evidence-based wound care and improvements to patients. Embedding a new standardised set of metrics into systems providing NHS services proved challenging with data collected either digitally, manually by clinical teams or a combination of both. Therefore, information was gathered from the TESs to understand the effort needed to implement the metrics (technical report 5).

2.3. Evaluation data analysis and synthesis

Technical reports (1-5) provide details on methods, analysis and present the findings of the qualitative data and any limitations. Technical report 6 provides details on methods and limitations of the quantitative data collected. This programme level report presents both key findings from the analysis of these different data sets and in addition, for the qualitative data a simple synthesis structured within a well-recognised implementation framework. The purpose of synthesis is to understand patterns, connections and relationships between pieces of data to surface findings at a programme level, creating a single explanatory narrative from multiple data sources.

Annex 2 to this report (page no. 57-58) describes in more detail the implementation framework used to frame the qualitative findings. The integrated-Promoting Action on Research in Health Services (i-PARIHS) framework sets out key aspects for successful implementation of innovations (including new ways of working) and evidence-based treatments. Facilitation is a primary framework concept and a key role that leads to successful implementation. This is where a person or team take ownership and control of the implementation process empowering and enabling others. This role was undertaken by the TWC central team (Health Innovation East) delivering the TWC programme.

3. Quantitative findings

Technical reports 5 and 6 support the presentation of the findings in this section.

3.1. Impact of the TWC programme

The following describes key points of approach and the quantitative data findings.

3.1.1. Summary of analytical approach

A descriptive analysis was conducted at the programme level, based on data for the six key areas of focus (with 17 data collection points) submitted by most TESs. This analysis encompasses the timeline of data collection (October 2023 to March 2024), current patient population, referral for and completion of full assessments, adherence to full care standards for lower leg and foot wounds as aligned with NWCSP LLRs, application of strong compression treatments, and healing rates. Each subsection provides a detailed explanation of the graphs and highlights any caveats and observed trends and impacts. This descriptive analysis does not include data for the Sussex TES as they had not

started to implement the NWCSP recommendations during the evaluation period. The Sussex TES case report is broken down by its three providers (ESHT, Pioneer, SCFT). Norfolk and Waveney TES have two providers - NCH&C and ECCH - therefore data reported here relates to seven TESs and eight providers; for ease, the narrative in this report refers to TESs only.

3.1.2. Data capture timeframe

Figure 1 displays the start date for metrics data collection for each TES. However, to ensure a consistent comparison across sites, a six-month data collection period from October 2023 to March 2024 is the dataset for programme level analysis. For detailed information on TESs' individual results, please refer to the TES case reports.

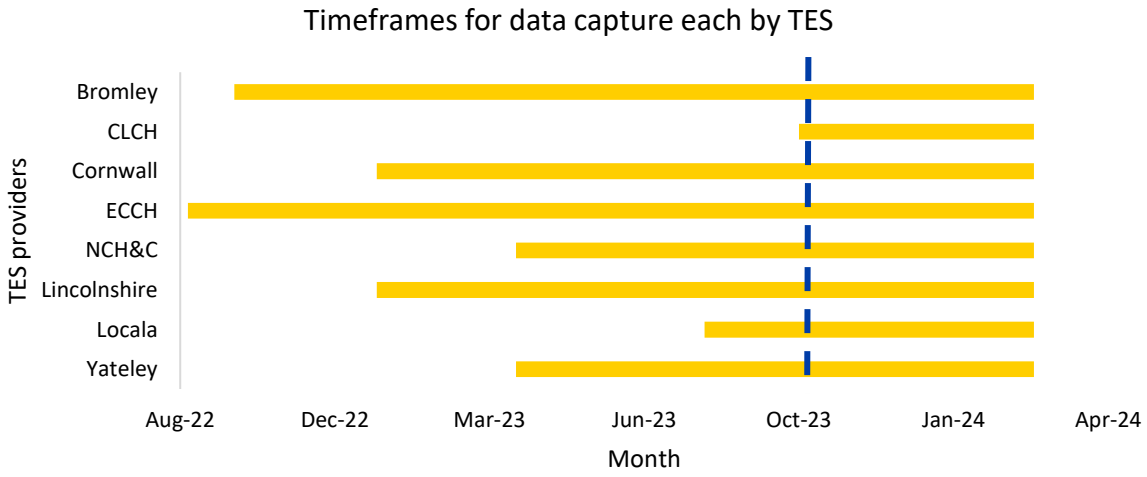

Figure 1 Timeframes for data capture by each TES

3.1.3. Overview of metrics used in analysis

Table 2 summarises the caseload in October 2023 and March 2024 for comparison. Data reported is provided for the six-month period October 2023 to March 2024, this data is:

- Number of patients with a lower limb wound currently on the caseload within community services.
- Number of patients referred for new assessment of lower leg wound.
- Proportion of patients with a lower leg wound receiving full assessment in line with NWCSP Lower LLRs.
- Proportion of adult patients with a lower leg wound and an adequate arterial supply, where no aetiology other than venous insufficiency is suspected, being treated in strong compression (40mmHg) by the end of March 2024.
- Proportion of patients recorded as healed 0-12, 12-24, 24-52, and after 52 weeks after identification by a health care practitioner. This is split by sites reporting numbers by wounds and sites reporting by patients.

Table 2 Metrics data summary for seven TESs (eight providers)

Timeframe	October 2023	October 2023 to March 2024					March 2024
TES (abbreviation)	Total Caseload	Total new referrals for the lower leg wounds (and foot wounds)	% of patients receiving full assessment for their lower leg wounds	Number of patients receiving strong compression with an adequate arterial supply by the end of March 2024(%)	Number of lower leg wounds recorded as healed (number of foot wounds recorded as healed	Number of patients with lower leg wounds recorded as healed (number of patients with foot wounds recorded as healed)	Total caseload
Bromley	480	635(336)	41.1%	39(45.57%)	349[2](47[3])	36[2](OOS[5])	321[1]
CLCH	27	38(OOS[5])	86.84%	10(52.63%)		25(OOS[5])	37[4]
Cornwall	1,629	796(476)	UTP[6]	204(42.59%)	158(90)		2,019
ECCH (Norfolk and Waveney ICS – East Coast)	406	435(71)	43.45%	UTP[6]		243(UTP[6])	417
NCH&C (Norfolk and Waveney ICS – East Coast)	1,171	1683(233)	5.05%	7(223.53%)		37(UTP[6])	1,272
Lincolnshire	44	16(OOS[5])	81.25%	9(31.82%)		12(OOS[5])	28
Locala	1,015[7]	989(167)	21.33%	181(70.75%)	250(92)		1,457[7]
Yateley	36	27(OOS[5])	100.00%	10(47.62%)	28(OOS[5])		31
Total	3,793[8]	4,619 (1283)	17.73%	460(49.68%)	785(229)	353(OOS[5]/UTP[6])	4,125[8]

[1]The data was re-submitted in June and podiatry data was removed.

[2] Data is reported separately for Bromley districting nursing team (reported by wounds) and Bromley tissue viability team (reported by patients). Proposed 10% conversion rate applied in programme analysis to align the wound data with the patient data.

[3]Only three months (January 2024 to March 2024) of foot wound healing data are provided.

[4]The caseload in CLCH is for the TWC pilot only.

[5]OOS (Out of scope): TESs reported this when the pathway had not yet been set up or it is not related to this TES.

[6]UTP (Unable to provide): TESs reported this when they are not able to provide the data for this metric.

[7] and [8] Locala reported in wounds and the other TESs reported in patients in the total caseload, therefore Locala is excluded from the total caseload.

3.1.4. Caseload by TES

From October 2023 to March 2024, eight providers across seven TESs have consistently captured and submitted data from their respective sites, showing different trends. A total of 3,793 patients (with 1,015 wounds reported by Locala) were recorded on the caseload in October 2023, increasing to 4,125 patients (with 1,457 wounds reported by Locala) in March 2024, representing an 8.8% increase. Overall, TESs such as Cornwall, CLCH, and NCH&C (Norfolk and Waveney TES) demonstrate a consistent monthly increase in caseloads. In contrast, TESs Bromley and Lincolnshire have experienced a decrease in caseloads, while ECCH and Yateley have maintained relatively stable numbers over this period. It is important to note that Locala reported data based on wounds rather than patients. A patient may have multiple wounds therefore this different counting cannot be aggregated. Assuming the proportion of patients with multiple wounds remains constant, the trend suggests an increase in the number of patients for Locala.

In cases like CLCH, where caseloads are declining, this may be due to the discharge of healed patients exceeding the number of new referrals. Conversely, TESs with increasing caseloads could be experiencing a variety of contributing factors. One explanation is that new referrals have outpaced the number of patients recorded as healed, as seen in Cornwall. Another factor may involve data quality issues identified during the cleaning process, where TESs may have included all wound types, including those not covered by NWSCP LLRs, such as diabetic foot ulcers. These typically remain on caseloads for extended periods. Additionally, healed patients could stay on the caseload even after they are healed for monitoring purposes.

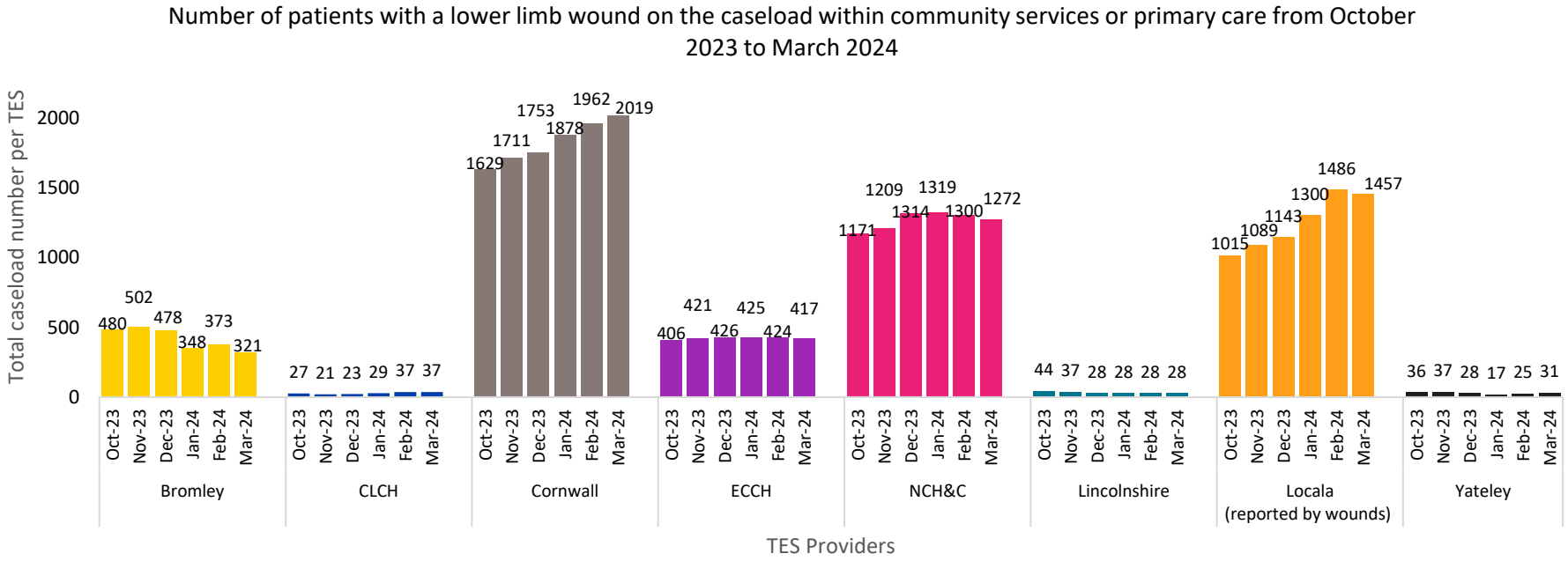

Figure 2 Number of patients with a lower limb wound on the caseload within community services or primary care from October 2023 to March 2024

With caveats, the following sections will discuss the number of new referrals, the number of patients receiving strong compression, and the number of patients recorded as healed, offering further insights into the overall caseload dynamics.

3.1.5. Referrals for new assessment

Figure 3 illustrates the number of new referrals for lower leg wounds reported by each TES from October 2023 to March 2024. Data was submitted by all eight providers, with a total of 4,619 new patients referred during this period. A downward trend in referrals was observed in Bromley, Cornwall, ECCH, NCH&C, and Lincolnshire, while Locala and Yateley remained stable and CLCH showed a slight increase. Overall, a decline in the total number of new referrals was recorded towards the end of the data capture period. This reduction is primarily attributed to significant decreases in referrals from TESs handling higher patient volumes, such as NCH&C and Bromley. The decrease does not appear to be related to data quality issues, such as completeness or timeliness, as the final data submission deadline was set for one month after the data cutoff date.

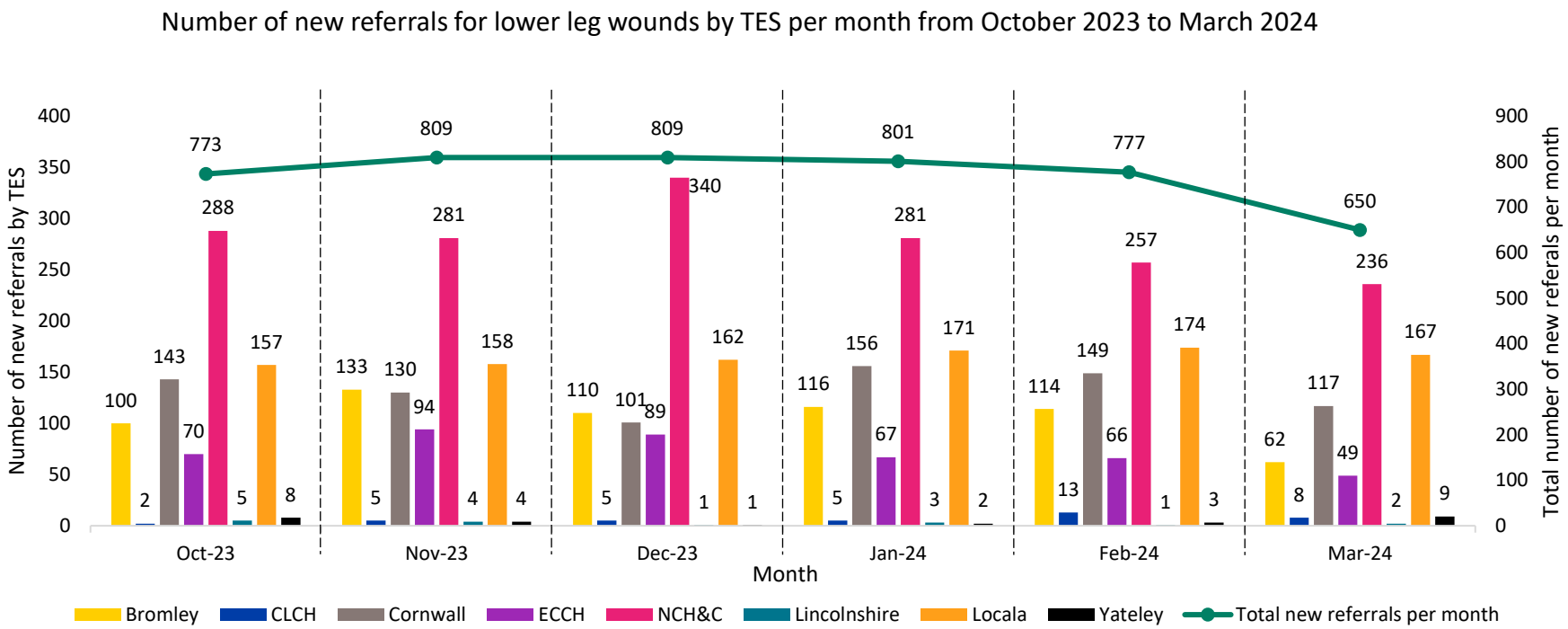

Figure 3 Number of new referrals for lower leg wounds by TES per month from October 2023 to March 2024

Figure 4 presents the number of new referrals for foot wounds at the beginning and end of the data capture period. This graph covers the entire timeframe for which data was provided by each site. It is important to note that referrals for foot wounds are significantly fewer than lower leg wounds, and the trend remains relatively stable. The data appears to show an increase in foot wound referrals for four TESs over the data collection period. In this chart, five TESs have provided data for this metric, and most show an increase in referrals by the end of the data collection period. However, it should be noted that the analysis revealed some quality concerns relating to this data (described in technical report 6 and individual TES case reports).

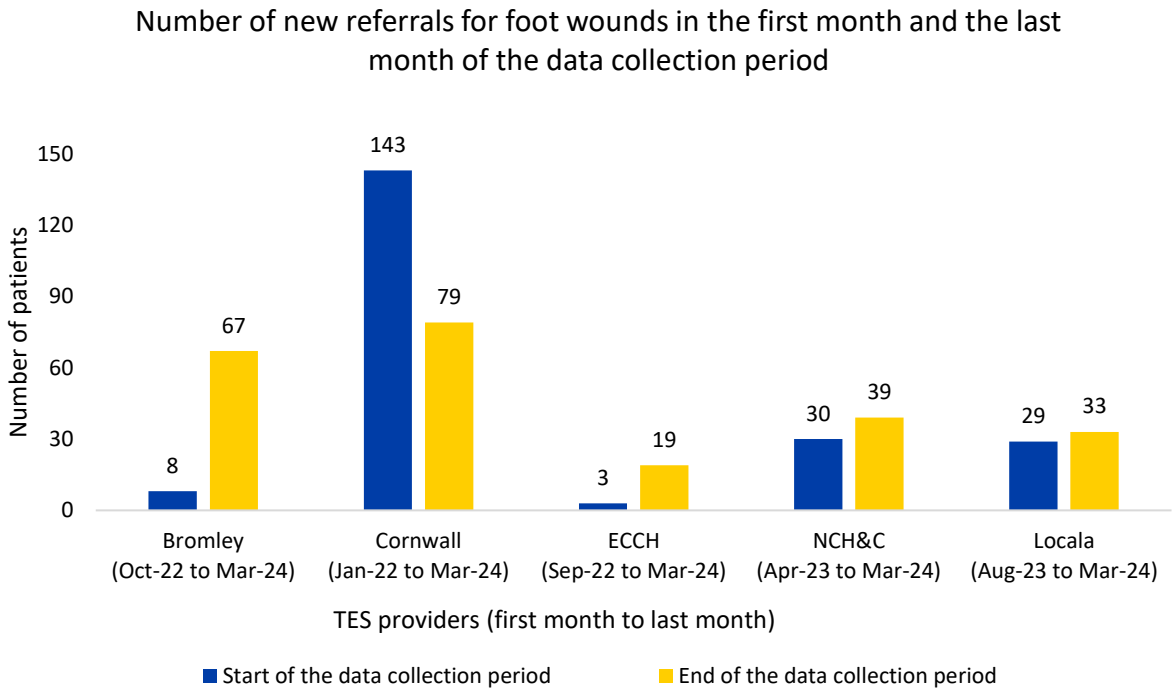

Figure 4 Number of new referrals for foot wounds in the first month and the last month of the data collection period

Figure 5 illustrates the average proportion of full assessments given to new referrals for lower leg wounds over a six-month period. Data was provided by seven providers across six TESs, except Cornwall. A total of 819 full assessments were completed during this period, covering over 17% of the total new referrals for the lower leg wounds from October 2023 to March 2024.

TESs with a caseload less than 100, such as CLCH and Yateley show that over 87% of their patients were provided with a full assessment. In contrast, TESs with caseloads over 1,000, such as NCH&C and Locala show a relatively lower proportion of patients receiving full assessments. This disparity might be influenced by several contextual factors, such as staff shortages and ongoing implementation and data collection development, which were frequently highlighted during the data submission period.

The evaluation could not generate a similar analysis for the full assessment rate of new referrals for foot wounds as only one TES provided data for this metric. Additionally, the proportion of patients receiving full care for both wound types could not be generated due to low submission rates and data quality issues. For more information refer to technical report 6.

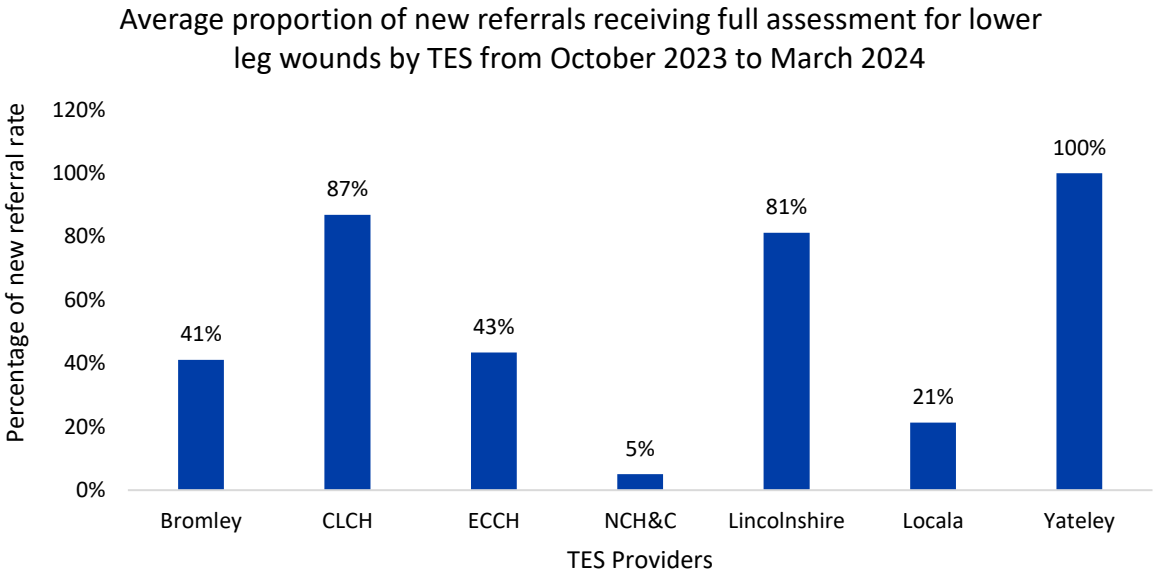

Figure 5 Average proportion of new referrals receiving full assessment for lower leg wounds by TES from October 2023 to March 2024

3.1.6. Strong compression and healing rate

Figure 6 illustrates the average proportion of patients with leg ulcers who received strong compression treatment by TES by the end of the data capture period. Data was submitted by seven providers representing seven TESs, excluding ECCH where data collection processes for this metric were still being developed at that time. As of March 2024, a total of 450 patients received strong compression out of 890, covering 50% of total suitable patients. The graph shows that most TESs fell below the average rate, with Locala surpassing the average rate by almost 21%. Notably, observing the trends in compression rates for each TES reveals that most show either a decline in providing compression or a relatively stable compression rate around their average. This trend was attributed to factors such as staffing or service capacity and patient preferences. **Figure 6** serves as a snapshot of the implementation of strong compression by the end of the data capture period. Patients unable to receive strong compression could significantly impact the rate.

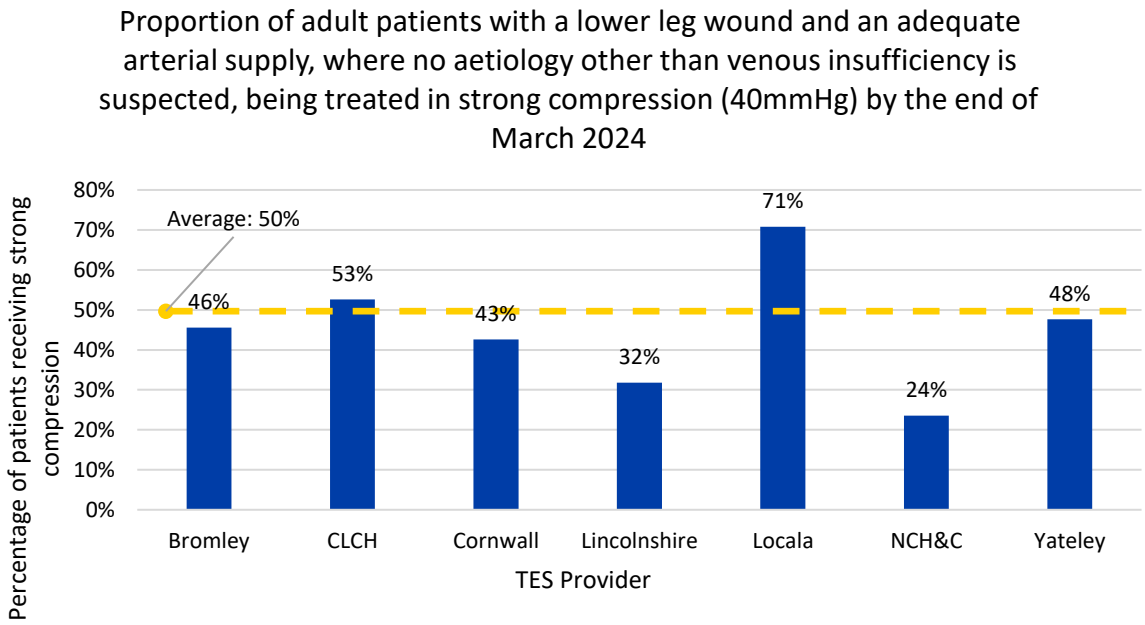

Figure 6 Proportion of adult patients with a lower leg wound and an adequate arterial supply, where no aetiology other than venous insufficiency is suspected, being treated in strong compression (40mmHg) by the end of March 2024

Figure 7 illustrates the proportion of patients with lower leg or foot wounds recorded as healed by a practitioner within specific timeframes — 0-12 weeks, 12-24 weeks, 24-52 weeks, and after 52 weeks — for each TES from October 2023 to March 2024. Data was submitted either by wound count or patient numbers, depending on each provider's reporting configuration. Between October 2023 and March 2024, a total of 1,014 wounds and 353 patients were recorded as healed across all providers.

Across all the TES providers, of the healed patients, 229 (65%) were healed within 12 weeks, and 68 patients (19%) were healed between 12 and 24 weeks, representing over 88% of the total healed patients. In terms of wound counts, 660 wounds (65%) were healed within 12 weeks, followed by 171 wounds (17%) healed between 12 and 24 weeks, representing over 81% of the total healed wounds.

Across all providers, either reported in patients or in wounds, the proportion of patients healed within 12 weeks ranges from 58% to 78%. The proportion of patients healed between 12 to 24 weeks ranges from 14% to 24%. The proportion of healed wounds, which are healed within 12 weeks ranges from 39% to 66%. The proportion of wounds healed between 12 to 24 weeks ranges from 18% to 39%. Healing times can vary due to severity of wounds; however, this data shows that more than half of the patients and wounds that are recorded as healed were healed within 12 weeks.

It is important to note that this analysis does not include data on unhealed patients or wounds, limiting our ability to fully assess the overall impact of the implementation. As a result, the percentages presented here reflect only the healed cases and do not account for the total patient caseload.

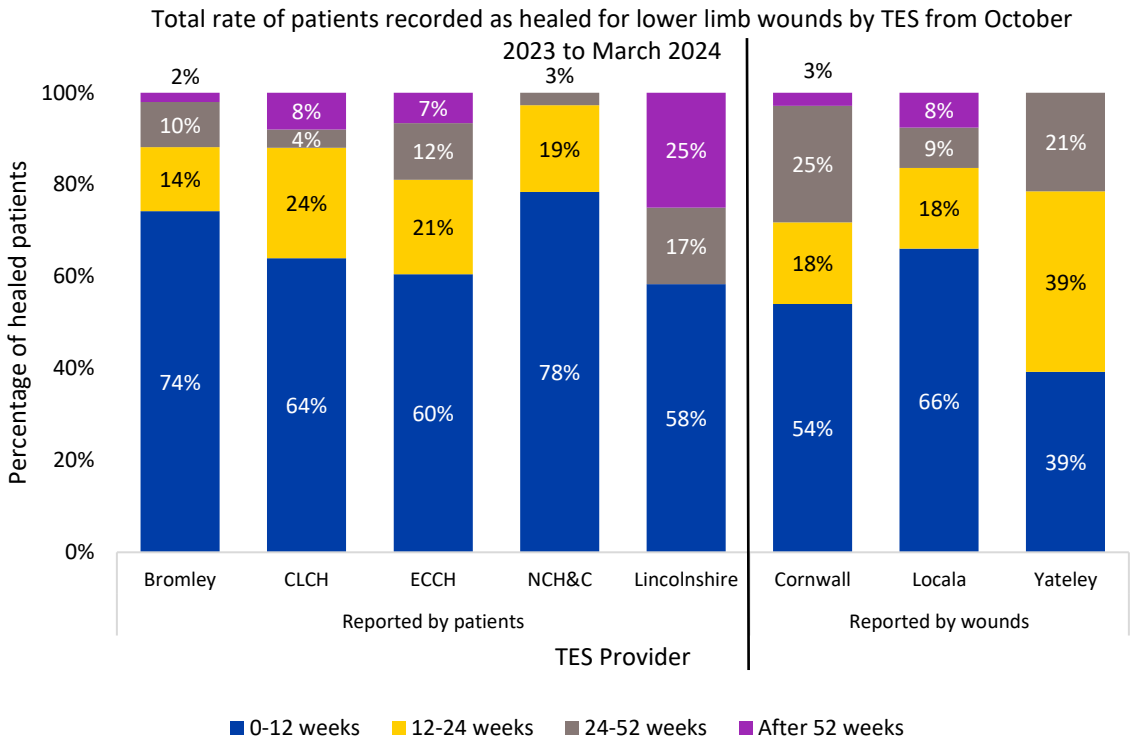

Figure 7 Total rate of patients recorded as healed for lower limb wounds by TES from October 2023 to March 2024

Figure 8 illustrates the proportion of patients with lower leg wounds or foot wounds recorded as healed by a practitioner within each timeframe, 0-12 weeks, 12-24 weeks, 24-52 weeks, and after 52 weeks from October 2023 – March 2024. Overall, for the six months' data capture period, on average per month, 169 wounds were healed, and 53 patients were healed.

Over the six-month period for either patients healed, or wounds healed, **Figure 8** shows a steady increase in wound healing within 12 weeks over time. However, patients healed within 12 weeks fluctuates showing no clear trend. One plausible explanation for this variability is the patients' data provided by CLCH, NCH&C, Lincolnshire, and Yateley tend to show fluctuation due to their small size of their healed cohort (less than 15), in contrast, TESs such as Cornwall and Locala, with larger healed cohorts (more than 25), exhibit a more stable trend. While a steady increase is showing in wounds healed within 12 weeks, there is a decrease in number of wounds healed between 12 and 24 weeks. The other two time periods, 24-52 weeks and after 52 weeks remain stable throughout the six-month data aggregation period.

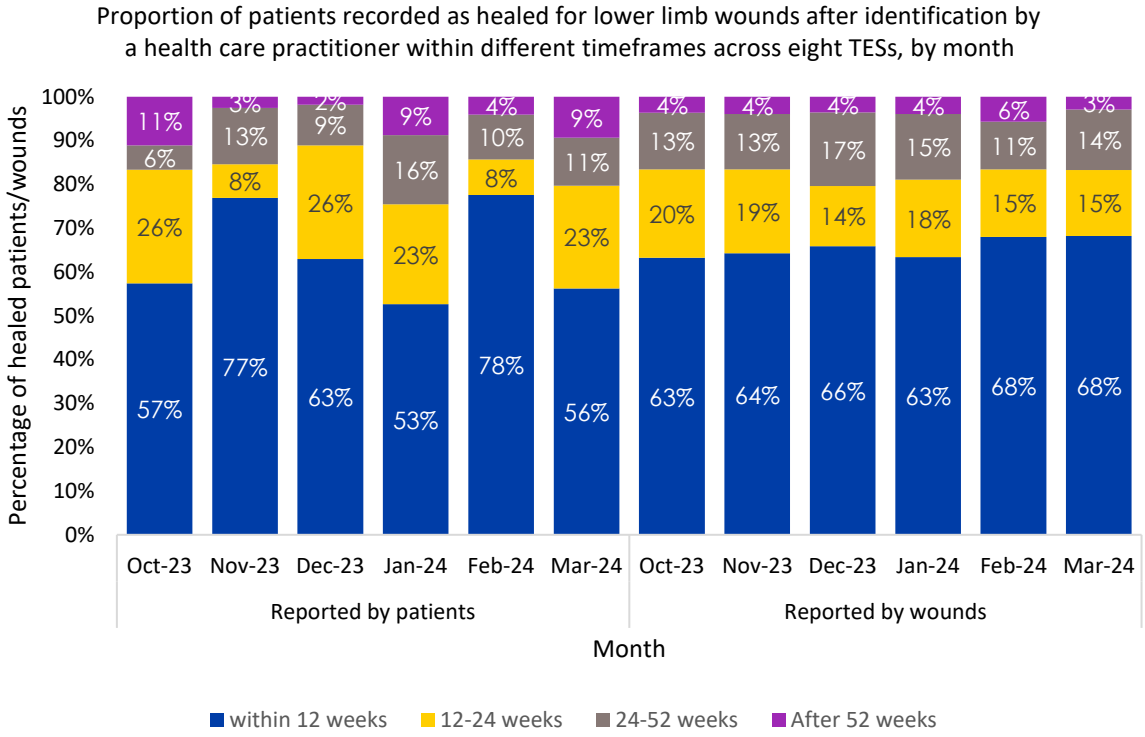

Figure 8 Proportion of patients recorded as healed for lower limb wounds after identification by a health care practitioner with different timeframes across eight TESs, by month

It is important to note that the healing rates presented in **Figure 8** lack statistical evidence to establish a causal effect between implementation of strong compression and healing outcomes for venous leg ulcers. Further patient-level data and contextual information is required to formulate robust testing assumptions.

TESs reported ongoing challenges in capturing a complete data set for each patient within their caseload. Most sites were not able to provide information about patients such as self-management, unhealed rates, or those removed from the caseload due to relocation or death (see section 3.2, **Figure 9** and technical report 5). Moreover, this information cannot be obtained reliably from calculation alone.

Due to various data quality issues in the datasets, the evaluation team considers that the reported proportion of unhealed patients does not accurately represent the overall healing rate for all TESs. If unhealed patients are added with healed patients the total number is not the same as the total caseload number, thus creating an error.

3.2. Implementation of the metrics

The TWC programme highlights the importance of evidence-based care and the continuous improvement of reporting metrics to monitor progress. The quality of the quantitative data collection and analysis was compromised by several limitations, specifically the consistency of recording and the reporting of all the key areas of focus (critical metrics). These issues were recognised early and

monitored throughout the programme, with efforts made by the TWC Central Team to encourage improvements to individual TES submissions. Narrative information (roadmap outputs[12] and data quality statements – see technical report 5) provided by the TESs was collated to better understand the complex issues that arose for TESs in collecting these prespecified metrics.

Figure 9 displays the percentage of metrics collated (agreed by TESs as in scope) for each TES from two different time points: the month each TES began reporting data, and March 2024. **Table 3** provides the month each provider began reporting metric data (according to the monthly wound care aggregated dashboards) on a regular monthly basis.

Table 3 TES provider and month commenced reporting metrics

TES provider	Month commenced reporting metrics
Bromley Healthcare	October 2022 (able to backdate)
CLCH	October 2023
Cornwall	January 2023
ECCH (Norfolk)	September 2022 (able to backdate)
Lincolnshire	January 2023
Locala	August 2023
NHC&C (Norfolk)	April 2023
Sussex – ESHT, Pioneer, SCFT	January 2023
Yateley	May 2023

[12] Roadmap outputs refer to submissions from TESs to the TWC central team updating on in scope metrics collected or not and related issues.

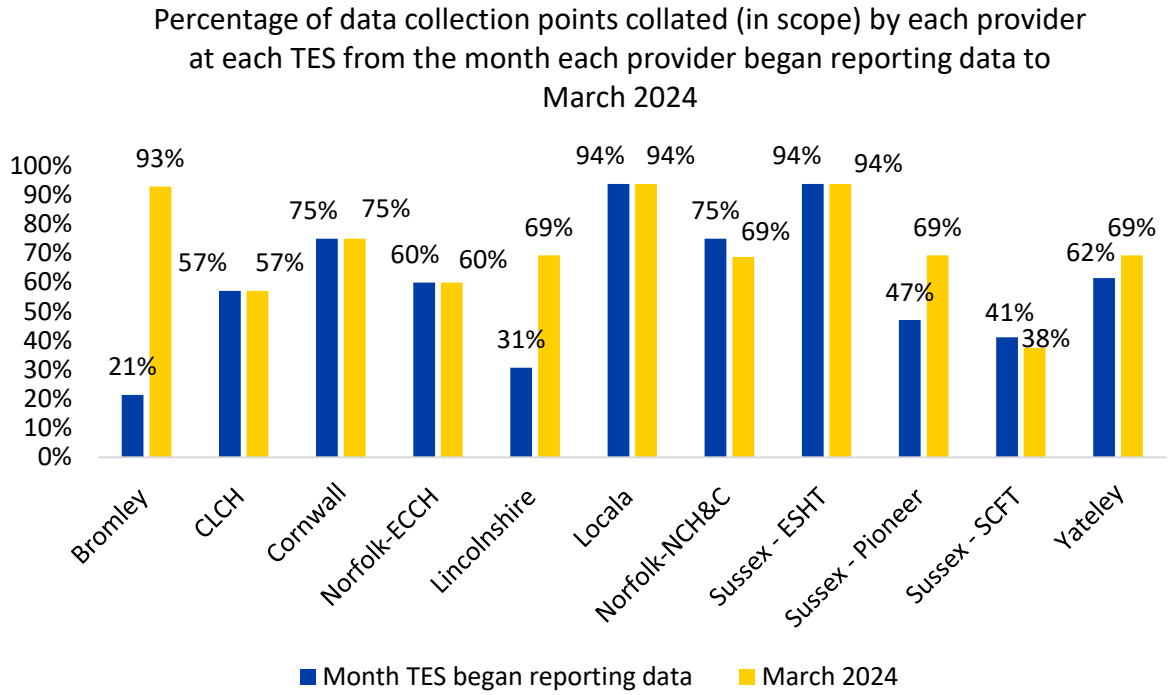

Figure 9 Percentage of metrics collated (in scope) by each provider at each TES from the month TES began reporting data to March 2024

From the narratives provided by the TESs the following reasons illustrate why some TESs faced difficulties collecting metrics:

Difficulties in system coding

- For a number of providers, no relevant code existed in individual TES systems, e.g. no code for strong compression.
- One of the challenges involved recording data for patients discharged or self-discharged, no relevant code existed in individual TES systems.
- Ensuring staff consistently complete the necessary checkboxes in templates on their systems to accurately report the metric.
- Differentiating between foot and leg wounds. For some providers, this was difficult to log separately in their IT systems, making it challenging to monitor the separate metrics effectively.

Manual data extraction for metrics and capacity issues

- Manual data extraction for some or most metrics depending on the TES impacted on time and constrained staff capacity.
- Organising and waiting for automation to efficiently collect metrics.

Uncertainty regarding metric definitions

- Different providers defined what constitutes 'full care' differently for the appropriate metric.
- In some cases, certain providers collected metrics that were similar but not precisely the ones required, or they may not have captured the complete picture to meet the metric requirements

(e.g., by not specifying the use of mild and strong compression or combined in one data point, see Annex 1).

The staff survey findings (technical report 1) corroborate data accuracy and time required for data collation as the most frequently reported challenge. Nearly half of staff responded they are reporting metrics in a combination of manual and automated processes. In terms of the impact of collecting these metrics, half of staff were positive while 42% were unsure. Fifty-eight per cent believed the collection of these metrics should continue, while 35% were unsure they should be continued.

Staff interviews describe the context that has constrained the implementation of the standardised metrics. Wound care is only one of many competing priorities and not the only priority for clinical data monitoring systems to adjust or incorporate new metrics,

> *"Our clinical systems team already have a backlog of other jobs they're doing."* CLCH interview 3

Also, implementing a substantive list of metrics may first appear a relatively simple task was not as straightforward,

> *It's a slog to get the data, input the data, make sure… the data is speaking to Rio* [electronic patient records system] *and vice versa. Interoperability is just a massive, a massive issue."*
> Cornwall small focus group

> *"It's not easy, but it's a long-term thing that will pay dividends, so it does take time."*
> Sussex focus group

Staff described challenges with interoperability across different systems in primary care and other locations, which make it difficult for integration. Some professionals do not enter data into the same system meaning it is lost, for example,

> *"…if we've got a patient that comes in through the normal pathway, so refer[red]… to community nursing and that gets referred into us, that's quite a simple pathway. If that patient is coming from a GP surgery, it never hits community nursing sometimes, so therefore, we're probably not capturing that data. We may do that patient assessment within a timeframe, but it won't be recorded because it's not gone through that community nursing channel. It's things like that we've picked up on that we need to look at."* Locala interview 1

The need for data to improve services and care to patients as well as address inequalities in care provision is well made[13] (The planned metrics sought to provide evidence of impact for both delivering improved wound care services and clinical practice, and to demonstrate the success of the TWC programme to facilitate implementation. Continued metric data collection remains an important objective to monitor improvements to lower limb wound care and is supported by the Leg Ulcer Best Practice Bundle[14] to monitor improvements to lower limb wound care.

[13] How data is used to improve health and care - NHS England Digital
[14] https://www.nationalwoundcarestrategy.net/wp-content/uploads/2024/04/NWCSP-Best-Practice-Leg-Ulcer-Bundle-v1.0-04.04.24.pdf

3.3. Potential cost savings

It was not possible to understand whether the TWC programme impacted wound healing rates and therefore if this would result in cost-effectiveness. A cost analysis was not performed because aggregated metric data made it difficult to accurately track the actual healing rates related to strong compression treatment. Further consideration is required for an economic analysis to demonstrate cost savings by collecting more detailed patient data e.g., accurate reporting of treatment (compression) administered and the healed status of patients as well as reporting of consumables (e.g., bandages and hosiery).

3.4. Potential for improvements towards the net zero agenda

Both the staff survey and the interviews asked staff whether they experienced any impact of improved wound care on bandage or hosiery, e.g. a reduction in use. This might imply a potential financial and environmental impact. Staff indicate that carbon reduction benefits could be achieved from new pathways leading to fewer appointments and fewer miles travelled for district nurses, and from more appropriate use of dressings.

> *"We're working with [WMDS] to look at a benefits analysis really. That's not just cost, that's also working towards net zero, less use of bandaging, those sorts of things, less visits to the clinics if we're seeing them less frequently, that's less CO2 emission. It's a holistic view of what we're trying to achieve from the app."* Bromley focus group

> *"…it's such a saving to get somebody in hosiery because it lasts for a much longer period than a new bandage twice a week."* Lincolnshire interview 2

In the survey, staff were asked whether the implementation of the NWCSP LLRs reduced use of wound dressings, bandages, hosiery and any other relevant products. 37% said yes, 14% said no and 49% were not sure.

3.5. Addressing health inequalities

Addressing whether the TWC programme impacted on health inequalities relied upon the patient cases, as demographic data at patient level was not collected by the TESs. Patient cases represented a mix of Indices of Multiple Deprivation (IMD) categories between 1 and 10. An assessment of impact would require specific data on measures such as LSOA (Lower Layer Super Output Areas)[15], ethnicity, gender, age and IMD at patient level (rather than aggregate level) would be beneficial for future analysis. For more details, please refer to technical report 6.

However, from qualitative data we can see indications of measures being taken by TESs to address health inequalities. As discussed above, factors identified as limiting patient engagement with lower leg wound treatment (and therefore healing) included: poor living conditions, low literacy/health literacy, co-morbidities, not attending routine appointments, and frailty. Apart from frailty, these factors have been strongly linked with higher levels of socio-economic deprivation in the wider health

[15] A geographical area that acts as a basis for measures such as deprivation

inequalities literature and can be classified as social determinants of health. Also recognised in the health inequalities literature is the need for trusted relationships and for targeted care adapted to patients' needs when engaging with more vulnerable populations. Data sources show these approaches are in operation in the TESs. For example, the use of a mobile clinic van to deliver outreach services and arranging transport for those needing assistance to get to clinics, as well as ensuring continuity of care to build trust and relationships in TES clinics and district nursing teams. The positive relationships between nurses and patients were highlighted in the patient case responses. There is also a cross-TES focus on upskilling staff, including improved knowledge on the wider factors (social determinants) that affect wound healing.

> *"The more acute a wound is - the newer a wound is - the faster it will heal if they're in the right treatments. We know that lower leg wounds, apart from the ones with red flags…need to be in compression... All these patients that have had wounds for years on end, at some point that will have been an acute wound. The faster you get them into treatments… There are always the influences of, you can never have tunnel vision on a wound because the health of that patient and their lifestyle massively influences the outcome. There's always those elements to it, and those elements that actually prevent healing. The more knowledge you've got about that, then the more you can do something about that."* Bromley focus group

Furthermore, TESs often stated that one of the key aims of the TWC programme for them was ensuring a consistent and equitable care offering. Availability of care is one of the key aspects of accessibility as recognised by NHS England and is another important feature of overcoming health inequalities (Levesque, Harris and Russell, 2013).

> *"I think inequalities wise; it's levelling up best practice so that we won't see people who might be ulcerated for years because they're not receiving best practice. Slightly differently, possibly from how we would normally look at health inequalities."* Frimley Interview 3

4. Implementation of the TWC programme—qualitative findings

Technical reports 1 – 4 give a full account of the findings for each of the key data sets: staff survey, patient cases, staff focus groups and interviews, and the implementation tracker. This data is synthesised using an implementation framework – the integrated Promoting Action on Research Implementation in Health Services (i-PARIHS) – to draw out additional insights based on the experience of the TWC programme implementation (see Annex 2, page no. 57-58).

The challenges of implementation in health and care services are well understood[16]. The health innovation networks support the implementation of key priorities. The TWC central team led the delivery of the TWC programme to implement the NWCSP LLRs. This proactive facilitation of a comprehensive multi-component programme to improve wound care seemed suited to the use of the i-PARIHS framework to synthesise and explain qualitative findings. This framework places an emphasis on the importance of facilitation as a core component to deliver successful innovation implementation in health and care services. Implementation of an innovation is typically supported by evidence for its

[16] Tackling The Growing Crisis In The NHS | The King's Fund (kingsfund.org.uk)

use in health care settings. Mediators for both facilitation and innovation are the context in which the innovation is implemented (the NHS) and those who are its recipients**,** which for the TWC programme are both patients and staff.

First, we address the underlying complexity of care for lower limb wounds drawn from the different qualitative data sources (technical reports 1-4).

4.1. Complexity of lower limb wound care

Multiple factors can impact on delivering the right lower limb care (NWCSP LLRs) to the patient at the right time. The evaluation has surfaced this complexity through all data sources and draws out the following observations for delivering wound care and treatment:

- **Appropriate and timely referral either by the patient, their carer or GP.**
- **Receipt of early intervention and full assessment** based on availability of appointments and either ability to attend clinic or availability of care at home.
- **Training staff to provide recommended care:**
    - Different levels of training with advance wound care training up to 4 days.
    - The need for annual refreshers.
    - Programme of training for new staff.
- **Diagnostic decisions at point of care:**
    - Vascular assessment, including Doppler to assess and identify cause of wound (e.g., poor arterial blood supply, or poor venous blood supply or both) appropriate onward referral to specialist services (e.g. vascular, dermatology, etc).
    - Other aspects of examining the wound.
- **Administering the right treatment for venous leg ulcers (e.g., strong compression):**
    - Applying appropriate types of bandages, wraps or hosiery and managing the transition for patients between them.
    - Managing exudate and lymphoedema.
- **Supply of wound care equipment and other supplies,** e.g., management of wounds by staff from visit to visit who need access to wound management digital systems via apps on their mobile phones.
- **Patient factors:**
    - Appraisal of patients' wider lifestyle and living circumstances that may affect healing and their ability to undertake self-care.
    - The need to use coaching techniques to gain the patient's acceptance of strong compression.

4.2. Implementation findings – qualitative data synthesis

The following sections summarise key findings (Technical reports 1-4) that relate to the components of the i-PARIHS framework (Annex 2, page no. 57-58) and whether the assumption of the framework bares out. The findings result from a process of data synthesis (see section 2.3). Briefly, mediating factors **context** and **recipient** are argued as slowing the ability of **facilitation** to reach the full potential of implementation of the **innovation,** the NWCSP LLRs via the TWC programme**.**

4.2.1. Innovation – NWCSP Lower Limb Recommendations

The innovation in this context refers to the delivery of improvements to lower limb wound care using the NWCSP LLRs[17] for the treatment of lower limb and foot wounds, specifically the timely application of evidence-based strong compression.

Staff with clinical expertise often stressed the complexity of wound care which required clinicians to possess a range of skills for example, to correctly take measurements, rule out red flags, give advice to patients on the importance of compression and consider lifestyle factors. Importantly, nurses must be confident to start mild compression ahead of a Doppler assessment. A clinician from the Bromley Healthcare focus group explained that with knowledge and experience, nurses can examine a leg and diagnose treatment needed and that a Doppler test is just one part of this process. There was also mention of the need to retrain longstanding staff to think differently about compression, and to change existing practice, which could be a challenge.

4.2.2. Context for delivering lower limb wound care

Context refers to the delivery of changes to pathways and clinical services for wound care within the wider locality of the health and care system within the TES by the provider such as an NHS trust or Community Interest Company (CIC).

Staff survey findings in response to the question "Which elements of the NWCSP lower limb recommendations has your TES delivered?", found nearly a third of staff reported that their TES delivered immediate and necessary care, and 28% of staff reported their TESs delivered wound assessment, diagnostics and management, see **Figure 10** for further information. However, only 16% considered they were delivering a dedicated lower limb service. Staff reported that the introduction of strong compression therapy after the full assessment was an impactful change, along with staff training and education which improved staff confidence and satisfaction in managing wounds. From the staff perspective they found the most impactful change for the patients was the benefit of their wound healing. Conclusions are limited due to the number of survey responders.

[17] NWCSP-Leg-Ulcer-Recommendations-final-version-15.07.2024.pdf (nationalwoundcarestrategy.net)

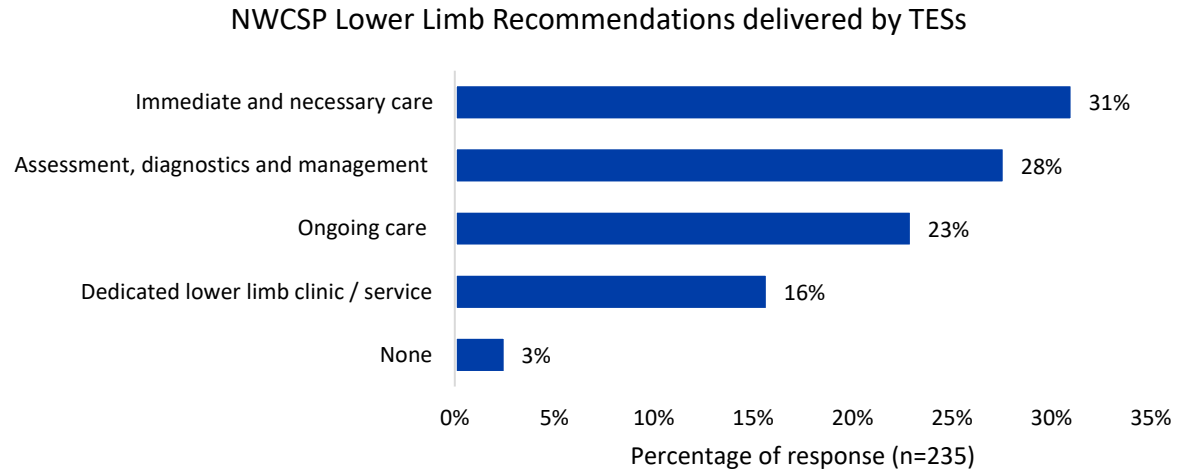

Figure 10 Elements of NWCSP Lower Limb Recommendations delivered by TESs

Staff survey findings identified workforce capacity as the most limiting factor in delivering the NWCSP LLRs, as this affected the ability to provide clinics at additional times. Key workforce factors included the need to release staff to attend training as well as manage variance in the staff skill mix. Other factors influencing the delivery of the NWCSP LLRs included patients with multiple comorbidities (and consequent impacts on healing), some patients' discomfort with compression therapy, and the need to navigate different interdependencies between service providers and referral pathways.

As mentioned above, staff feedback also commented on the impact of staffing constraints, as well as availability of dressings, and operating within financially challenged systems with other competing priorities.

> *"We are in that is financially very badly hit, and the priority for the trust at the moment is to fund services that are being provided but not funded. We aren't first in the queue."* Cornwall Interview 1

> *"The only thing is, I think sometimes it's getting that full assessment within the allocated time. If you've got staff off sick, if you've got weeks full of appointments and you can't physically fit them in to do that full-leg assessment within the allocated time, can sometimes be a little tricky. We try our very best to do it."* Frimley interview 2

As previously described the variability in the contexts of each TES might demonstrate the different challenges to delivering NWCSP LLRs.

TESs covered a wide range of models of service delivery from specialist mobile services for people experiencing homelessness to planning and implementing integrated care system-wide wound care services. Therefore, each TES provided a unique window on implementation within their context. Implementation tracking across all TESs sought to capture information close to when events occurred and surfaced the multiple 'implementation steps' that often challenge implementation efforts in health and care services (Eisman, 2021). **Table 14** summarises strategies used to support

implementation and factors that constrained or facilitated successful implementation (technical report 4) within the context of TESs delivering changes to pathways and clinical services.

Table 1 Summary of implementation strategies, constraints and successes

Factor	Description
Implementation strategies for staff and patients	**Engagement** • Setup of staff task and finish groups. • Consensus-building across staff teams. • Use of champions. • Reaching out to under-served communities with services: housebound and people experiencing homelessness. • Stakeholder engagement. **Communication of evidence-based knowledge** Delivery of training and education programmes. **Behavioural approach** • Regular monitoring of staff competencies. • Development of patient information materials to support self-care. • Targeted approaches to training staff. • Local dashboards to motivate staff by enabling visibility of their achievements (e.g. numbers of patients with wounds healed). • Coaching of staff. • Use of reminders (WhatsApp etc. for equipment checks before visits).
Implementation constraints	• Challenges with implementing the NWCSP LLRs for strong. compression involving patients (pain and discomfort) and staff (confidence). • Size, scale and complexity of pathway and system changes needs time as well as financial resources. • Delivering services in certain localities and engaging other colleagues e.g. vascular, presented challenges and therefore time and capacity to overcome them. • Workforce capacity and the challenges of many trusts operating in Opel 4 during their implementation of the TWC programme impacted on the ability to deliver wound care services as planned. • Technical difficulties either with collecting data or integration of Wound Management Digital Systems (WMDS).

Implementation successes	• The TWC programme was a key enabler in allowing trusts and other providers to drive forward planned changes to services and ensure improvements to practice. This included the opportunity to share and learn across the TES sites. • Fostering engagement and collaboration across staff teams and patient pathways was an enabler to move services forward. • Gaining the right support in the system was an enabler to obtain authority to deliver services. • Improvements in staff awareness and understanding of wound care. • Service and patient pathway changes delivered during the lifetime of the TWC programme. • Although aspects of the implementation plans for delivering the TWC programme objectives were not fully operationalised there is commitment from those involved to pursue work started.

4.2.3. Facilitation - Expert implementation of the TWC programme

The Health Innovation Network's TWC programme (supported by the NWCSP) is the key facilitation component providing expert implementation to enable the NHS to deliver better wound care. The TWC programme provided a range of implementation support to NHS trusts and other NHS providers. Health Innovation East provided strategic level engagement, leadership and co-ordination of the programme and implementation planning through the TWC central team (Health Innovation East). This involved:

- Recruitment of TESs through an application and contractual process with financial resourcing.
- Support for each TES from a programme manager from the health innovation network local to their region. This support provided local level facilitation.
- A forum and range of support activities, e.g., programme webinars, clinical calls and metrics calls, to allow cross-TES sharing and opportunities for problem solving.
- Development of an implementation toolkit for lower limb wounds.
- Co-ordination of a standardised set of metrics for wound care to measure the impact of delivering wound care recommendations.

Expert implementation facilitation provided by the TWC central team to deliver the TWC programme has put a focus on the importance and priority of this health care need to improve lower limb wound healing. This involved the translation of NWCSP LLRs into implementation steps offering practical support and education. The TWC central team conducted regular meetings with the TESs to share local challenges and successes and to share solutions to implementation constraints where possible. The purpose of this facilitative style fosters a learning organisation culture that values and respects the workforce without being directive (Harvey and Kitson, 2015).

From the staff survey findings, nearly half stated that their local health innovation network had enabled improvements to their lower limb wound care. The input from the local health innovation networks was appreciated particularly to drive the change in lower limb wound care. Just over half of staff survey responders believed support from the Health Innovation East, TWC central team enabled

improvement to their delivery of lower limb wound care. This input was received positively, including the emphasis on the importance of capturing data (standardised metrics) and the use of technology to deliver the services.

When interviewed, staff expressed enthusiasm and buy-in for the aims of the TWC programme to ensure consistent pathways in lower limb wound care.

> *"I have been able to raise wounds and lower limb care as an area of where we should really be concentrating our work, looking at reduction in, how we make savings, best practice, patient experience, and I think having it from an ICB perspective, I've been able to bring wound care, lower limb, up the agenda."* Frimley interview 3

> *"We are now doing what we were supposed to do in the first place, that we've always supposed to do. The difference is now we've got the time, or we are allowed the time to do the assessments that are required."* Lincolnshire interview 1

4.2.4. Recipients – staff and patient experience of the TWC programme

Recipients of the TWC programme are both staff and patients. So, patients who are receiving wound care and staff as individuals and working in teams to provide a wound care service. This includes those commissioning the wound care services and all grades of staff and those working in various roles from clinical management staff to operational leads in ICBs to expert staff in tissue viability or podiatry and district nursing teams. The data sources that inform staff and patient experience are the staff interviews, focus groups, staff survey and the patient cases (technical reports 1-4).

39 staff who stated they were involved in supporting the delivery of NWCSP LLRs in their services (see (survey data) technical report 1)) believe there is potential for the practice (i.e. the new lower limb services) to become normal practice. These staff had a strong understanding of the TWC programme and its aims, and who they needed to work with to put NWCSP LLRs into practice. However, staff may have less confidence in how to integrate the LLRs into their service delivery and how to determine the progress of TWC programme implementation.

Staff experience of providing lower limb wound care

Staff are engaged and motivated to apply the lower limb wound care guidance. The survey showed that introduction of strong compression therapy after the full assessment was viewed as the most impactful change, followed by staff training and education which improved staff confidence and satisfaction in managing wounds. Interviews confirmed that staff feel patients are now receiving better care, and that this is leading to faster healing, improved outcomes, and reduced contacts.

> *"In September, there was a practice nurse meeting and one of our clinical admin team shared some information about the coding. It says that so far, 50 patients have had the full assessment since April, and out of those 50, 23 now have a healed leg ulcer."* Frimley interview 2

> *"Everyone's been pretty hot on trying to get something done quickly for the patient. At the end of the day, it helps them, and it helps us not having to see them as often."* Norfolk interview 2

Staff efficiencies were reported to result from the use of compression garments rather than bandages – these are quicker to use and can be applied by a wider range of staff.

"Certainly, in our clinics we're using more garments, and I've covered clinic the last two weeks and it makes a difference…It was bliss, it was absolutely bliss that I even managed to do a few emails in between each session because I was so timely on the appointments, makes a huge difference." Bromley focus group

Staff training

Staff acknowledged the expertise needed to deal with the complex field of wound care delivered through the TWC programme. This training to upskill staff was delivered across all sites. Survey responses to training found 94% of staff were very satisfied or satisfied with the different locally available e-learning opportunities available. From 66% (80 staff) who responded to the survey question on e-learning, 33% completed both the Wound Care Education for the Health and Care Workforce programme and in-house e-learning modules (e.g. trust or organisation's own e-learning programme), 15% completed only the Wound Care Education for the Health and Care Workforce programme and 19% completed only their in-house e-learning module. 28% stated that they have not accessed e-learning modules.

In addition, 97% were very satisfied or satisfied with the local face-to-face training opportunities. Challenges noted were training availability and finding the time away from clinical duties to attend training. Staff stated training was needed for staff in intersecting parts of the system (e.g. GP surgeries or care homes), but engagement could be challenging.

"I think the old guidance used to be it was a leg ulcer after eight weeks of non-healing, and it's now changed to two. I'm not necessarily sure whether they know that or if the practice nurses are given any kind of… They're in charge of their own training and stuff, aren't they? I don't know if they know about getting them into compression early or referring on early." Norfolk interview 1

"Because I think we've got something like 60 plus care homes, plus 57 GP surgeries. Literally two people, it's just impossible for them to go out and train every single one. What we want to try and do is bring the people to us, but it's that engagement that's been a little bit tricky". Cornwall focus group

Within survey responses, the most reported barrier to the implementation of the new wound care programme was limited or reduced workforce capacity, which was also highlighted within the interviews and focus groups (technical report 3). Other challenges for staff at the point of care were patient-related (see Patient factors below), the interdependency of external service providers adding complexity in managing patients' wound care and ensuring data accuracy and time required for data collection and collation.

Use of Wound Management Digital Systems (WMDS)

The TWC programme supported the roll out of NHS compliant point-of-care mobile digital technology (Wound Management Digital Systems (WMDS)) based on the additional functional recommendations provided by the NWCSP (NWCSP, 2021). This provides a detailed review of an optimal approach to WMDS for developers. This functionality includes data capture and recording at the point of care, image capture and the ability to integrate with local patient management systems and patient records. The staff survey found TESs used a variety of WMDS and other technology. 77% of responses indicated technology made a difference to their services or patient care by enabling accurate and consistent

recording with improved oversight of patient care. Also, beneficial to both staff and patient was remote access to wound images to show progress or lack of progress towards wound healing. However, the staff survey identified challenges with variability in internet connectivity (especially in rural areas) and camera quality.

In the interviews, staff reported on the use of WMDS. WMDS were found to speed up the referral process and was considered useful for members of the wider team (e.g. podiatry or tissue viability) for the purpose of seeing the wound and giving advice without necessarily needing to see the patient.

> *"…it went from something like 20 days to two days, something like that in terms of, you know, speed of tissue viability, nurse, viewing a reliable visual representation of the wound and being able to give virtual advice or saying actually I think I need to come and see that and then make it a priority to go and see it."* CLCH Interview 1 (Isla Care (provider system), already implemented pre-pilot)

Standardising care - including the way photos are taken and measured and prompting actions - was viewed as improving practice at point of care.

> *"The app (WMDS) we're using to standardise what we see, measurements, photography. We've been quite lax with photographs and wound photography so it's really something that's come at the right time for us as well. We're not just taking pictures, the app will help with measurement, with making sure that everyone is doing the same thing and standardising that measurement we can use it to produce our notes as well and again that will give us prompts."* Bromley focus group

However, some challenges were expressed on interoperability and cost:

> *"We're using a different system, so a lot of our work and written work and assessment is all done on SystmOne, and they don't communicate. We often end up having to do it twice because we don't have a proper record here on the* [WMDS] *website."* Norfolk focus group

> *"We did look at the* [WMDS] *app at one point, but our phones weren't compatible with it."* Locala interview 1

Several sites raised concerns about the cost of using WMDS, suggesting they could not justify this as an expense in the current climate. (Cornwall Interview 1 added it should not be a priority of the project in the same way as other aspects).

> *"At the moment, with the finances, I can't even put in cases for invest[ment] to save because there isn't the finance there."* Frimley interview 3

> *"Again, just talking generally about the wound management digital systems, far too much emphasis has been placed on this. This is not the focus for trusts who are in financial recovery."* Cornwall Interview 1

While not developed in depth, it was apparent from interviews that existing tissue viability expertise, or already well-established links to tissue viability and other specialist services, acted as facilitating

factors for implementation. Within survey responses, free text responses suggested that support from tissue viability nurses is helpful with staff training and providing specialist advice.

> *"I think we had a really good foundation we're really fortunate…I think your team (tissue viability), although there's some learning and some changes, we already have the leg ulcer service, the structure of the clinics, and the support that you do provide to primary care when they reach out to the nursing teams."* Bromley focus group

Patient factors

Findings regarding patient factors arose from three qualitative data sources: staff survey (technical report 1); patient cases (technical report 2); and staff interviews and focus groups (technical report 3).

24 patient cases, across seven TESs provided data on 57 appointments delivering lower limb wound care to ambulatory and non-ambulatory patients. There were variations in cases in relation to socio-economic deprivation (as per the Indices of Multiple Deprivation [IMD] decile). Key points from this patient data were:

- Patients were mostly aged 65 years and over, except those from Locala TES, who were younger.
- All cases fell within the white category for ethnicity.
- The findings show patients' routes into the new pathways were mostly via primary care.
- Overall feedback from the 24 patients indicates they were highly satisfied with their care with 100% of patient cases across all TESs rating treatment received as either 'Very Good' or 'Good'.
- Patients reported receiving information on a variety of topics from their care providers. Most often mentioned were 'information on how to care for your foot/leg' and 'details about when and where to seek further help or information.'
- Most patients (93%) stated that they found information received to be understandable, and there were no suggestions for areas that needed further clarity or explanation.
- Appreciation for clear communications and warm relationships with clinicians was highlighted in free text responses.
- Patient cases mainly gave positive comments about their healing and the use of compression, with only a couple reporting concerns (wraps hard to apply and stockings rolling down).

Figure 11 provides a summary of the patient case data by success and challenges with quotes taken from case reports administered by staff to patients.

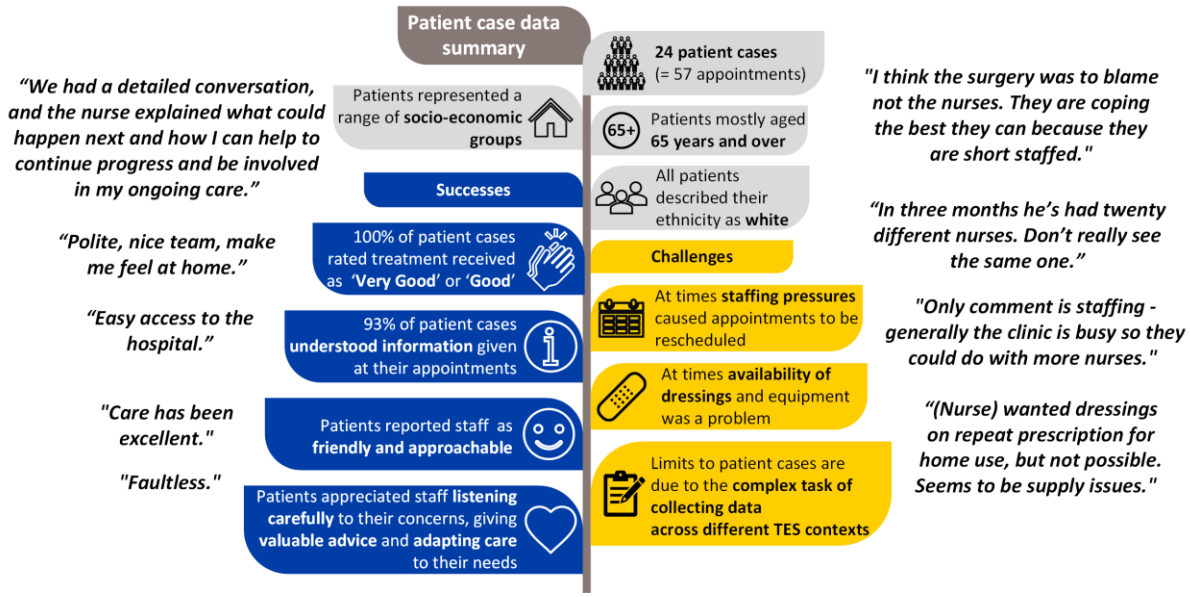

Figure 11 Summary of patient case data with quotes

The staff survey found most clinical and management staff (93%) gave advice, support or education to help patients to care for their own wounds. The most common advice, support or education given on wound care was preventing wounds (27%), dressing of wounds (23%), compression therapy (20%) and cleaning wounds (19%). The advice, support and education given on wound care was mainly provided verbally (45%) and through leaflets (27%).

- Most of the staff (71%) stated that patients respond well to the advice, support and education given by staff.
- Many patients are keen to take ownership and responsibility of their wound to heal faster and minimise recurrence.
- A proportion of patients, however, do not engage well with self-care mainly due to their dislike of the compression therapy and more longer-term wounds being complex and slower to heal. See technical report 1 for further details.

  'Most patients are willing to self-help once explained the benefits, but we do have a growing number of non-[compliant] patients who take up a lot of time at each visit.' (Free text survey response)

Factors identified as impacting patients' ability to engage with treatment in survey responses were frailty and old age, resistance to lifestyle/diet changes and lower ability to read and interpret information (literacy/health literacy). Similarly, within staff interviews and focus groups a range of lifestyle and general heath factors that can work against healing and treatment adherence were identified. Factors that could hamper healing, (also likely to be associated with higher levels of socio-economic deprivation[18]), included poor hygiene at home, lack of literacy/engagement with

[18] For example: Chapter 6: social determinants of health - GOV.UK (www.gov.uk) and NHS England » Enabling people to make informed health decisions

explanations, and not attending appointments. There was even some mention of people inhibiting their healing because nurse visits were the highlight of their week.

> *"If they don't heal, we'll be coming in for longer. We do have some people that will scratch or cut the dressings down."* Norfolk Interview 3

Strong compression was highlighted as a particular focus for patient resistance because of discomfort, lack of belief it would work, or dissatisfaction with its appearance.

> *"There's only one of my TWC patients that actually didn't get on with it and couldn't tolerate it, an elderly lady and the wound was minor anyway… she said, 'I couldn't stand it anymore'. She took it all off, cut it off."* Lincolnshire interview 3

This resistance to compression, and noncompliance with advice, could also lead to deterioration post-healing, which was a source of frustration. Although, discussions around self-care were recognised as important issues around patient ability to comply remained.

> *"You discharge, you get everybody's legs lovely, and creams and everything, and they go off on their merry way, and two weeks later, they're back knocking on the door because they haven't put them on."* Norfolk focus group

> *"You can do lots of educative programmes and things on the internet, but realistically, our patients aren't accessing these things. They're sat during the day watching the television."* Norfolk interview 1

Nursing staff highlighted the importance of building relationships with patients and providing consistency of care to build trust with patients which could lead to them trying, and persevering with, compression.

> *"We had a lady that's got quite severe dementia in one of our care homes. She'd had two leg ulcers…and she would not tolerate any dressings. She was removing all the dressings every day. We did a lot of work with her. I increased her visits to build a rapport with her and gradually persuaded her…she's now in hosiery."* Norfolk interview 2

> *"There's a lot around the patient, and engagement of the patient, and preparing the patient, and persuading the patient."* Lincolnshire interview 3

In summary, the TWC programme provided **expert facilitation** (as defined by the i-PARIHS framework, Harvey and Kitson, 2015[19]) **through the leadership and co-ordination** of TWC central team. Facilitation is a key activity that integrates action around **innovation adoption** (NWCSP LLR and recommendations for dedicated lower limb wound care services) within the innovation **context** to **those delivering or receiving the innovation** (staff and patients). Facilitation effort to support implementation of the TWC programme was restricted by the TESs' financial restraints and workforce capacity to support changes

[19] Harvey, G., & Kitson, A. (Eds.). (2015). Implementing evidence-based practice in health and care: A facilitation guide. Routledge.

to wound care services. Staff were enthusiastic about the support and opportunity of the programme and patients indicated they were satisfied with care they received. Nevertheless, known patient factors may have inhibited lower limb wound healing in some cases and staff indicate that patients require more time for engagement to promote self-care of their wound and tolerance to compression to support lower limb wound healing. Overcoming these barriers and building trust with patients is recognised to be challenging and time-consuming for staff, forming part of the overall implementation effort.

4.3. How to determine implementation success

Implementation effort, as defined here, is the effort needed to facilitate, engage, encourage, support and inform health and care services to achieve implementation success (Annex 2, page, no. 57-58), a key feature of this evaluation. Quantitative analysis was not able to demonstrate a correlation between wound healing and early assessment (immediate and necessary care), full assessment and the application of strong compression. This is due to inconsistencies in data reporting across the sites. There are several reasons for these data inconsistencies described fully in technical report 6. However, also described is the challenge of implementing a new set of standardised metrics into local health systems and the complexities of developing templates for the centrally hosted clinical support systems e.g. within SystmOne, RIO, EMIS.

However, evidence from qualitative data demonstrated progress across TESs in delivering their plans to encourage and support the spread and adoption of the NWCSP LLRs. This progress included improved wound care pathways, and that healing rates were experienced by staff and patients. While acknowledging data collection challenges and inconsistencies across metrics and TESs, the workforce issues and other constraining factors reported above suggest that implementation effort is likely to take longer before impact data shows effect.

Guest and colleagues (2020) in their evaluation of the burden of wounds on the NHS conclude first, that the prevalence of wounds has increased by 71% between 2012 and 2018 and that patient management costs increased by 48% in real terms. Second, they also state that the annual NHS cost of wound management (2018) was £8.3 billion, of which £2.7 billion and £5.6 billion was associated with managing healed and unhealed wounds respectively. 81% of this total cost is incurred in community services. This area of care is expanding exponentially and the effort to implement recommended practice is a challenge within the current resources in NHS settings. Within the i-PARIHS framework, the construct ‘context’ seeks to explain how context or setting influences the way innovation (NWCSP LLRs) is adopted and spread; specifically, the use of complex systems theory as applied to health care in systems (Harvey and Kitson, 2015). This is expressed by Braithwaite and colleagues (2018).

> *"Construing health and care as a complex adaptive system implies that getting evidence into routine practice through a step-by-step model is not feasible. Complexity science forces us to consider the dynamic properties of systems and the varying characteristics that are deeply enmeshed in social practices, while indicating that multiple forces, variables, and influences must be factored into any change process, and that unpredictability and uncertainty are normal properties of multi-part, intricate systems."* (Braithwaite et al, 2018, 16:63)

Therefore, this infers that implementation success does not occur at a single point in time and that progressive steps made towards a given outcome are important observations. Although the impact of the TWC programme facilitating the implementation of NWCSP LLRs on wound healing rates is not conclusive, qualitative data strongly indicates change is in progress and patients and staff are experiencing that change. Staff also attribute change in practice to the support of the TWC programme. Measures of success are often limited to impact (e.g. wound healing), whereas delivery of new pathways and training requires time to become embedded as routine. The following draws together key successes of the TWC programme and challenges that hindered progress of the programme.

TWC programme delivery successes

Overall, this evaluation indicates that staff are motivated and encouraged by the solutions and opportunity for better training and improvements to patient care. They believe they are making a difference and witnessing improvements in the healing of patients' wounds. Key points drawn across the data of what worked well from the staff perspective are:

- **TESs have invested in delivering a range of training in line with NWCSP LLRs** including their own in-house training. Training is provided at different levels in progressive steps, including needs assessments, refresher courses, and ensuring staff are competent. It was a significant undertaking for some TESs to roll out staff training across their locality. Training was also becoming embedded and routinised.
- Patient cases recruited suggested this small sample of **patients were very satisfied with the care provided by the TESs**, and appreciated the clear communications, advice and friendly approach of clinicians.
- Those **TESs that undertook service and pathway improvements rather than a whole service redesign were able to implement service changes more easily**. One TES (Sussex) took the opportunity to undertake service transformation across its three providers. This involved significant planning and consultation including negotiating budgets and therefore, implementation of this service transformation was not captured in the duration of the evaluation. However, the TWC programme provided an opportunity for strategic planning to co-ordinate implementation of recommended wound care services across the county.
- **Instilling the importance of collecting standardised data metrics for ongoing audit purposes** e.g., wound healing rates and use of strong compression, led to the development of local dashboards. These dashboards and other feedback mechanisms to staff providing care directly to the patient allowed both motivation and ongoing education of evidence-based wound care.

TWC Programme progress challenges

Each TES presented a unique case given their approach to deliver NWCSP LLRs in their area. This diversity prevents a fair comparison between TESs; however, several issues were common to all. In varying degrees these were:

- **Competing priorities within and across parts of the local wound care service infrastructure** (e.g., community care, primary care, specialist services such as diabetes, vascular and podiatry) hindered engagement and the ability to collaborate in a supportive and timely manner.

- **Implementation of technology, data collection and other related procedures were often impeded by both the complexity and time** taken to integrate reporting requirements into existing provider systems. These required lengthy procedures to develop templates to capture data, for example. Effort and time were invested in piloting, conducting cost-benefit analysis and integrating wound management digital system solutions into local patient management systems, and for some this was either delayed or not pursued.

- **Workforce challenges covering vacancies, sickness and operational capacity impacted on delivering recommended wound care.** These are common challenges in the NHS currently and implementation plans and strategies need to accommodate these likely scenarios. However, staff indicated that the opportunity provided by the TWC programme permitted focus on this area of care that may not have occurred otherwise.

- **Financial pressures within health systems created competition for scarce resources and constrained some activities.** Examples included de-prioritisation of digital wound care management systems, pausing one business case to develop a dedicated service and delays to data collection templates while business support teams worked on other prioritised change projects.

As indicated throughout there are factors that push back against the TWC programme efforts to progress implementation. This implementation effort *pushing forward* and the NHS challenges pushing *back* is summarised in **Figure 12.**

Figure 12 Progressing implementation efforts in NHS systems for lower limb wound care

5. Conclusions

Lower limb wounds are a significant care issue for the NHS. This evaluation showed the importance of the implementation effort delivered to support the implementation of the NWCSP LLRs and the development of dedicated services for lower limb wound care. Overall, the healing rate for wounds for the period October 2023 to March 2024 showed a steady increase in the number of wounds healed within 12 weeks. Patient healing rates varied between 53% and 78% recorded as healed within 12 weeks. It was not possible to show a clear correlation between early assessment, application of strong compression and wound healing rates to support implementation of the proposed care pathways due to the lack of suitable baseline data.

Other findings from qualitative data supports TWC programme success. Staff were committed to its aims, had confidence in the programme resulting in better care, faster healing, improved outcomes and fewer appointments, anticipated net zero benefits and the positive contribution of wound management digital systems (WMDSs). Staff identified challenges that included patient lifestyle and health factors that can delay healing and reduce ability to tolerate compression. Other challenges related to engaging the wider health system, staffing and financial pressures, and logistics associated with the collection of metrics data and implementation of WMDSs. TESs targeted specific populations such as those in areas of high deprivation, living in poor housing conditions, those experiencing homelessness or were vulnerable members of the community.

The implementation investment provided by the TWC programme was valued by clinical staff as an opportunity to dedicate time and energy to focus on this clinical area that competes with other clinical priorities. Resource costs for implementation are acknowledged here as requiring attention for future planning and the need to possibly continue investment to sustain change (Eisman et al, 2021, Elwy et al 2020). Research and evaluation costs are often focused on financial saving, benefit or effectiveness due to treatment or innovation adoption rather than implementation.

6. Implications of findings

Efforts made by expert implementation facilitation constrained by NHS system and patient factors indicates the following implications for these evaluation findings for both practice and future evaluations.

6.1. Implications for lower limb wound care practice

1. The scale up and spread of the necessary improvements to wound care and the delivery of dedicated wound care services across the NHS requires a significant implementation effort, associated resources and sustained support over time to embed changes in practice. Exemplified by the TWC programme this includes strategic leadership; financial support; coordination of activities; community of practice; guidance and an implementation toolkit and expert facilitation.
2. Staff willingness to deliver effective care was countered by contextual pressures that prevented wider engagement and delivery of best clinical practice. The extent to which an improvement programme is actively managed and facilitated was shown to be a critical factor in explaining implementation success.
3. Programme level findings indicate that patient factors can inhibit opportunities for effective lower limb wound care due to co-morbidities, intolerance for strong compression and the inability of some patients to support self-care. Greater effort and time to build trust with patients are strategies that staff employ to manage wound care in these cases, and therefore the need for greater staff capacity and time to manage this area of care is highlighted.
4. Programme level findings show that whilst supporting digital solutions such as WMDS is viewed as providing benefits, they also present adoption challenges when integrating this technology at local systems' level. This indicates the need for further development and assistance to services in this area.
5. To ensure that investment in implementation is making a difference, data monitoring should be continued.
6. Automated data collection supported by point of care reporting needs to become embedded and routinised into local systems and may need more resources.

6.2. Implications for future evaluations and metrics data collection

1. To ensure implementation investment is making a difference, there is a need to embed automated data collection into local systems and to provide support to clinical staff collecting data during patient contacts.

2. Low patient participation in the evaluation resulted in an imbalance of patient perspectives. Purposive sampling of specific patient groups to better understand inequalities should be considered in future.
3. The collection of demographic data on patients receiving wound care would enable an assessment of the extent to which services are addressing inequalities.

Technical reports

1. Technical report: Staff survey
2. Technical report: Patient cases
3. Technical report: Staff interviews and focus groups
4. Technical report: Implementation tracker
5. Technical report: Implementation of metrics
6. Technical report: Quantitative metrics

TES case reports

1. Bromley Health and Care Community Interest Company (CIC) Ltd
2. Central London Community Health and care NHS Trust – Merton Community Nursing Team
3. Cornwall Partnership NHS Foundation Trust
4. Lincolnshire Community Health Services NHS Trust – Skegness and Mablethorpe Integrated Community Team
5. NHS Frimley ICS – Yateley Medical Centre
6. Locala Health and Wellbeing Community Partnerships CIC
7. Norfolk and Waveney ICS – East Coast Community Care and Norfolk Community Health and Care
8. Sussex Health and Care ICS

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Annex 1 Understanding strong compression for lower limb wounds

Compression bandages or hosiery garments can be applied to the lower limb for the treatment of venous leg ulceration in the absence of acute or chronic limb threatening ischemia (CLTI). A lower leg ulcer is defined as a wound that occurs on or above the ankle but below the knee that takes more than two weeks to heal[20]. Most leg ulceration occurs due to poor venous blood flow in the legs. Where clinically indicated, graduated compression therapy can be applied following a skilled lower limb assessment which includes a calculated ABPI using an ultrasound doppler device.

Graduated compression therapy[21] can be applied in two different strengths measured in mmHg:

- **Strong Graduated Compression**: is either an elastic compression system applied to deliver at least 40mmHg of pressure at the ankle or an inelastic system applied in accordance with manufacturers' recommendations. Strong compression delivers what current evidence suggests is the full therapeutic dose and should be first line for treating venous leg ulcers.
- **Mild Graduated Compression**: is intended to apply up to 20mmHg at the ankle. This is about half of the recommended full therapeutic dose of strong compression therapy. It is thought to have benefits for people with venous insufficiency awaiting a skilled full lower limb assessment.

[20] NICE Clinical guideline [CG168] Varicose veins: diagnosis and management [online]. Published 24 July 2013. https://www.nice.org.uk/guidance/cg168

[21] National Wound Care Strategy Programme Leg Ulcer Recommendations July 2024 NWCSP-Leg-Ulcer-Recommendations-final-version-15.07.2024.pdf

Annex 2 Application of the i-PARIHS (integrated-Promoting Action on Research in Health Services)

The i-PARIHS framework was first published in 1998 (Kitson et al 1998). It is one of the more commonly used implementation frameworks and has undergone various developments, most significantly in 2015 (Harvey and Kitson, 2015). This latest version was used to provide an explanatory framework for the qualitative data findings.

This framework developed through a process of research concludes that successful implementation (SI) results from facilitation as a key ingredient. Briefly, this is where one or more individuals (Fac^n = facilitators) are assigned to support others to navigate complex transformations in complex health systems (C = context). This requires a comprehensive understanding of the innovation (I = Innovation) and those receiving it (R = Recipients) it (e.g., staff, patients, service commissioners and other key stakeholders). This is summarised as:

$SI = Fac^n (I + R + C)$

Successful implementation is attributed to the following (Harvey and Kitson, 2015):

- *Achievement of agreed implementation [and] project goals.*
- *The uptake and embedding of the innovation in practice.*
- *The individuals, teams and stakeholders are engaged, motivated and 'own' the innovation.*
- *Variation related to context is minimised across implementation settings.*

Key concepts of the framework are described further in **Table 1** and aligned with the key TWC programme components. i-PARIHS authors describe the framework in simple terms – what is being implemented, who is being targeted, where and how. 'How' is the key construct.

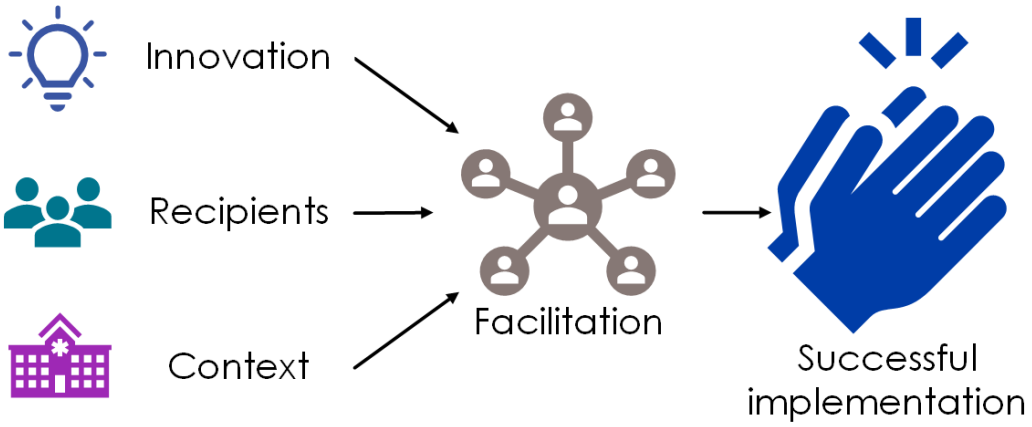
Table 1 i-PARIHS constructs and related TWC programme elements

I-PARIHS component	Description of key elements (Harvey and Kitson, 2015)	Application to TWC programme
What? **The innovation** (expanded since original)	Any activity to mobilise knowledge and research evidence into practice.	NWCSP LLRs for the treatment of lower limb and foot wounds, specifically the timely application of evidence-based strong compression.
Who? **Recipients** (new construct 2015)	Both individuals and teams (collective).	Patients receiving wound care. Staff as individuals and working in teams to provide a wound care service. Those commissioning the services.
Where? **Context** (original construct)	Both inner context (immediate setting e.g., hospital ward, general practice, unit, or department) and outer	Delivery of changes to pathways and clinical services for wound care within the wider locality of the health and care system within the TES e.g., providers such

	context (wider health system e.g., policy environment, regulatory frameworks, political environment).	as an NHS trust or community interest company.
How? **Facilitation** (Activates implementation engaging with the other constructs)	Ranges from individual to groups of facilitators. Ranges from novice to expert facilitation. Involves participation of key stakeholders. Takes ownership and control of the implementation process. Empowering and enabling others. Provides feedback.	The Health Innovation Network's TWC programme (supported by the NWCSP) is the key facilitation component providing expert implementation to enable the NHS to deliver better wound care.

Figure 2 Core constructs of the i-PARIHS framework demonstrates how the key constructs of **C**ontext, **R**ecipient and **I**nnovation are mediated through **F**acilitation to achieve **S**uccessful **I**mplementation.

Figure 2 Core constructs of the i-PARIHS framework



Version Control

Version	Status	Key Changes	Authorised by
V1 Oct 2024	Live		
V2 Nov 2024	Live	Final amendments completed.	Philippa Darnton