

SBRI NROL Mixed-Methods Evaluation Report

Project Title: Scaling and Evaluating the NeuroRehabilitation OnLine (NROL) Model: Enhancing Access to Intensive Digital Stroke Rehabilitation Across NHS Regions for Better Outcomes

Organisation: Lancaster University

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- Lancashire and South Cumbria Integrated Care System staff, patients and families who participated in NROL
- Cheshire and Merseyside Integrated Care System staff, patients and families who participated in NROL
- Health Innovation North West Coast
- ELAROS
- SameYou



1. EXECUTIVE SUMMARY

This independent evaluation, led by Lancaster University, and reviewed by Health Innovation North West Coast, was commissioned as part of SBRI Healthcare Competition 26 – Stroke, Phase 3.

Purpose

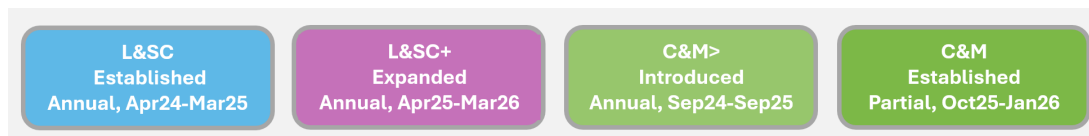
Stroke and neurological conditions are leading causes of long-term disability. Rehabilitation plays a crucial role in reducing disability, with higher doses of therapy associated with better outcomes; however, many patients in the UK receive less rehabilitation than recommended in national stroke guidelines, often due to organisational constraints and geographical barriers. Telerehabilitation may help address this gap. The purpose of this evaluation was to examine whether NeuroRehabilitation OnLine (NROL), a digitally enabled multidisciplinary group rehabilitation model, could be feasibly delivered at scale across National Health Service (NHS) regions to increase access to, and intensity of, stroke and neurological therapy in line with national guidelines and offer a sustainable, equitable and efficient model of care. An overarching aim was to inform system-level value indicators of NROL, aligned to NHS healthcare priorities, to guide decisions about further spread and commissioning.

Context

Context was described, detailing the innovation, individuals, healthcare setting, and external influences:

Innovation		NeuroRehabilitation OnLine (NROL): a digitally enabled multidisciplinary group rehabilitation programme with dedicated technology support and embedded peer-support, delivered in real-time by existing NHS therapy staff to complement existing therapy (i.e. part of hybrid care). Run in repeating 6-week 'NROL Blocks'.
Individuals		Patients: NHS community-based patients undertaking stroke or neuro-rehabilitation. Staff: NHS existing therapy staff from stroke and neuro-rehabilitation teams; small, dedicated regional NROL operational teams; clinical-academic and NHS management oversight and strategic leadership.
Healthcare setting		2 Regional NHS Integrated Care Systems (ICSs): - Lancashire and South Cumbria (L&SC) - Cheshire and Merseyside (C&M) Community-based stroke and neuro-rehabilitation services.
External influences		NHS system-level strategic drivers, including national healthcare priorities to improve access, efficiency and outcomes, expand digitally enabled care, reduce health inequalities, respond to workforce pressures, and support environmental sustainability.

NROL was expanded (scaled-up) in the L&SC ICS and introduced (scaled-out) to the C&M ICS. Four cases were evaluated:



The autonom-e platform was introduced in the L&SC+ case to support scalable digital operation by improving patient access and operational efficiency.

Evaluation overview

The evaluation reviewed NROL in a structured way, focusing on how it was implemented by examining selected implementation outcomes of:



The evaluation questions were: *Across regions and cases,*

1. Was NROL adopted when scaled; what did adoption consist of and what were key challenges and enablers?
2. Was NROL accepted, and a way to support increased therapy provision?
3. To what extent was NROL being sustained and how; and what were the efficiencies and productivity gains?

Evaluation questions were examined using fourteen evaluation indicators. Key findings were interpreted in relation to NROL's potential value to NHS system-level healthcare priorities, derived from key drivers in NHS strategic documents, mirrored in focus areas of the SBRI Healthcare Competition 26 – Stroke, Phase 3.

Design, data collation and analysis:

A mixed-methods approach was undertaken using secondary data collected between April 2024-March 2026, collated by Lancaster University, consisting of:

- Regional NROL service data from L&SC and C&M
- Wider stroke and neuro-rehabilitation service data from L&SC and C&M
- Health Innovation North West Coast (HINWC) NROL 'Staff Coaching and Culture' and 'Patient and Public Involvement and Engagement' Reports^{1,2}
- Lancaster University NROL Health Economics Summary Report³
- NROL autonom-e Platform Report⁴

Quantitative data was primarily summarised using descriptive statistics and reporting, and qualitative using data extraction.

Key Findings

A visual display presents the convergence of key mixed-methods findings for each implementation outcome, addressing the evaluation questions and providing insights into areas for future focus.



Interpretation

Key findings interpreted in relation to NROL's potential value to NHS system-level healthcare priorities.



Conclusions

NROL is a scalable, digitally enabled model of multidisciplinary group rehabilitation that increases access to, and intensity of, community stroke and neurological therapy across NHS regions.

Successful scale-up and scale-out were demonstrated, with safe delivery and sustained use while preserving core programme components within real-world constraints. Rapid adoption in Cheshire and Merseyside demonstrated the model's transferability to this region when supported by structured adaptation, while expansion in Lancashire and South Cumbria resulted in marked increases in referrals, sessions, and patient contacts, supported by the introduction of NROL clinical leads.

NROL was acceptable to patients and staff and supported increased therapy provision within existing workforce capacity. Delivery was coordinated by a small, dedicated regional operational team, and in L&SC+ case digital operational infrastructure was introduced (autonom-e platform; see independent report for full summary⁴). Participation was broadly representative of the wider population it served, although assessment of equity of reach by ethnicity was limited.

Sustainability was underpinned by workforce capability development opportunities and iterative integration into existing organisational and system pathways, helping to address key challenges and build resilience under workforce pressures. Implementation challenges continue to be fed back, reviewed and acted upon. Efficiency and productivity gains were evident, with reduced travel, favourable staff-to-patient ratios, and effective use of assistant practitioner and assistant roles. Additional environmental benefits (i.e. avoided carbon emissions) align with NHS Net Zero goals.

In L&SC, successful engagement with system decision-makers culminated in recurrent commissioning of the NROL model, with the intention that the model of care will undergo further adaptation work for potential transformation into clinical pathways beyond stroke.

Recommendations

Sustain NROL delivery through regional coordination: Maintain dedicated regional NROL teams to support operations, quality, championing, and cross-organisational working. Consider involving patient-volunteers where appropriate.

Continue to embed NROL at a system-level: Continue integration within existing rehabilitation pathways, leveraging assistant practitioner and assistant roles, and promoting ongoing workforce capability development to support sustainable and efficient delivery.

Monitor and optimise NROL delivery over time: Monitor pragmatically and use proportionate evaluation including focuses on access, utilisation, and equity to ensure delivery operates as intended and continues to demonstrate value. An improved understanding of out-of-session practice would be valuable; digital functionality within the autonom-e platform may be able to support this. National initiatives to improve routine ethnicity recording should be supported to strengthen future equity assessment.

Progress commissioning and support structured scale-out: Progress commissioning discussions in C&M, informed by evaluation findings and commissioning in L&SC. Support structured scale-out to new regions and/or clinical pathways using structured adaptation. Scaling is expected to generate economies of scale, enhancing value and sustainability; however, it would benefit from national-level oversight and resourcing to support appropriate adaptation, consistency, and quality, and coordinated evaluation.

2. BACKGROUND

Stroke and other neurological conditions are common and a leading cause of disability. Rehabilitation plays a crucial role in minimising disability, maximising activity performance, and optimising quality of life for patients. Higher doses of rehabilitation are associated with better outcomes.⁵ However, in the UK patients often receive less rehabilitation than is recommended in national clinical guidelines with variable access across providers,^{6,7,8} often due to workforce shortages, resource constraints, and geographical barriers.^{9,10} Telerehabilitation is one solution that may help address shortfall in therapy provision and is an approach endorsed for use alongside conventional in-person therapy.^{6,7}

The NeuroRehabilitation OnLine (NROL) digitally enabled, multidisciplinary group rehabilitation innovation was developed and implemented to help stroke and neuro-rehabilitation services tackle system-level persistent challenges in; delivering recommended levels of therapy within existing workforce and resource constraints, inequities in access to therapy, workforce shortages and service fragmentation, whilst minimising environmental impact.¹¹ Delivered by the existing therapy workforce, NROL delivers programmes of targeted physical and talking therapy with embedded peer-support to community-based patients with stroke and neurological conditions remotely in real-time, via Teams, with dedicated technology assistance.

NROL was co-produced for use in the NHS and operationalised through a longstanding clinical-academic partnership between East Lancashire Hospitals NHS Trust (ELHT) and Lancaster University (LU), with funding from the SameYou charity. Initially implemented within ELHT,¹² the partnership established the service model, delivery infrastructure and implementation approach required for routine NHS delivery, and subsequently led regional scale-up across the Lancashire and South Cumbria Integrated Care System (ICS).¹³ Evaluation demonstrated strong early adoption by organisations, staff and patients, facilitated cross-organisational delivery, increased access to rehabilitation, and supported improvements in patient outcomes.¹⁴ Earlier developmental work that informed NROL included a pilot programme undertaken at the National Hospital for Neurology and Neurosurgery through a collaboration between University College London and the SameYou charity.¹⁵ NROL is recognised as an exemplar in UK stroke guidance and strategy.^{6,16}

The goal of the SBRI NROL project was to build on previous success by scaling and evaluating NROL to increase access to, and intensity of, rehabilitation in a new regional setting (scale-out), Cheshire and Merseyside (C&M) ICS, as well as expanding the rehabilitation offer at L&SC ICS (scale-up). Scale-up at L&SC included plans to increase the NROL team by introducing dedicated NROL clinical leads to champion an expanded NROL programme, helping move closer towards the national guideline recommendations of three hours of motor recovery and functional therapy per day.⁶ There was an aim to optimise the innovation through deployment of a digital platform (autonom-e) to improve patient access to NROL and operational efficiency. Workforce and environmental efficiencies were anticipated based on previous evaluations.^{12,14}

The goal of the SBRI NROL evaluation was to demonstrate real-world validation that NROL feasibly enhanced rehabilitation access and intensity, and to understand the value of NROL as a scalable, sustainable, equitable and efficient model of care. To do this Lancaster University evaluators collated and analysed mixed-methods data from SBRI NROL project partners. This report starts with an overview of context, before describing the design and methods, presenting the evaluation results, and interpreting the findings against potential value indicators aligned to NHS system-level healthcare priorities. The report has undergone independent review by Health Innovation North West Coast and been agreed by partners.

3. CONTEXT

Context is described using the updated Consolidated Framework for Implementation Research (CFIR), followed by a description of the four NROL cases for evaluation. CFIR is a widely used framework for understanding factors that influence implementation.^{17,18}

3.1 Innovation

 NROL as a regional innovation has been comprehensively described.¹¹ An overview of the core components and an example of groups is presented in Figure 1. In brief, NROL delivers digitally enabled (MS Teams) multidisciplinary group rehabilitation over repeating six-week 'NROL blocks.' Each block begins with an NROL introductory session, then patients follow individualised programmes including target therapy talking and/or physical targeted therapy groups with optional community peer-support groups for six weeks. Secondary prevention education is incorporated. The innovation is coordinated by a small, dedicated regional NROL team and groups are delivered by existing therapy staff across the region (shared-care approach) with support (NROL team therapy staff members, students, third-sector). To facilitate access, patients receive set-up and ongoing assistance from a NROL team Technology Support staff member, who is also present during NROL sessions. Technology support is extended to delivery staff. NROL is embedded within established neurorehabilitation care pathways to complement the existing rehabilitation offer (i.e. NROL is part of hybrid care).

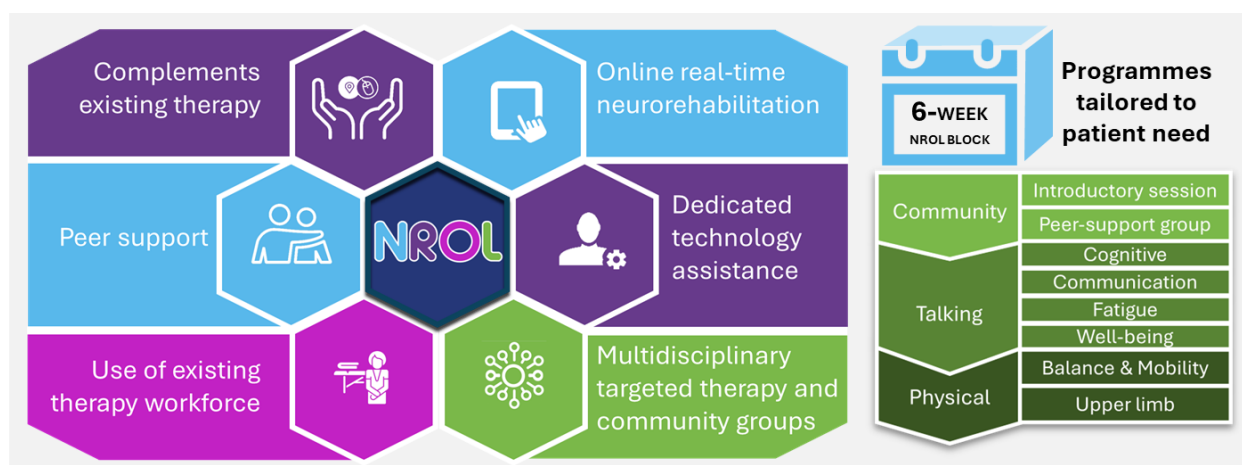


Figure 1: Overview of NROL core components and an example of NROL groups

NROL was introduced to the L&SC ICS in April 2022. The model was adapted for the C&M ICS in 2024, using ADAPT guidance,¹⁹ and introduced in September 2024. The co-produced adaptation process was written up and submitted to a peer-reviewed journal, with a preprint made available.²⁰

3.2 Individuals



Patients: Adults undertaking community neurorehabilitation for sudden onset or progressive/intermittent neurological conditions were referred to NROL by wider service therapy staff. In addition to service eligibility, inclusion required English proficiency (or translator access) and willingness to participate in online group therapy, with or without carer support. Participants required access to suitable digital hardware or connectivity.

Staff: Existing therapy staff from all involved services shared NROL group delivery, coordinated by a small, dedicated regional NROL team. Clinical-academics and NHS management provided oversight and strategic leadership.

3.3 Healthcare setting (Inner setting)

Two regional NHS integrated care systems (ICSs) in the North West of England were involved (Figure 2). NHS Trusts were eligible if they had services that provided community-based stroke and/or neurological rehabilitation.

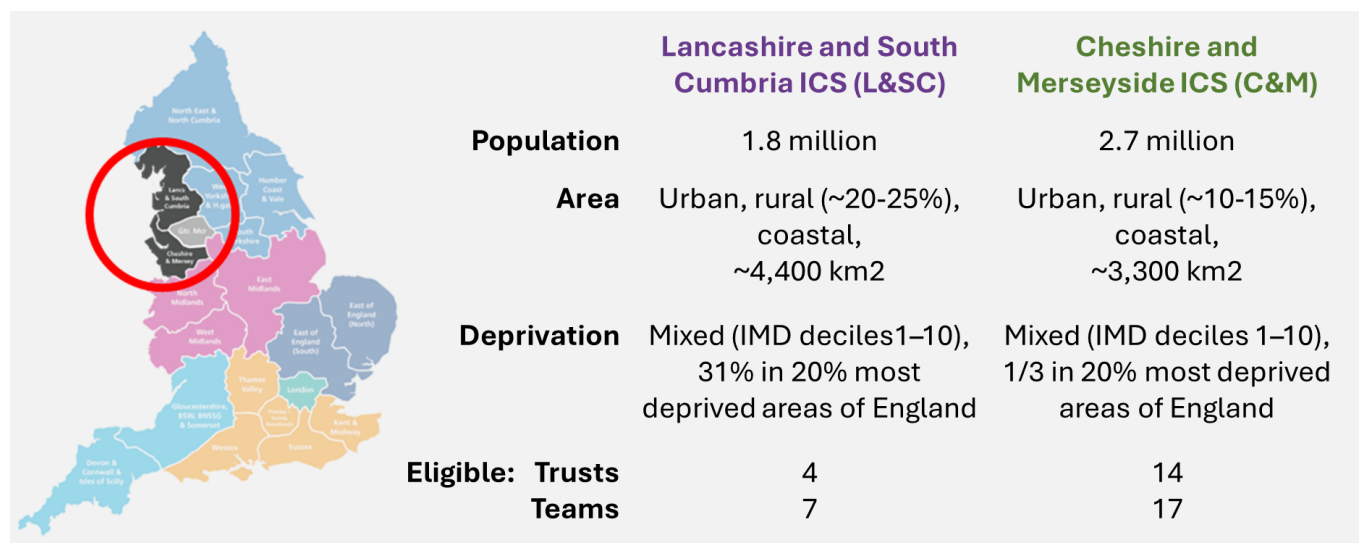


Figure 2: Context of NHS ICS regions

Both ICS regions cover a mix of urban, rural, and coastal communities; C&M has a larger population and a higher concentration of Trusts within a smaller geographical footprint. Across both regions, there are a range of deprivation levels, with areas of high deprivation (~1/3 in the 20% most deprived areas of England).²¹⁻²⁴

3.4 External influences (Outer setting)



The development of NROL, and the current project and its evaluation, were shaped by NHS strategic drivers, including national healthcare priorities to improve access, efficiency and outcomes, expand digitally enabled care, reduce health inequalities, respond to workforce pressures, and support environmental sustainability, as outlined in the NHS Long Term Plan.²⁵ These priorities were reinforced in the 10 Year Health Plan for England: fit for the future, the NHS Long Term Workforce Plan, the Core20PLUS5 approach and the 'Delivering a Net Zero Health Service' report.²⁶⁻²⁹ These areas were central to the SBRI Healthcare Competition 26-Stroke, Phase 3 Challenge.³⁰

3.5 NROL cases

NROL was scaled-up in the L&SC ICS and scaled-out to the C&M ICS. Four cases were evaluated to explore the scaling (Figure 3).

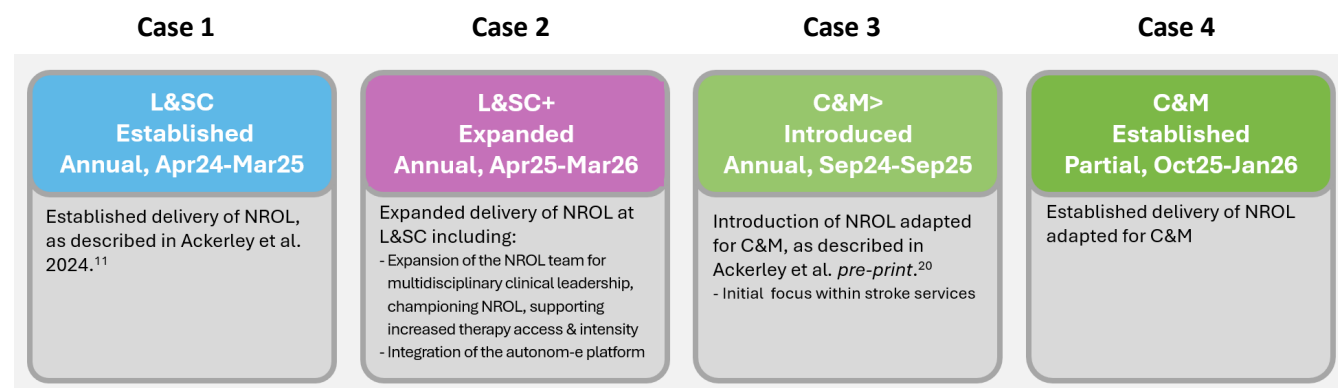


Figure 3: NROL cases for evaluation

3.6 Autonom-e Platform

The autonom-e platform was introduced to NROL in February 2026 during the L&SC+ case, to support scalable digital operations by improving patient access and operational efficiency. The platform is a customisable software system, developed by the Sheffield-based digital health company, ELAROS 24/7 LTD, for healthcare and research. The platform was pivoted from the company's "C19-YRS" specialist platform, a nationally recommended solution for NHS Long Covid Services, which was commissioned across L&SC's Long Covid clinical services in 2022. For the SBRI NROL project, ELAROS, in collaboration with the NROL team at L&SC and Lancaster University clinical-academics, led system development to enable intelligent group therapy scheduling to co-ordinate multiple series of staff and patient session appointments across an ICS region for NROL delivery, accounting for the necessary data governance requirements between organisations. The platform has four portals tailored to stakeholder groups with personalised account functions (Table 1).

Table 1: Autonom-e Platform portals and functions

Portal	Functions include:
NROL patient	Outcome measure completion; access to allocated sessions; access to relevant resources; session reminders; messaging with the NROL team
NROL delivery staff	Calendar view; access to allocated sessions; access to patient referral and records required for their delivery role
NROL operations	Referral processing; calendar planning; block scheduling; access to patient/staff/attendance records and data; resource upload
System Administration	ELAROS platform administration; access to aggregated, anonymised system data

An independent report provides an overview of the implementation of autonom-e for NROL, including patient and staff feedback, efficiency, and productivity review.⁴ Please refer to this report for full details. In the current evaluation, key insights relevant to organisational integration are included.

4. EVALUATION OVERVIEW

4.1 Purpose

The purpose of this evaluation was to determine whether NROL, a digitally enabled multidisciplinary group rehabilitation, could be feasibly delivered at scale across NHS regions to increase access to and intensity of stroke therapy in line with national stroke guidelines and offer a sustainable, equitable and efficient model of care. Findings will be interpreted to inform potential value indicators aligned to NHS system-level healthcare priorities, to help guide decisions about further spread and commissioning.

4.2 Evaluation outcomes, questions, and indicators

To operationalise the evaluation purpose through a structured lens, implementation was examined using selected Proctor's implementation outcomes (Figure 4). Proctor's implementation outcomes relate to the effects of implementation actions in healthcare and service delivery.³¹

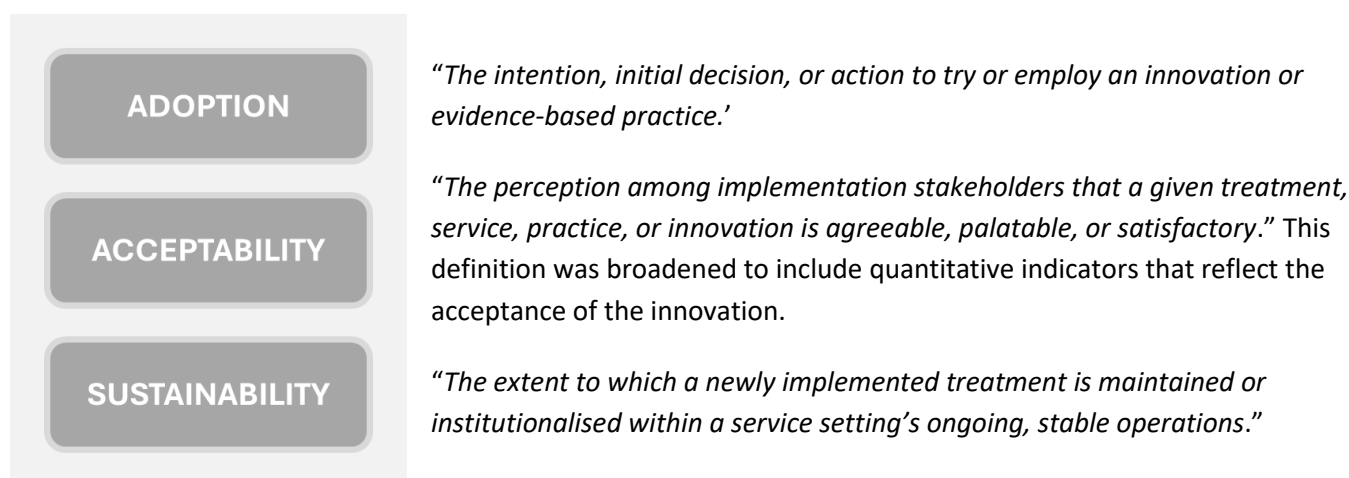


Figure 4: Selected implementation outcomes³¹

The following evaluation questions were asked: Across cases and regions,

1. Was NROL adopted when scaled; what did adoption consist of and what were key challenges and enablers?
2. Was NROL accepted, and a way to support increased therapy provision?
3. To what extent was NROL being sustained and how; and what were the efficiencies and productivity gains?

Fourteen evaluation indicators for addressing the evaluation questions were determined, based on previous evaluation and stakeholder engagement, and are outlined in Table 2.

Table 2: Evaluation indicators and specific indicator questions for each selected implementation outcome

Outcome	Indicator	Indicator question
Adoption	Participation	• Who participated? (organisations, staff, patients)
	Delivery	• What was delivered? (blocks, groups, sessions, contacts)
	Challenges and Enablers	• What were the key challenges and enablers?
Acceptability	Utilisation	• Was NROL utilised by staff and patients?
	Perceptions	• What were staff and patient perceptions of NROL?
	Safety	• Was NROL safe for patients?
	Therapy Provision	• Did NROL support increased therapy provision?
	Patient outcomes	• What were NROL participant health-related quality of life and activity performance outcomes?

CONTINUED		
Outcome	Indicator	Indicator question
Sustainability	Fidelity	• <i>Were the NROL core components preserved when scaled?</i>
	Sustained innovation	• <i>Were there continued participation, delivery, and utilisation over time?</i>
	Workforce capability	• <i>What training activities did staff complete?</i> • <i>What were staff perceptions on professional development?</i>
	Organisation integration	• <i>What processes, procedures, materials were enacted to facilitate sustainability, and what has been their impact?</i>
	Service efficiencies	• <i>Were anticipated service efficiencies from NROL's group and digital delivery formats observed? (e.g. staffing, travel, environmental)</i>
	Productivity	• <i>Were there productivity gains?</i>

4.3 Interpretation of potential value

The findings associated with the implementation outcomes were interpreted in relation to potential value indicators aligned to NHS system-level healthcare priorities.

Potential value indicators were derived from healthcare priorities detailed in the NHS key strategic documentation (Long Term Plans, 10 Year Health Plan for England, Core20PLUS5, Delivering a Net Zero Health Service) and focus areas of SBRI Healthcare Competition 26 – Stroke, Phase 3,²⁵⁻³⁰ and are presented in Figure 4.

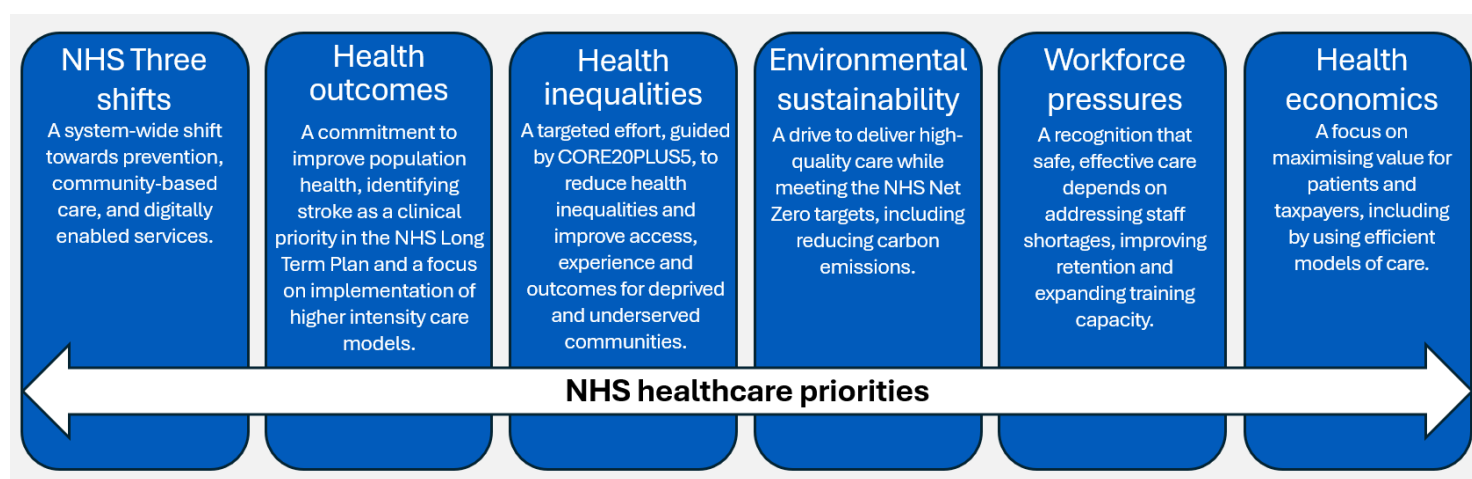


Figure 4. Potential value indicators aligned to NHS healthcare priorities

5. DESIGN AND METHODS

5.1 Design

An exploratory mixed-methods convergent parallel approach was undertaken using secondary data and is overviewed in Figure 5. Quantitative and qualitative data was collected throughout the evaluation period (April 2024-March 2026) by SBRI NROL partners and collated by Lancaster University. Results relating to the evaluation indicators were synthesised and interpreted under the selected implementation outcomes and summarised across cases. Findings were then interpreted to inform the potential value indicators to NHS system-level healthcare priorities.

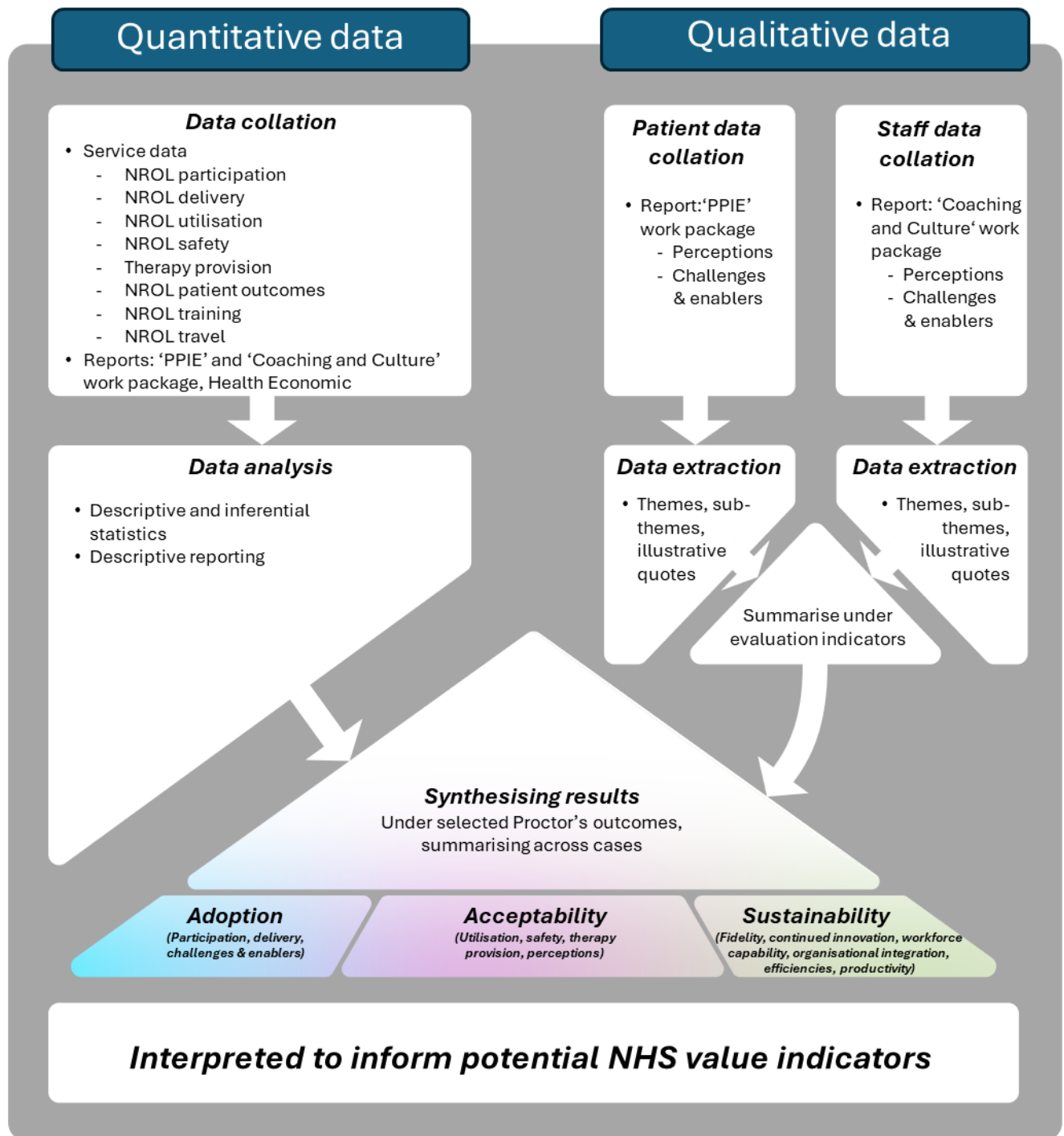


Figure 5: NROL mixed-methods evaluation design

5.2 Methods

Data collation

Secondary data sources are summarised by case in Table 3 (see Appendix 1 for further detail). Data source linkage to evaluation indicators, specific indicator questions, and data analysis is provided in Appendix 2.

Table 3: Secondary data sources^{F1}

Type	Source	Case			
		L&SC Established Annual, 6 blocks (Apr24-Mar25)	L&SC+ Expanded Annual, 6 blocks (Apr25-Mar26)	C&M> Introduced Annual, 6 blocks (Sep24-Sep25)	C&M Established Partial, 2 blocks (Oct25-Mar26)
Quantitative	NROL service data	✓ n=333	✓ n=405	✓ n=337	✓ n=132
	Relevant wider stroke and neuro- rehab service data	✓	✓	✓	✓
	HINWC reports from 'Patient and Public Involvement and Engagement' work package: ² Quantitative content		✓ Survey n = 62		
	LU 'NROL Health Economic Summary' report ³	✓	✓		
	NROL autonom-e Platform Report: ⁴ Quantitative content		✓ Survey n= 8 staff n= 32 patients		
Qualitative	HINWC reports from staff 'Coaching and Culture' work package ² and field notes		✓ Workshops 1&3 n=15, n=45	✓ Workshop 2 n =32	✓ Workshop 3 n=45
	HINWC reports from 'Patient and Public Involvement and Engagement' work package: ² Qualitative content and field notes		✓ Survey n=62		
			✓ Focus groups n=7, n=6		
			✓ Case study n=1		✓ Case study n=1
	NROL autonom-e Platform Report: ⁴ Qualitative content		✓ Survey n=8 staff n=32 patients ✓ Focus group n=6 patients		

^{F1} An 'NROL block' is a six-week structured programme of digitally enabled multidisciplinary group rehabilitation sessions.

Data analysis

For the service data, quantitative data were primarily summarised using descriptive statistics and reporting, with some inferential statistics. For NROL service data, an intention-to-treat approach was applied to participants who dropped out (i.e. after at least one targeted therapy session). Analyses were conducted using available data for each variable. Where missingness exceeded 5%, missing values were reported as a separate category. Quantitative analyses were performed using Microsoft Excel (V.2602) and IBM SPSS Statistics V.31.0. Data processing for NROL patient outcomes (EQ-5L-5D for health-related quality of life,³² Patient Specific Functional Scale for activity performance (PSFS),³³ and NROL travel is detailed in Appendix 2. All statistical tests were two-tailed, with a significance threshold of $p < 0.05$. Where normality was not assumed (Shapiro-Wilk test $p < 0.05$), non-parametric testing was used and medians, with ranges or IQRs, reported.

Relevant service data and analyses were shared to inform the LU NROL Health Economic Summary.³ Key findings were then extracted and incorporated into the evaluation. For the HINWC reports,^{1,2} both quantitative data and qualitative key findings, comprising themes, sub-themes and illustrative quotes, were extracted and incorporated.

5.3 Ethics statement and governance

The host organisation, East Lancashire Hospitals NHS Trust (ELHT), registered the SBRI NROL project as a service evaluation (SBRIH26P3050). The evaluation was also approved as a service evaluation by the Lancaster University Faculty of Health and Medicine Research Ethics Committee (FMH-2025-5237-ExRev-1). Data sharing provisions were included within contractual arrangements between SBRI NROL project partners. Data Protection Impact Assessments (DPIA) approvals were obtained for L&SC but delayed for C&M; as a result, data processing for this region remained within C&M services, with only aggregate data shared for this evaluation.

5.4 Data limitations

The use of collated real-world, routinely collected service data was pragmatic but had some constraints. Available data allowed insights focused predominantly on NROL participants, and access to wider service data varied across Trusts, limiting some analysis. Some patient characteristics (e.g. ethnicity) were less frequently reported and prevented some review; shortcomings in ethnicity reporting are an ICB system concern and improvement a priority area.³⁴ Governance timelines and data-sharing approvals also influenced data availability for C&M. As noted, only aggregate quantitative data were available, limiting more granular analysis. Opportunities for HINWC to gather patient and carer perspectives were limited, affecting representativeness. In addition, patient outcome data on NROL exit in C&M were not included due to data constraints that did not support meaningful analysis.

Comparative analysis of therapy provision (NROL vs. non-NROL) using participating Trusts' Sentinel Stroke National Audit Programme (SSNAP) datasets was not pursued due to inconsistencies within sampled datasets. Workshop accounts indicated variation in how teams recorded NROL activity in SSNAP,¹ highlighting this as a system alignment challenge rather than a compliance issue. Challenges were linked to the major changes to SSNAP dataset requirements from October 2024, which are expected to require time for full organisational integration. Consequently, NROL service data were used for non-comparative analysis, supported by findings from previous NROL comparative evaluation and national-level SSNAP community results.^{14,35}

6. RESULTS

For each implementation outcome, findings related to evaluation indicators are presented for each case (where relevant) and a cross-case summary provided. Key findings are summarised in a visual display.

6.1 ADOPTION NROL participation, delivery, challenges, and enablers

6.1.1 Participation: organisation and staff

NROL organisation and staff participation are presented by case in Table 4.

Table 4: NROL organisation and staff participation summary by case^{F2}

	L&SC Established Annual, 6 blocks				L&SC+ Expanded Annual, 6 blocks				C&M> Introduced Annual, 6 blocks				C&M Established Partial, 2 blocks			
Trusts	4				4				10				10			
Teams	7				7				14				14			
NROL team	Operational lead (1.0 FTE)				Operational lead (1.0 FTE)				Operational lead (0.6 FTE)				Operational lead (0.6 FTE)			
	Technology support (1.0 FTE)				Technology lead (0.2 FTE)				Tech support/Evaluator (1.0 FTE)				Tech support (1.0 FTE)			
	Assistant (1.0 FTE)				Assistant/Tech support 1.0 FTE)				Tech support/Assistant (1.0 FTE)				Tech support/Assistant (1.0 FTE)			
	Administrator (1.0 FTE)				Administrator (1.0 FTE)				Administrator (1.0 FTE)				Administrator (1.0 FTE)			
					3x NROL clinical leads (1.4 FTE)											
Delivery team	Therapists	58	PT	31%	Therapists	70	PT	31%	Therapists /Nurse	57	PT	29%	Therapists /Nurse	32	PT	26%
			OT	28%			OT	36%			OT	29%			OT	26%
			SLT	12%			SLT	15%			SLT	25%			SLT	24%
			Psy	4%			Psy	4%			Psy	2%			Psy	0%
			Diet	3%			Diet	1%			Diet	2%			Diet	5%
			Nurse	-			Nurse	-			Nurse	2%			Nurse	3%
	AP/Assistants	17	AP	23%	AP/Assistant	10	AP	13%	Assistants	8	Assist	12%	Assistants	6	Assist	15%
	NROL team	2			NROL team	5			NROL team	2			NROL team	2		
	Students	6			Students	4			Students	7			Students	5		
	Stroke Assn.	4			Stroke Assn.	1			Stroke Assn.	4			Stroke Assn.	1		
	Pt. volunteer	0			Pt. volunteer	0			Pt. volunteer	0			Pt. volunteer	0		
Observers	Staff	118			Staff	48			Staff	85			Staff	23		

Cross-case summary:

- **Broad organisational participation was observed across both regions**, with 14/18 eligible Trusts and 21/24 Teams involved.^{F3}
- **NROL in each region was coordinated by a small, dedicated regional NROL team**. C&M prioritised two technology support staff reflecting the size of the region; one with an assistant background, one with evaluation skills. For the L&SC+ case, three dedicated clinical leads were recruited to provide multidisciplinary clinical leadership, champion NROL and support expansion, and the NROL assistant was trained to provide technology support.
- **Existing multidisciplinary therapy staff delivered NROL sessions**. This involved approximately 65-80 different staff per year (~35-42% of the wider service therapy staff), about 25-40 per block.
- **Student and third-sector contributed to delivery**. There was no patient-volunteer involvement, as there has been previously.^{12,14} This was recognised in participant feedback as something that would be valued.
- **Wider service therapy staff observed session delivery** for experiential learning.

"Within a year we've gone from kind of four or five Trusts involved to getting all Trusts involved and on board."

C&M NROL Operational Team member

"Maybe invite a former stroke patient...to show vulnerable patients what they could possibly achieve with the lessons provided"

NROL participant, Service Feedback

^{F2} PT = Physiotherapist, OT = Occupational Therapist, SLT = Speech and Language Therapist, Psy = Psychologist, Diet = Dietician, AP = Assistant Practitioner, Assist = Assistant. Existing multidisciplinary therapy staff = Therapists and APs/Assistants. NROL team = NROL team therapy staff members who are therapists/therapy assistants and were able to facilitate group sessions (i.e. operational and clinical leads, assistant).

^{F3} In C&M, four Trusts did not to participate due to competing priorities and hesitancy around new initiatives and technology, and three Teams remained to be onboarded at end of the evaluation period.

6.1.2 Participation: patients

NROL patient participation and characteristics are presented by case in Table 5 (for full participation profiles see Appendices 4 and 5). Geographical spread is shown in Figure 6. L&SC data were analysed to review health inequalities.

Table 5: NROL patient participation and characteristics summary by case

	L&SC Established Annual, 6 blocks		L&SC+ Expanded Annual, 6 blocks		C&M> Introduced Annual, 6 blocks		C&M Established Partial, 2 blocks	
	N = 333		N = 405		N = 337		N = 132	
	Participants n=228	Did not start n=105	Participants n=268	Did not start n= 137	Participants n=211	Did not start n= 126	Participants n=80	Did not start n= 52
Characteristic								
Age years, median (range)	59 (23-89)	61 (20-89)	62 (28-97)	63 (24-97)	61 (19-88)	70 (43-96)	63 (34-93)	67 (34-86)
Sex, % male	60%	44%	53%	53%	59%	54%	68%	60%
Ethnicity White, %	83%	87%	81%	71%	89%	83%	90%	96%
Asian, %	4%	4%	2%	3%	4%	6%	0%	2%
Black, %	<1%	0%	1%	1%	2%	5%	3%	0%
Other, %	1%	0%	<1%	1%	1%	1%	1%	0%
Not stated/Not known, %	11%	10%	16%	25%	4%	6%	6%	2%
IMD decile, median (range) 1 = most deprived, 10 = least deprived	5 (1-10)	4 (1-10)	6 (1-10)	5 (1-10)	5 (1-10)	5 (1-10)	4 (1-10)	5 (1-10)
IMD in most deprived 20%, % IMD decile ≤2	24%	31%	21%	29%	36%	39%	31%	35%
Rural, %	20%	22%	19%	25%	8%	6%	9%	8%
Living alone, %	15%	26%	19%	22%	22%	24%	23%	17%
Stroke, %	74%	84%	73%	75%	100%	100%	99%	100%

Figure 6: NROL participant map

Cross-case summary:

- **NROL referrals were received for 1207 patients and 787 patients participated (83% stroke).** In C&M, referrals represented approximately 17% of the wider stroke caseload. In the L&SC, referrals represented about 8% of the wider stroke and neurological caseload, increasing to about 9% in the L&SC+ case (stroke patients ~10% in both cases). In the L&SC+ case, NROL referrals increased by 22% and participants by 18%, indicating strengthening adoption within existing services. Overall, approximately one-third of patients referred to NROL did not start NROL, reflecting a variety of clinical, practical, other, and unknown reasons (Appendices 4 and 5).
- **NROL patients had a wide range of demographics and were geographically spread (>8950km²), generally representative of regional contexts and wider stroke populations.** Ages ranged (19-97), and deprivation levels were mixed (IMD 1-10), with reach into the most deprived areas (≥21% from the 20% most deprived areas of England). Representation from ethnic minority groups was low; but consistent with national and regional stroke population profiles (Appendix 6). Access was inclusive of patients living rurally and/or alone, and generally aligned to regional context (Figure 2).

Health inequalities small-scale review:

Differences or associations between patient characteristics and participation status (patients referred to NROL who participated vs. those who did not start) were examined using pooled L&SC NROL data (Appendix 7).

- **Residence in the 20% most deprived areas was associated with a lower likelihood of starting NROL after referral** ($p<0.05$), this warrants further investigation.
- **No other characteristic showed a statistically significant difference or association** (all $p\geq0.05$). This included age ($p>0.1$). However, the median age of stroke patients participating in NROL (61 years) was lower than that observed in national and regional stroke populations (75-78 years) based on descriptive comparison (Appendix 6); this may warrant further exploration.
- **Ethnicity was not reviewed due to data missingness** which limited assessment of representativeness and equity of reach; further investigation is needed.

6.1.3 Delivery

NROL delivery is presented by case in Table 6. The overall group offer for each case is shown in Figure 7 (Appendix 8 provides detail by block).

Table 6: NROL delivery summary by case

Delivery metric (excludes Introductory sessions)	L&SC Established Annual, 6 blocks	L&SC+ Expanded Annual, 6 blocks	C&M> Introduced Annual, 6 blocks	C&M Established Partial, 2 blocks
Blocks delivered, n	6	6	6	2
Different groups delivered, n	9	12	8	8
Sessions delivered, n	281	473	240	75
Patient contacts, n	1905	2563	1180	548
Existing therapy staff facilitation contacts, n	530	536	457	151
NROL team therapy staff facilitation contacts, n	39	458	86	45
Cross-organisational delivery, % sessions ≥ 2 Trusts	44%	11%	20%	20%
NROL technology support contacts (in-session), n	281	457	414	148

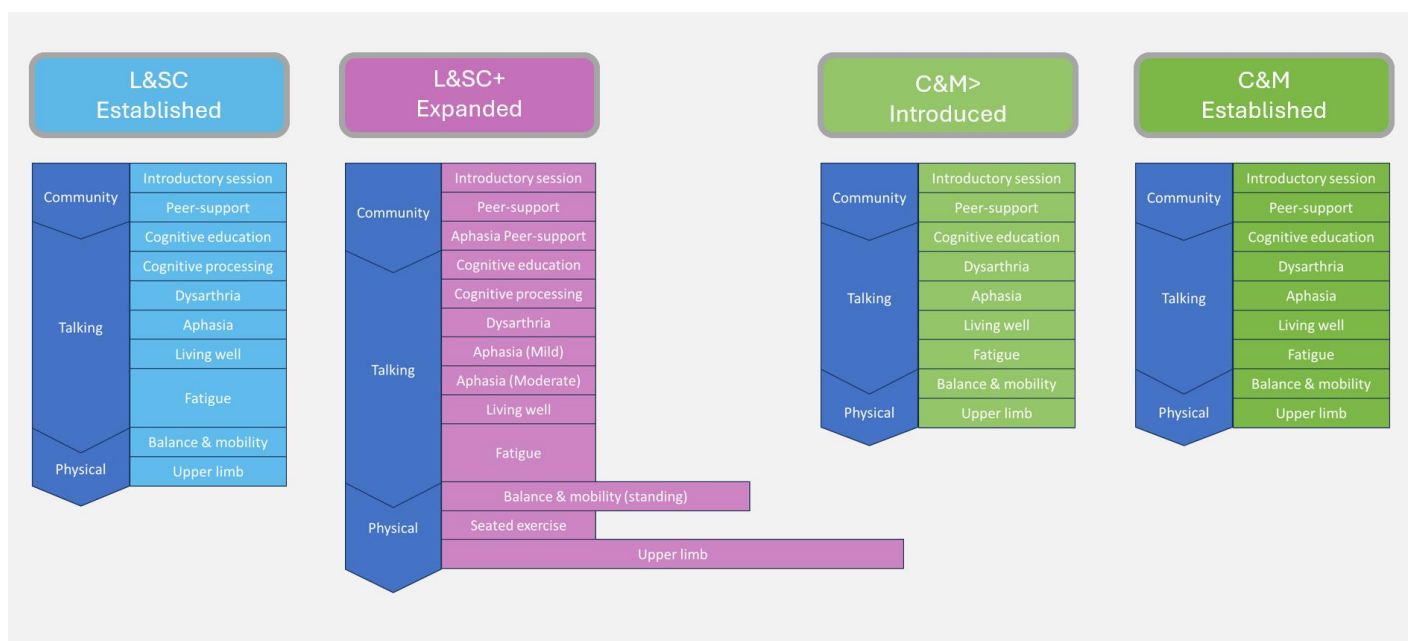


Figure 7: Overall NROL group offer by case^{F4}

Cross-case summary:

- **Across all cases, 20 NROL blocks were delivered, consisting of up to 12 multidisciplinary groups with 1069 sessions, and resulting in 6196 patient contacts.** In C&M, eight blocks were delivered, consisting of eight different groups with 315 sessions, and 1728 patient contacts. In the L&SC+ case, expansion consisting of three new groups and multiple weekly sessions for two physical groups, achieved a 68% increase in annual sessions (281 to 473) and 35% increase in annual patient contacts (1905 to 2563).
- **Existing therapy staff provided the majority of the group facilitation contacts in all cases.** In the L&SC+ case, NROL team therapy staff increased their contribution to group facilitation from 7% to 46%; mainly driven by NROL clinical leads facilitating the new groups and some additional sessions, and use of the NROL assistant performing both assistant and technology roles within some sessions.
- **Cross-organisational delivery was featured across all cases (11-44%).**

^{F4} For group boxes, width represents sessions held per week (e.g. double width = 2 sessions) and height represents the number of cohorts run (e.g. double height = 2 cohorts).

- **Technology staff supported delivery in most sessions.** In C&M, two technology support staff were typically present although one was performing a dual assistant role in some sessions; this could be reviewed for potential efficiencies.

6.1.4 Challenges and enablers

Key enablers and challenges to NROL adoption derived from HINWC reports^{1,2} are presented across cases in Tables 7 and 8.

Table 7: Key enablers to NROL adoption

Enabler	Theme	Illustrative quotes / subthemes
• Digital format, with dedicated technology support	Digital format enabled improved patient access to rehabilitation, with benefits including reduced fatigue/travel and increased family involvement.	<i>"Being online was useful when not able to drive." NROL participant, Focus group</i>
	Importance and value of technology support were strongly emphasised by patients and staff. Staff noted light-touch support typically overcame technical barriers. 89% of surveyed patients found joining sessions online easy, and patients rarely reported technology issues as a reason for non-participation once referred (Appendices 4 & 5). However, the digital format may have influenced referral decisions (see Table 8).	<i>"I had never done Teams before, but I was able to join with [Tech Support]'s help." NROL participant, Survey</i>
• Multidisciplinary involvement and shared ambition	Success was seen as dependent on multidisciplinary involvement, with key roles for managers, therapists, operational leads, external partners, and patients. Staff in both regions described shared ambition across disciplines to enhance care for patients.	It was reflected by staff that each stakeholder group brings unique influence and expertise, and collaboration is vital to embed NROL into routine practice and achieve growth targets.
• Staff training, particularly observations	Building therapist confidence and capability through training and support was seen as central and perceived as effective, with strong consensus of the value of observing NROL sessions.	Benefits of observation included: increased confidence for group facilitation, improved understanding of group dynamics, better referral quality, professional development.

Table 8: Key challenges to NROL adoption

Challenges	Theme	Illustrative quotes / examples of impact
• Referral decisions	Some staff did not approach patients to discuss referral due to assumptions about age, communication/cognitive level, digital capability, and lack of carer support.	<i>"Unconscious bias leading to conversations about NROL not being opened; additional barriers even when conversations do happen." Therapy staff, Workshop</i>
	Staff reported some patients declined NROL referral due to a lack of suitable technology or connectivity, discomfort with group-based format, or not fitting around return to work.	Culture changed over time, with a shift towards more proactive inclusion asking <i>"Why not NROL?"</i> (see Section 6.3.4).
• Staff-perceived capability and capacity to deliver	Confidence in adapting to new technology was noted as a barrier. Time constraints, competing priorities and administration burden challenged delivery.	Staff recommendations for system integration and efficiencies improvements (see Section 6.3.4) and expanded NROL training (see Section 6.3.3) were acted upon.

• Communication of NROL information	Both staff and patients wanted more accessible information about NROL, particularly the groups available. Staff indicated programme visibility could be improved by embedding NROL within meeting agendas etc.	Improved communication about the NROL offer was enacted by resource development, platform integration, and stakeholder interactions (see Section 6.3.4).
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6.2: ACCEPTABILITY NROL utilisation, perceptions, safety, therapy provision, and patient outcomes

6.2.1 Utilisation

NROL utilisation is presented for each case in Table 9.

Table 9: NROL utilisation summary by case^{F5}

Utilisation metric (excludes Introductory sessions)	L&SC Established Annual, 6 blocks	L&SC+ Expanded Annual, 6 blocks	C&M> Introduced Annual, 6 blocks	C&M Established Partial, 2 blocks
Staff				
Targeted therapy group block capacity, median %	83%	73%	84%	105%
Patient				
Drop-out rate (i.e. after ≥1 targeted therapy session), %	16%	12%	7%	8%
Sessions attended per participant, median (range)	6 (1-58)	7 (1-50)	7 (1-23)	6 (1-18)
Targeted therapy patient session attendance rate, %	67%	59%	61%	67%
Peer-support group, % total NROL participants	42%	44%	43%	39%
Aphasia peer-support group, % aphasia group patients	-	41%	-	-
Participants in ≥1 block, %	18%	16%	9%	11%

Cross-case summary:

- **Strong utilisation of NROL by wider service staff**, with therapy group capacity at the start of an NROL block typically filled to ≥73% through referrals. In C&M, median block capacity was 84% in the first year. For the subsequent partial period, median capacity was 105%, indicating that groups were oversubscribed; this approach was reported to be intentional to account for anticipated withdrawals and drop-outs. In the L&SC+ case, capacity utilisation reduced slightly following programme expansion (83% to 73%), which likely reflects the introduction of new groups requiring time to establish.
- **Good patient utilisation, although scope for optimisation.** In C&M, patients attended a median of 6-7 sessions each, and targeted therapy session attendance rates were adequate (≥61%). In the L&SC+ case, median session attendance increased modestly from 6 to 7 (6 to 8 for participants with stroke). Targeted therapy attendance rate declined (67% to 59%), which likely reflects the inclusion of multiple weekly physical group sessions, again requiring time to establish. This is supported by a reduction in physical groups attendance (60% to 51%) and a smaller decline in talking groups (72% to 68%).
- **Peer-support groups were well utilised**, with about 40% of patients choosing to attend despite their optional nature.
- **Repeat use of NROL was observed**, with 9-18% of participants engaging in more than one NROL block.

^{F5} Targeted therapy group block capacity reflects the proportion of targeted therapy group patient allocation opportunities filled at the start of the NROL block. The Peer-support group has optional attendance for all NROL participants. The Aphasia peer-support group has optional attendance for all patients participating in an Aphasia group.

6.2.2 Perceptions

Key perceptions related to NROL acceptability were derived from HINWC reports,^{1,2} and NROL service data, and are presented in Table 10. Patient perceptions predominantly reflect the views of L&SC participants due to more limited qualitative data availability for C&M.

Table 10: NROL patient and staff perceptions across cases

Theme	Patients	Staff	Illustrative quotes / subtheme
• Perceived value for patients	89% of survey respondents felt NROL was an important part of their rehabilitation despite some having initial reluctance. NROL was reported as providing a vital source of purpose, confidence, and wellbeing support. Many participants felt NROL complemented their face-to-face therapy. Those with previous stroke rehabilitation experience without NROL, reported NROL increased their access to therapy sessions and materials.	Staff reported that NROL improves access to therapy and increases therapy intensity, and that patients consistently valued the routine, peer-support and community fostered by NROL.	<i>"I found the whole experience on the NROL course very worthwhile... even though I nearly had second thoughts about doing the course due to my high anxiety levels."</i> NROL participant, Survey <i>"The service is a life line...there to help, support and reassure that there will be a light at the end of the tunnel."</i> NROL participant, Focus Group <i>"I think it would benefit most stroke patients across the country and save travel time and I think NHS money. I believe in doing it right and doing it in a human way."</i> NROL participant, Case Study
• Generally high patient satisfaction and staff recognised benefits	Patient experience was predominantly positive, with 94% of survey respondents rating the overall NROL experience as good or very good, 77% reporting they had the support they needed, and 95% expressing trust in NROL staff and feeling treated with dignity and respect.	Beyond recognising value for patients, staff reported benefitting from professional development, innovation, reduced travel, collaboration, role flexibility e.g. remote, part-time.	<i>"Everyone involved with the NROL team have been absolutely brilliant with encouraging and prepared to listen"</i> NROL participant, Feedback <i>"Liked that the slides were shared after each session so I could show my family and explain what I had to do which really helped."</i> NROL participant, Survey Staff feedback that opportunities for professional development, leadership roles, and agile roles may contribute to greater job satisfaction.
• Group format seen as highly beneficial for peer-support by many, but not for all	91% of survey respondents liked that NROL was a group activity, with reports that group interaction had significant social and motivational benefits. A shared environment helped reduce feelings of isolation. However, some participants reported challenges with aspects of group-format, such as being on camera or background noise.	Staff reported that patient empowerment was evident, although noted that some patients disliked group scenarios limiting their participation.	<i>"Was great to share experiences, people were amazing and it made you feel you weren't alone."</i> NROL participant, Survey <i>"If you went to a hospital you'd be on your own, perhaps just one-on-one?... I don't think it would be the same as chatting to everyone..."</i> NROL participant, Focus Group <i>"The sessions were great, but sometimes lost concentration if participants had their microphones on."</i> NROL participant, Feedback <i>"Seeing patients empower each other changed the whole feel of rehab."</i> NROL therapy staff, Workshop
• Some reservations with mixed condition and ability groups	Some patients with a degenerative disease expressed finding it discouraging to see others improving when they knew they would not, with some suggesting condition-focussed groups. Ability-specific groups was recommended by some for speech groups.	Staff noted a need for lower-level physical groups.	<i>"I have mixed feelings, to be honest I think it was really nice to be able to hear that I'm not on my own and see everyone else but my illness won't get better."</i> NROL participant, Focus Group <i>"No group for low level upper limb and balance."</i> NROL therapy staff, Workshop

6.2.3 Safety

NROL safety was reviewed using NROL service records, and HINWC reports,² and is summarised for each region.

Cross-region summary:

- **NROL was safely delivered in both regions.** Over the evaluation period, in L&SC there were two falls (both non-injury events with session continuation) and in C&M there was one fall (a non-injury fall with session discontinuation). In both regions, NROL staff followed standard operating procedure (SOP) guidelines for managing and documenting incidents; no first aid was required, follow-up check-ins were completed, and no further action was required. In L&SC, one additional event was recorded: a mental wellbeing request relating to additional psychological support by a patient. This was communicated to the patient's referrer and escalated appropriately by the patient's service, with the patient receiving ongoing follow-up. During feedback, patients described NROL as providing a safe and encouraging environment.

6.2.4 Therapy provision

Delivery and utilisation metrics were used to determine the amount of NROL therapy hours provided by staff and received by participants and summarised across cases. Findings were interpreted alongside NROL Health Economic Summary and HINWC reports,^{2,3} and national stroke audit community results.³⁴

Cross-case summary:

- **Across cases, about 1,069 hours of therapy were provided, with 6,196 hours received by participants through group-based delivery.** In its first year, C&M provided 240 hours and patients received 1180 hours, with growth indicated for the next annual period (Table 6).
- **NROL supported more intensive therapy, marking progress toward national stroke guideline therapy targets.** Participants typically received a median of 360-420 minutes of therapy from NROL sessions alone (range 60-3,480), alone exceeding the SSNAP-reported community median of 345 minutes total therapy. As detailed in the NROL Health Economics Summary, most NROL-delivered therapy is additional rather than substitutive; reinforcing its meaningful contribution to recommended rehabilitation intensity as part of hybrid care. In the L&SC+ case, planned expansion increased therapy hours provided by 68% (281 to 473) and hours received by 35% (1,905 to 2,563), indicating that the growth in therapy provision outpaced patient utilisation; ongoing monitoring is recommended. Median NROL therapy received by stroke patients increased from 360 to 480 minutes (+33%). Staff and patient feedback reinforced the perceived value of NROL for increasing therapy intensity
- **NROL may have supported out-of-session practice.** Patient feedback indicated that resources (e.g. patient practice videos) facilitated independent activity between sessions. Quantitative data capture on out-of-session practice would strengthen future evaluation.
- **NROL facilitated more equitable therapy and may help address unmet need.** Beyond geographical access advantages, regional delivery enabled access to therapies not available in some Trusts (e.g. psychology support) and allowed group therapy where local impairment incidence was low (e.g. aphasia). Demand for the fatigue group was consistently high. In L&SC, most NROL blocks were run with two fatigue cohorts and frequently started at full capacity, signalling this group may be addressing an unmet need.

"My greatest achievement was the Stand Sit Challenge...I do that every day and it is getting easier." NROL participant, Focus Group

"Where I live is isolated so not everything is available but the online sessions really helped me." NROL participant, Survey

6.2.5 Patient outcomes

NROL self-reported patient outcome data were available for the L&SC ICS region and are presented in Table 11. Key themes and illustrative quotes from HINWC reports are incorporated.²

Table 11: NROL patient outcomes for quality of life (EQ-5D-5L) and activity performance (PSFS) for L&SC^{F6}

	Measure	Median entry (IQR)	Median exit (IQR)	p-value	Mean difference (SD)	% Improved or stable (exit-entry change score ≥ 0)	% met or exceeded MCID
L&SC Established Annual, 6 blocks	EQ-Index (n=172)	0.545 (0.257-0.682)	0.585 (0.331-0.733)	0.004	0.047 (0.225)	61%	35%
	EQ-VAS (n=172)	50 (40-70)	60 (40-75)	0.021	3.24 (20.02)	68%	38%
	PSFS (n=201)	4.00 (3.00-5.33)	5.33 (4.00-7.33)	<0.001	1.27 (1.86)	82%	17%
L&SC+ Expanded Partial, 5 blocks	EQ-Index (n=113)	0.624 (0.443-0.730)	0.631 (0.522-0.735)	0.157	0.031 (0.211)	60%	29%
	EQ-VAS (n=113)	60 (50-75)	65 (50-75)	0.020	3.42 (17.2)	75%	40%
	PSFS (n=119)	4.00 (2.67-5.33)	6.00 (4.33-7.00)	<0.001	1.62 (2.09)	86%	24%

Cross-case summary:

- Self-reported activity performance improved for many during both L&SC ICS cases.** At group level, statistically significant improvements in paired Patient Specific Functional Scale (PSFS) scores were observed in both cases ($p < 0.001$), indicating a consistent modest positive shift; however mean differences remained below the minimally clinically important difference (≥ 2.8 points), consistent with previous evaluation.^{12,14} At an individual level, 82-86% of participants improved or remained stable. During feedback opportunities, participants reported improvements in mobility, coordination, speech and daily functioning and shared emotive examples of meaningful functional improvement and achievement of personal goals.

"After my stroke I had no idea how to use my Xbox which I had been using for some time before, NROL helped with me with my coordination and I am now back and 'Top of the Leader Board' NROL helped me 100%."

NROL participant, Survey

- Perceived overall quality of life improved for many during both L&SC ICS cases.** At group level, statistically significant improvements in perceived overall current health (paired EQ-VAS) were observed in both cases ($p < 0.05$), indicating a consistent modest positive shift; however mean differences remained below the minimally clinically important difference (≥ 10 points), consistent with previous evaluation.^{12,14} Changes in EQ-5D health state (paired EQ-Index) were statistically significant in the L&SC case but not in the L&SC+ case, and did not meet the MCID (≥ 0.10 points). At an individual level, $\geq 60\%$ of individuals improved or remained stable for their measures of quality of life.
- Some participants reported that the structured nature of NROL supported progress monitoring.**

"Repeating sessions helped me measure my progress."

NROL participant, Survey

^{F6} EQ-5D-5L measures health-related quality of life.³² Patient Specific Functional Scale (PSFS) measures activity performance.³³ See Appendix 2 for further detail. IQR=interquartile range. SD = standard deviation. MCID = meaningful clinically important difference. For L&SC+, data from the final block was not available due to platform integration. Outcomes reported are for L&SC only, reflecting limited outcome data availability for C&M.

6.3.1 Fidelity

Fidelity was defined as the extent to which NROL core components were delivered as intended. Key findings for adoption and acceptability were examined against these core components.

Cross-case summary:

- **NROL core components were preserved during scale-up within the original region, and scale-out to a new region.**



Online real-time neurorehabilitation was provided in all cases, to over 750 patients.

Dedicated technology assistance, including in-session and 1:1 patient set-up & ongoing support, was provided in all cases by ≥ 1 NROL technology support staff. Therapy staff were offered technology training. Technology assistance was identified as a key enabler.

Multidisciplinary targeted therapy and community groups were run in all cases (8-12 different groups).

Existing therapy staff provided the majority of NROL staff contacts, using a shared care approach with all Trusts contributing to delivery. Cross-organisational session delivery featured but could be developed (see below).

Peer-support was embedded through the group-based format and dedicated peer-support groups, with about 40% of patients choosing to attend an optional community peer-support group across cases. An Aphasia peer-support group was introduced in L&SC during NROL expansion (L&SC+ case).

Complemented existing therapy. Participants reported NROL complemented their face-to-face therapy.

- **Cross-organisational NROL session delivery remained a feature across cases (11-44%), but at lower levels than previously reported.**¹⁴ Benefits of cross-organisational delivery has previously been reported; including potential staffing efficiencies (e.g. reduced need for multiple therapy staff from any one Team per session, flexibility to temporary cover staff shortages across teams which in turn limits regional inequity), as well as opportunities for cross-regional shared learning and professional networking. Workshop accounts indicate that staff expressed an “appetite” for cross-organisational working,¹ suggesting this could be further developed.

6.3.2 Sustained innovation

Sustained innovation was defined as the continuation of NROL across multiple blocks, characterised by stable or increasing participation and ongoing delivery and utilisation. Key service metrics are presented in Table 12, including previous evaluation data for L&SC Years 1 (Apr22-Mar23) and 2 (Apr23-Mar24) following NROL regional introduction.¹⁴ Key themes derived from HINWC reports are incorporated.¹

Table 12: Key service metrics associated with sustained innovation over time for both regions

Service metric (excludes Introductory session)	L&SC Introduced Annual (Y1) 6 blocks	L&SC Established Annual (Y2) 6 blocks	L&SC Established Annual (Y3) 6 blocks	L&SC+ Expanded Annual (Y4) 6 blocks	C&M > Introduced Annual (Y1) 6 blocks	C&M Established Partial (Y2) 2 blocks
Number of Trusts Teams, n	4 7	4 7	4 7	4 7	10 15	10 15
Therapy staff per block, range	26-38	27-44	33-41	21-38	22-26	25-28
New referrals per block, average n	32.0	41.5	55.5	67.5	56.2	66.0
Sessions per block, average n	42.5	42.7	46.8	78.8	40.0	37.5
Patients participating per block, average n (Includes new and repeat participants)	31.3	38.8	63.7	75.5	58.7	70.5
Targeted therapy group block capacity, median %	80%	85%	83%	73%	84%	105%
Targeted therapy patient session attendance rate, %	69%	72%	67%	59%	61%	67%

Cross-case summary:

- **Sustained organisation, staff, and patient participation** was demonstrated across regions. Stable organisational involvement was maintained in both regions (4 Trusts in L&SC; 10 Trusts in C&M), alongside continued engagement of existing therapy staff (~25-40 per block). Persistent involvement of student and third-sector partners (Table 4) further indicated sustained partnership working and learning opportunities. In both regions, referrals rose steadily year-on-year (average referrals per block increased by approximately 10-15).
- **Ongoing delivery was maintained.** All planned NROL blocks were delivered as intended across both regions. The average number of sessions delivered per block remained broadly consistent over time (~37-47), except for the L&SC+ case, where planned expansion resulted in a marked increase in sessions (average ~79 sessions per block).
- **Utilisation remained strong across regions.** Block capacity typically reached ≥73% and session attendance rates were consistently observed within an acceptable range (59-72%), indicating good engagement while highlighting scope for optimisation.
- **NROL was perceived as a predictable and reliable clinical offer by therapy staff in both regions.** Routine, structure, and consistency were identified as common and enduring features of delivery.

6.3.3 Workforce capability

Workforce capability refers to the development and maintenance of the digital, clinical, and relational skills required to deliver NROL consistently over time. Training activities supporting sustained delivery are presented in Table 13. Key staff perceptions related to training across cases, derived from HINWC reports,¹ are summarised.

Table 13: NROL training across cases

Type	Strategy	Mechanism	Detail
• Targeted induction	Shadowing	Session observation	Experiential learning to support readiness for referral or before group delivery.
	Assess readiness and distribute educational materials	Competency for group facilitation	A transferable competency document was co-produced by NROL clinical leads (L&SC+) outlining knowledge, skills and behaviours for NROL delivery with links to NROL resources. Shared with C&M and locally adapted.
	Provide clinical supervision	1:1 clinical session	Staff offered 1:1 clinical support session/s with the NROL team therapy staff before delivery.
	Provide local technical assistance	1:1 technology session/s	Staff offered 1:1 technology session/s with a NROL technology support staff member before delivery.
• Ongoing capability development	Revise professional roles	NROL team assistant training	For the L&SC+ case, the NROL assistant was trained to provide digital support, allowing dual assistant and technology function in sessions.
	Conduct ongoing training	Cross-regional group training	Therapy staff workshops were run to strengthen workforce confidence and capability, identify cultural, behavioural, and system-level barriers and enablers, and support shared learning. Targeted training covered delivering therapeutic groups online, managing complex situations, developing practical digital skills, and delivering physical exercise online; sessions recorded to create a future training resource.
		Cross-regional Assistant Practitioner/ Assistant training	In 2025, targeted training sessions for assistant roles were run to increase awareness of NROL, promote referral and support involvement in facilitation.
	Develop educational materials	NROL resources	Written training resources were co-created and shared (e.g. 'How to use Teams') and linked to competency documents.
	Make training dynamic	Regional and cross-regional shared learning opportunity	Interactive peer learning through inter-disciplinary and cross-organisational session delivery. Regional meetings supported cross-regional knowledge mobilisation.
• Platform training (L&SC)	Digital facilitation	Regional group training for autonom-e digital platform	In the L&SC+ case, regional training and Q&A sessions were run for relevant service staff to upskill in use of autonom-e; sessions recorded to create a future training resource.

Cross-case staff perceptions:

- **Formal training and tacit learning opportunities were seen as important and valued by staff across both regions.**

"Increasing consistency between what is offered in face-to-face and online."

Therapy staff, Workshop

- **Observations were considered highly valuable.** There was strong consensus that observing live NROL sessions built knowledge and confidence and was a key enabler (Section 6.1.3). Higher observer numbers were seen during earlier stages of adoption for both regions (Table 4), signalling knowledge mobilisation over time.
- **The NROL competency framework supported reflective practice and supervision conversations.**
- **Targeted training and dedicated support improved confidence with online delivery.** In a poll following cross-regional targeted training sessions, delivery staff self-reported confidence rose from 5.6 to 6.9 out of 10 (descriptive comparison). Therapy staff described greater digital confidence and virtual facilitation skills, improved ability to adapt and pace group activities, and increased readiness to deliver emotionally attuned rehabilitation including managing sensitive discussions, supporting peer interaction, and holding therapeutic space in group-based digital sessions.
- **Staff benefitted from professional development and networking opportunity,** highlighting the advantages of observing colleagues from different professional backgrounds and reported integration of shared approaches into their own practice.

6.3.4 Organisation Integration

Organisational integration captured the embedding of NROL within routine clinical pathways, workflows, and governance structures to optimise fit over time. Strategies and mechanisms enacted to support sustainability, including processes, procedures, and materials, are presented in Table 14. Examples of their impact were derived from NROL service data and perceptions from HINWC reports.^{1,2} Key insights related to integration of the autonom-e platform were derived from the NROL autonom-e report (see report for further detail).⁴

Table 14: NROL organisation integration across cases

Strategy	Mechanism	Detail	Examples of impact / Illustrative quotes
• Distribute educational materials	Resource development	Co-created new and updated resources to support referral, communication, participation, and delivery. Shared cross-regionally, linked with operational platform.	Streamlined google forms referral, co-created NROL information videos for patients/staff linked via a QR-coded keyring, co-produced guided practice videos as a patient resource to support out-of-session practice. <i>“Useful to record short clips of sessions to educate other services about NROL.” Therapy Staff, Workshop</i>
• Provide local technical assistance	Dedicated NROL technology assistance	Ongoing 1:1 and group technology support offered to patients and staff.	Technology assistance consistently described as responsive, patient friendly and highly effective, a key enabler to participation, particularly for those with limited digital confidence.
• Conduct ongoing training	NROL training	Training materials and sessions were developed and iteratively updated to support confident and consistent delivery.	See Table 13, Section 6.3.3
• Promote adaptability and conduct small tests of change	Planned and responsive adaptations, with feasibility assessed	Planned adaptations to support scaling. Responsive adaptations to improve adoption and acceptability.	In the L&SC+ case, for expansion three clinical leads were introduced, and three new groups and additional weekly physical sessions trialled (and sustained) to increase access and intensity of therapy. In C&M, once NROL implementation was established, NROL criteria was extended to include patients with neurological conditions beyond stroke. In both regions, inpatient participation was introduced to support timely decision-making for referral into NROL and was associated with positive feedback. <i>“Being part of the group [whilst inpatient], and seeing others and how they had improved, gave him encouragement and helped with his negative thoughts.” NROL participant carer, Focus Group</i> In L&SC+, in response to patient feedback (Section 6.2.2), the Fatigue group successfully trialled condition-focussed sub-groups (stroke vs. other neurological conditions), the Aphasia group was iterated into two ability-specific subgroups (mild vs. moderate), and the seated exercise (lower level physical) group was added.

CONTINUED			
Strategy	Mechanism	Detail	Examples of impact / Illustrative quotes
Development stakeholder interrelationships	NROL meetings	Regular online meetings (including pre-block facilitator and delivery team meetings, NROL team huddles, and regional and cross-regional workshops).	Supported knowledge and information sharing, provided a feedback loop, and enabled identification and planning of programme improvements.
	Wider service engagement	Wider service meetings and drop-in sessions were used to raise awareness and advocate for NROL, with staff championing referral and participation.	NROL has become a standing agenda item in many service meetings, reflecting a cultural shift from passive to active decision-making. <i>"Many patients are now considered for NROL; teams ask "why not NROL?" in weekly meetings." Therapy staff, Workshop</i>
Change infrastructure	Autonom-e platform introduced at L&SC	In February 2026, the operational platform was deployed to improve patient access to NROL information, sessions, and resources, and to support efficiency for clinicians and the NROL team.	Following introduction, the patient portal was used by 81% of NROL participants, who described enhanced access, engagement, and motivation. Patient reported relative ease in accessing appointments times, logging into sessions, and completing outcome measures. Information on available groups is provided, addressing a key adoption challenge (Section 6.1.3), although clearer signposting is required. <i>"The app is great for me with memory loss, it reminds me of my appointments..." NROL participant, Focus Group</i> Automated reminders support attendance (Section 6.2.1) and the platform houses resources to support out-of-session practice. <i>"The app motivates me in between sessions to do my exercises...I can access instructions and videos which remind me of what I should be doing!" NROL participant, Focus Group</i> Preliminary staff feedback was generally positive in relation to completing core NROL tasks and accessing relevant information; however, it was noted efficiency gains may take time. Productivity data suggest a saving of ~85 hours of operational activity each block.
Formal implementation blueprint	Standardisation and risk management	Standard Operating Procedures, group manuals, and delivery resources were regularly reviewed and updated to reflect changes in NROL delivery and procedure.	Resources supported safe, consistent delivery across settings, guided risk mitigation, and incident reporting, and provided assurance to organisational leads. Resources were shared with wider services interested in NROL.
Audit and provide feedback	Concurrent evaluation	Evaluation was conducted throughout NROL delivery and shared with stakeholders across both regions.	Evaluation data has been shared with service leads and decision-makers to support staff engagement and inform funding and contracting decisions. A co-produced NROL publication (Lancaster University, C&M ICB, and L&SC ICB)²⁰ supported learning and wider dissemination. Both regions advocated for ongoing evaluation.

CONTINUED			
Strategy	Mechanism	Detail	Examples of impact / Illustrative quotes
Involve executive boards	NROL advisory group	Established to engage relevant external stakeholders, who provided oversight of implementation and supported sustainment planning.	The group reviewed NROL documentation, advised on guideline alignment, and provided input on carer involvement and platform usability prior to launch.
	Executive leadership engagement	NROL leaders and project partners met regularly with regional NHS decision-makers to discuss long-term commissioning and business case development.	In L&SC, a NROL Business case was submitted in November 2025 and achieved a successful outcome (see below). In C&M, commissioning-intent conversations are ongoing with executive leaders.
Fund and contract for innovation	NHS Commissioning	Commissioning procedures aligned NROL with NHS values and contractual arrangements.	In L&SC, recurrent funding was granted (from Quarter 2:2026/27) to support sustainment of NROL, with intent to enable service delivery transformation across additional clinical pathways.

Cross-case organisation integration perceptions:

- Workshop accounts highlighted differences in how embedded NROL felt within services.** In C&M, which was earlier in implementation, staff described a predominantly patient-centred and relational approach, emphasising patient empowerment and community-building. In contrast, staff in L&SC, with longer exposure to NROL, more often described a system-level focus, characterised by improved infrastructure integration and more routine, predictable delivery.
- Dedicated NROL coordination roles were key.** Across workshops, staff consistently emphasised the importance of dedicated operational, administrative, and IT support, describing these roles as reducing burden on clinical staff and enabling greater focus on therapeutic delivery.

6.3.5 Service efficiencies

Service efficiencies refer to advantages achieved through group-based and digital delivery formats. Key efficiency metrics related to staffing and travel, and environmental impact use are presented in Table 15. Key themes derived from the HINWC reports are incorporated.¹

Table 15: NROL service efficiencies summary by case^{F7}

Efficiency metric (excludes Introductory session)	L&SC Established Annual, 6 blocks	L&SC+ Expanded Annual, 6 blocks	C&M > Introduced Annual, 6 blocks	C&M Established Partial, 2 blocks
Staffing efficiencies				
Targeted therapy group therapy staff: patient ratio, median (range)	0.3 (0.0-2.0)	0.2 (0.0-2.0)	0.4 (0.1-3.0)	0.3 (0.08-2.00)
NROL Assistant/Tech Support providing dual function, % sessions	≤1%	55%	18%	48%
Travel efficiencies				
Avoided driving miles, n	39803	47311	11104	5515
Avoided driving time, hours	1320	1658	487	228
Avoided mileage cost, £	23484	27913	6551	3253
Environmental efficiencies				
Avoided travel carbon emission, kgCO ₂ e	12799	15213	3570	1773

Cross-case summary:

- **Staffing efficiencies were evident across all cases, with median therapy staff:patient ratios of ≤0.4.** In C&M, ratios (0.3-0.4) were comparable to those observed in earlier L&SC phases.¹⁴ In L&SC, lower ratios were observed as the model matured. In the L&SC+ case, ratios improved further (0.2), likely reflecting economies of scale and increased delivery contribution from NROL team therapy staff (Table 6).
- **Assistant practitioner and assistant roles contributed meaningfully to delivery efficiency.** These staff (excluding NROL assistants) accounted for 12-23% of therapy staff delivering NROL (Table 4). Staff feedback during workshop discussions highlighted their importance in supporting sustained delivery under workforce pressures. In addition, NROL team members increasingly performed dual clinical and digital functions within sessions, reducing reliance on existing therapy staff for group facilitation and supporting favourable staff:patient ratios. In the L&SC+ case, this was driven by formal training of the NROL assistant to provide digital support increasing dual-function delivery from ≤1% to 55% of sessions. In C&M, a technology support staff member with an assistant background contributed to group facilitation, with dual-function delivery increasing from 18% to 48% as NROL became established.
- **Travel avoidance efficiencies were demonstrated.** In total, 103,733 driving miles were avoided, corresponding to an avoided mileage cost of £61,201. A total of 3,693 driving hours were avoided.
- **Carbon emissions were also avoided,** totalling 33,355 kgCO₂e. Annual avoided emissions averaged approximately 14,000 kgCO₂e in L&SC. In C&M, emission avoidance was lower (3,570 kgCO₂e in the first year) consistent with the region's smaller geography and lower rurality (Figure 2), and the programme's earlier stage of maturity.

^{F7} Therapy staff:patient ratio includes existing therapy staff contacts but excludes all NROL team member contacts. A therapy staff:patient of 0.0 occurred when NROL sessions were facilitated solely by NROL team members, without involvement from existing therapy staff.

6.3.6 Productivity

Productivity refers to how efficiently inputs (such as staff time and resources) are converted into outputs (such as therapy delivered and activity). Key insights are derived from the LU Health Economics and HINWC reports.^{1,3}

Cross-case summary:

- **NROL supports system-level productivity** by enabling greater therapy delivery per unit of therapist cost compared to standard in-person 1:1 model. Group-based delivery and avoided travel reduce the variable cost per patient contact (approximately 80% lower in the L&SC region). This enables services to deliver rehabilitation that is not currently achievable through in-person models, moving provision closer to nationally recommended rehabilitation intensity targets within existing resource constraints.
- **NROL supports workforce productivity** through more intensive use of therapist time per contact; reflected in low therapy staff:patient ratios (both regions ≤ 0.4), alongside avoided travel that releases clinical time (approximately 1,500 hours annually in L&SC and 500 hours in C&M). Together, these features indicate potential productivity gain through more efficient workforce deployment, although data was not available on how freed time was subsequently utilised.
- **Agile regional workforce use may contribute to job satisfaction.** Staff accounts from workshops indicated that regional working supported workload distribution and reduced pressure on individual staff. Expanded roles and professional development opportunities were perceived by some to contribute to job satisfaction and reduced burnout. These factors may have positive implications for workforce sustainability.

6.4: Visual display of key findings

A visual display (Figure 8) illustrates the convergence of key mixed-methods findings to address each implementation outcome and evaluation questions, and highlights areas for future focus.



Figure 8: Visual display of key mixed-methods findings. NROL, NeuroRehabilitation OnLine.

7. INTERPRETATION

Key findings in relation to NROL's potential value to NHS system-level healthcare priorities are summarised (Figure 9) to help guide decisions about further spread and commissioning. These summaries reflect how value may be articulated and mobilised to support continued delivery; they do not represent independently evaluated outcomes.

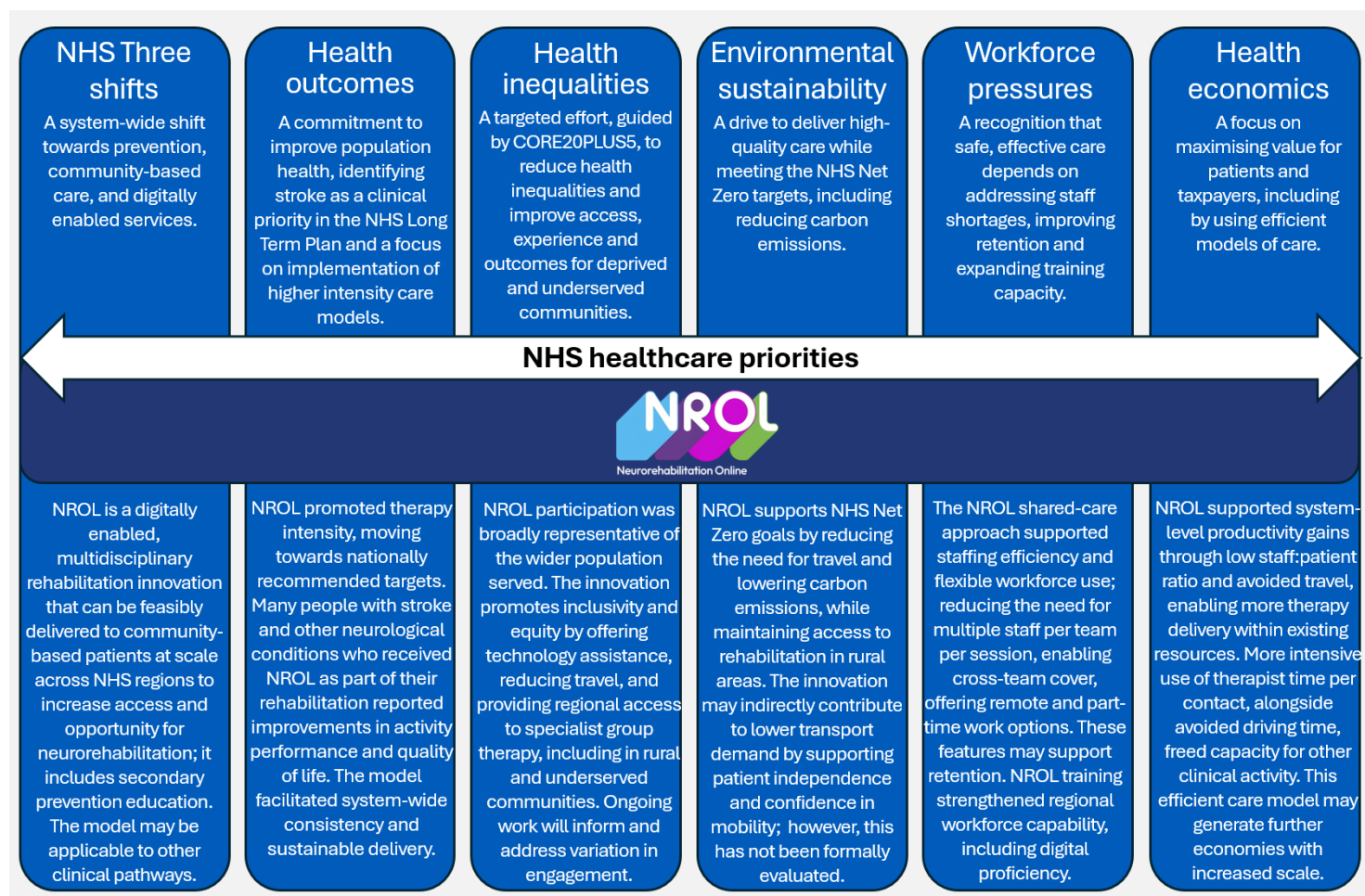


Figure 9: NROL's potential value to NHS system-level healthcare priorities

8. CONCLUSIONS

This evaluation demonstrates that NROL is a scalable model of digitally enabled multidisciplinary group rehabilitation that can be delivered across NHS regions to increase more equitable access to, and intensity of, community stroke and neurological therapy.

NROL was successfully adopted, delivered safely, and sustained both when transferred, with structured adaptation, to a new region (scale-out) and when expanded within the original region (scale-up), while preserving core programme components within real-world constraints. Rapid first-year adoption in C&M demonstrated transferability with structure adaptation, while expansion in L&SC led to marked increases in referrals, sessions, and patient contacts. Participation was broadly representative of the wider population served; however, ethnicity recording constrained assessment of equity of reach for this characteristic. This reflects a recognised national data limitation rather than an issue specific to NROL.

NROL was acceptable to both patients and staff, increasing therapy provision within existing workforce capacity, supported by a small, dedicated regional NROL team and, in L&SC, a digital operational platform was introduced. Sustainability was underpinned by workforce capability development opportunities and iterative integration into existing organisational and system pathways, helping to address key challenges and build resilience under workforce pressures.

NROL was shown to be an efficient model of care, with productivity gains supported by reduced travel, favourable staff-to-patient ratios, and effective use of assistant practitioner and assistant roles. NROL also demonstrated environmental benefits (i.e. avoided carbon emissions) aligned with NHS Net Zero goals.

Overall, the findings provide evidence that NROL offers an equitable, efficient, and sustainable model of care, aligned with NHS system-level healthcare priorities. **In L&SC, successful engagement with system decision-makers has supported recurrent commissioning of the NROL model**, with intention that the model of care will undergo further adaptation for potential transformation into other clinical pathways beyond stroke.

Recommendations

- ***Sustain NROL delivery through regional coordination:*** Maintain dedicated regional NROL teams to support operations, quality, championing, and cross-organisational working. Consider involving patient-volunteers where appropriate.
- ***Continue to embed NROL at a system-level:*** Continue integration within existing rehabilitation pathways, leveraging assistant practitioner and assistant roles, and promoting ongoing workforce capability development to support sustainable and efficient delivery.
- ***Monitor and optimise NROL delivery over time:*** Monitor pragmatically and use proportionate evaluation including focuses on access, utilisation, and equity to ensure delivery operates as intended and continues to demonstrate value. An improved understanding of out-of-session practice would be valuable; digital functionality within the autonom-e platform may be able to support this. National initiatives to improve routine ethnicity recording should be supported to strengthen future equity assessment.
- ***Progress commissioning and support structured scale-out:*** Progress commissioning discussions in C&M, informed by evaluation findings and commissioning in L&SC. Support structured scale-out to new regions and/or clinical pathways using structured adaptation. Scaling is expected to generate economies of scale, enhancing value and sustainability; however, it would benefit from national-level oversight and resourcing to support appropriate adaptation, consistency, and quality, and coordinated evaluation.

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12. APPENDICES

Appendix 1: Data sources

Type / Source	Case			
	L&SC Established Annual, 6 blocks	L&SC+ Expanded Annual, 6 blocks	C&M> Introduced Annual, 6 blocks	C&M Established Partial, 2 blocks
Quantitative				
Anonymised NROL service data	NROL database and service records (n=333, Apr24-Mar25)	NROL database and service records (n=405, Apr25-Mar26)	NROL database and service records (n=337, Sept24-Sept25)	NROL database and service records (n=132, Oct25-Jan26)
Anonymised relevant wider stroke and neuro- rehab service data	Stroke and neuro-rehabilitation service records (Apr24-Mar25)	Stroke and neuro-rehabilitation service records (Apr25-Mar26)	Stroke rehabilitation service records (Sept24-Sept25)	Stroke rehabilitation service records (Oct25-Jan26)
HINWC reports (final, supplementary) from 'Patient and Public Involvement and Engagement' work package: ² Quantitative content		NROL participant survey rating questions: 1:1 MS Teams, n =62 NROL participants (Jun25-Nov25)		
LU NROL Health Economics report ³	Relevant L&SC data shared between current evaluation and economics reports			
NROL autonom-e Platform Report: ⁴ Quantitative content		NROL participant survey rating questions: MS forms/in-person/phone, n = 32 NROL participants, n = 8 NROL therapy staff (Apr26)		
Qualitative				
HINWC reports (final, supplementary, field notes) from staff 'Coaching and Culture' work package ¹		NROL regional workshop 1: 3hr, hybrid n=15 service therapy staff and NHS managers (Sept25)	NROL regional workshop 2: 3hr, hybrid, n=32 service therapy staff and NHS managers (Sept25)	
		Cross-regional NROL workshop 3: 3 hr, MS Teams n=45 therapy staff and NHS managers (total across regions) (Mar26)		Cross-regional NROL workshop 3: 3 hr, MS Teams n=45 therapy staff and NHS managers (total across regions) (Mar26)

CONTINUED Type / Source	Case			
	L&SC Established Annual, 6 blocks	L&SC+ Expanded Annual, 6 blocks	C&M> Introduced Annual, 6 blocks	C&M Established Partial, 2 blocks
HINWC reports (final, supplementary, field notes) from 'Patient and Public Involvement and Engagement' work package: Qualitative content ²		NROL participant survey free-text questions: 1:1 MS Teams, n = 62 NROL participants (Jun25-Nov25) NROL focus groups: MS Teams, FG1 (Stroke) n = 5 NROL participants + n = 2 carers (Sept25), FG2 (Other Neuro) n = 6 NROL participants (Nov25) Case study 1: A working age multiple stroke survivor and NROL participant (Apr26)		Case study 2: A working age stroke survivor and NROL participant (Apr26)
NROL autonom-e Platform Report: ⁴ Qualitative content		NROL participant survey free-text questions: MS forms/in-person/phone, n = 32 NROL participants, n = 8 NROL therapy staff (Apr26) NROL autonom-e platform focus group: MS Teams, n = 6 NROL participants (Apr26)		

Appendix 2: Evaluation indicators and specific indicator questions for each selected implementation outcome with associated data source/s and analysis

Outcome	Indicator	Indicator questions	Data source	Data analysis
Adoption	Participation	<i>Who participated? (organisations, staff, patients)</i>	NROL service data	Descriptive and inferential (Mann-Whitney U, χ^2) statistics
	Delivery	<i>What was delivered? (blocks, groups, sessions, contacts)</i>	NROL service data	Descriptive statistics
	Challenges and Enablers	<i>What were the key challenges and enablers?</i>	HINWC reports	Extraction
Acceptability	Utilisation	<i>Was NROL utilised by staff and patients?</i>	NROL service data	Descriptive statistics
	Perceptions	<i>What were staff and patient perceptions of NROL?</i>	HINWC reports	Extraction
	Safety	<i>Was NROL safe for patients?</i>	NROL service data	Descriptive reporting
	Therapy Provision	<i>Did NROL support increased therapy provision?</i>	NROL service data	Descriptive statistics
	Patient outcomes	<i>What were NROL participant health-related quality of life and activity performance outcomes?</i>	NROL service data, HINWC reports	Descriptive and inferential (Wilcoxon Signed Rank) statistics; comparison with MCID ^{F8}
Sustainability	Fidelity	<i>Were the NROL core components preserved when scaled?</i>	NROL service data	Descriptive statistics and reporting
	Sustained innovation	<i>Were there continued participation, delivery, and utilisation over time?</i>	NROL service data, HINWC reports	Descriptive statistics and reporting Extraction
	Workforce capability	<i>What training activities did staff complete?</i>	NROL service data	Descriptive reporting
	Organisation integration	<i>What were staff perceptions on professional development?</i>	HINWC reports	Extraction
		<i>What processes, procedures, materials were enacted to facilitate sustainability, and what has been their impact?</i>	NROL service data	Descriptive reporting
	Service efficiencies	<i>Were anticipated service efficiencies from NROL's group and digital delivery observed? (e.g. staffing, travel, environmental)</i>	HINWC reports	Extraction
	Productivity	<i>Were there productivity gains?</i>	NROL service data	Descriptive statistics ^{F8}
			LU NROL Health Economics Report	Extraction

^{F8} *NROL Self-reported patient outcomes*: Measures included the EQ-5D-5L for health-related quality of life,³² and the Patient Specific Functional Scale (PSFS) for activity performance.³³ Only complete data entries (i.e. both entry and exit scores) were included in analysis. The EQ-5D-5L consists of two parts: the EQ descriptive system profiles individual's health state and EQ Visual Analogue Scale (EQ-VAS, max 10) rates individual's perceived overall current health. Descriptive system question responses were transformed into an EQ Index score (EQ-Index, max 1.000) using the EuroQoL Group's crosswalk methodology with a United Kingdom population value set.³⁶ Activity performance measured by the PSFS (max 10), was used to generate patients' average rating on performing up to three activities of function that are important to them and which were impacted by their neurological condition.^{33,37,38} Mean differences were provided for comparison with minimal clinically important differences (MCIDs), defined as EQ-Index $\geq$ 0.10, EQ-VAS $\geq$ 10, and PSFS $\geq$ 2.8 points.^{37,39}

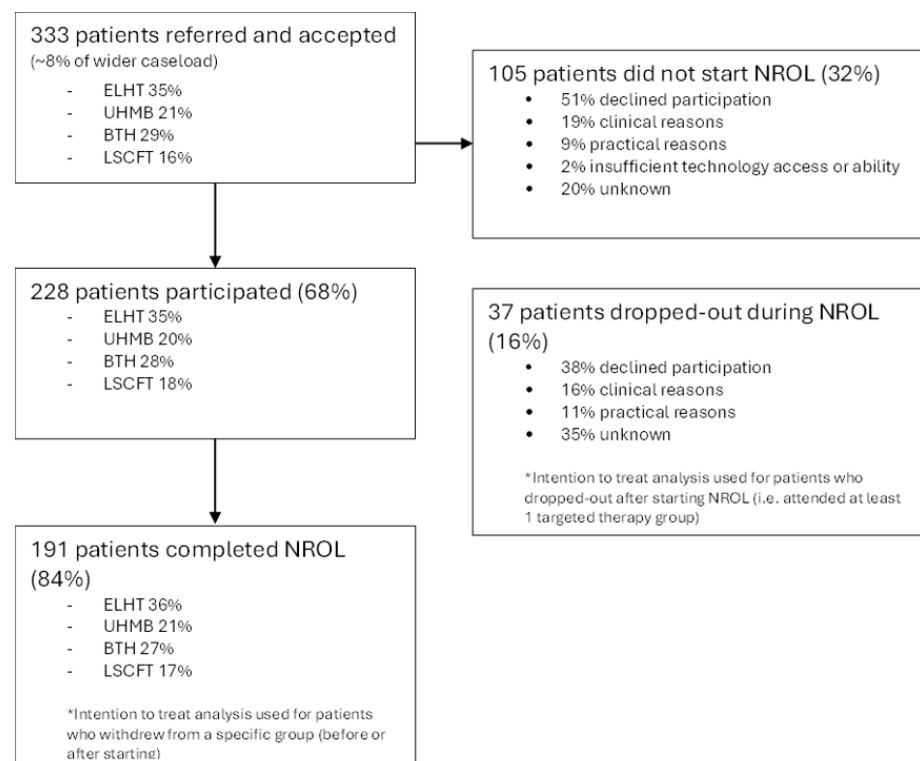
^{F9} *NROL Travel avoidance*: Informed estimates of avoided driving miles and time were determined using Google maps, based on referring staff worksite and patient residential postcode combined with NROL session attendance. Mileage cost avoidance was calculated using 59 pence per mile (NHS mileage rate).⁴⁰ Avoided carbon emissions were estimated using total avoided mileage cost and a UK conversion factor (0.545 kgCO₂e per £).⁴¹

Appendix 3: NROL Participating Trusts and Teams

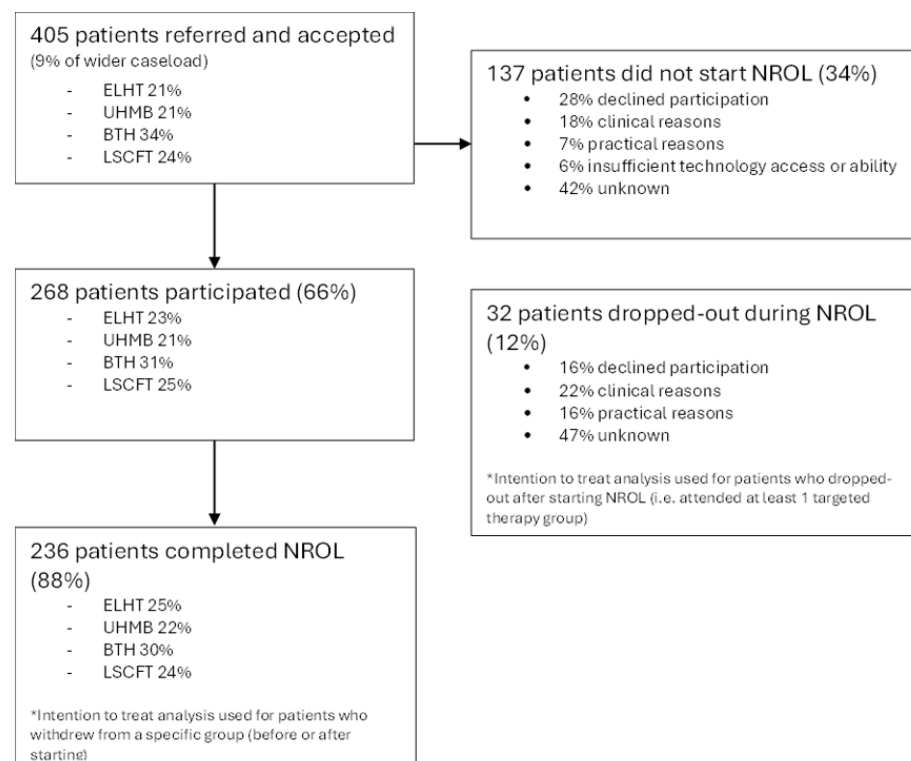
Lancashire and South Cumbria (L&SC) ICS region			Cheshire and Merseyside (C&M) ICS region		
Trusts		Number of Teams involved	Trusts		Number of Teams involved
East Lancashire Hospitals NHS Trust	ELHT	2	Liverpool University Hospitals NHS Foundation Trust	LUFHT	2
University Hospitals of Morecambe Bay NHS Foundation Trust	UHMB	2	Liverpool Heart and Chest NHS Foundation Trust	LHCH	1
Blackpool Teaching Hospitals NHS Foundation Trust	BTH	2	Mersey Care Foundation Trust	MCFT	2
Lancashire and South Cumbria NHS Foundation Trust	LSCFT	1	Countess of Chester Hospital NHS Foundation Trust	COCH	1
			Chester and Wirral Partnership NHS Foundation Trust	CWP	
			Mersey and West Lancashire Teaching Hospitals NHS Trust	MWLTH	1 of 2
			Mid Cheshire Hospitals NHS Foundation Trust	MCHFT	1
			Wirral University Teaching Hospital NHS Foundation Trust	WUFT	3
			Warrington and Halton Teaching Hospitals NHS Foundation Trust	WHHFT	2 of 3
			Bridgewater Community Healthcare Foundation trust	BCHFT	1 of 2

Appendix 4: NROL participation profile for L&SC ICS

A: L&SC Established delivery (Annual (Apr24-Mar25), 6 NROL blocks)

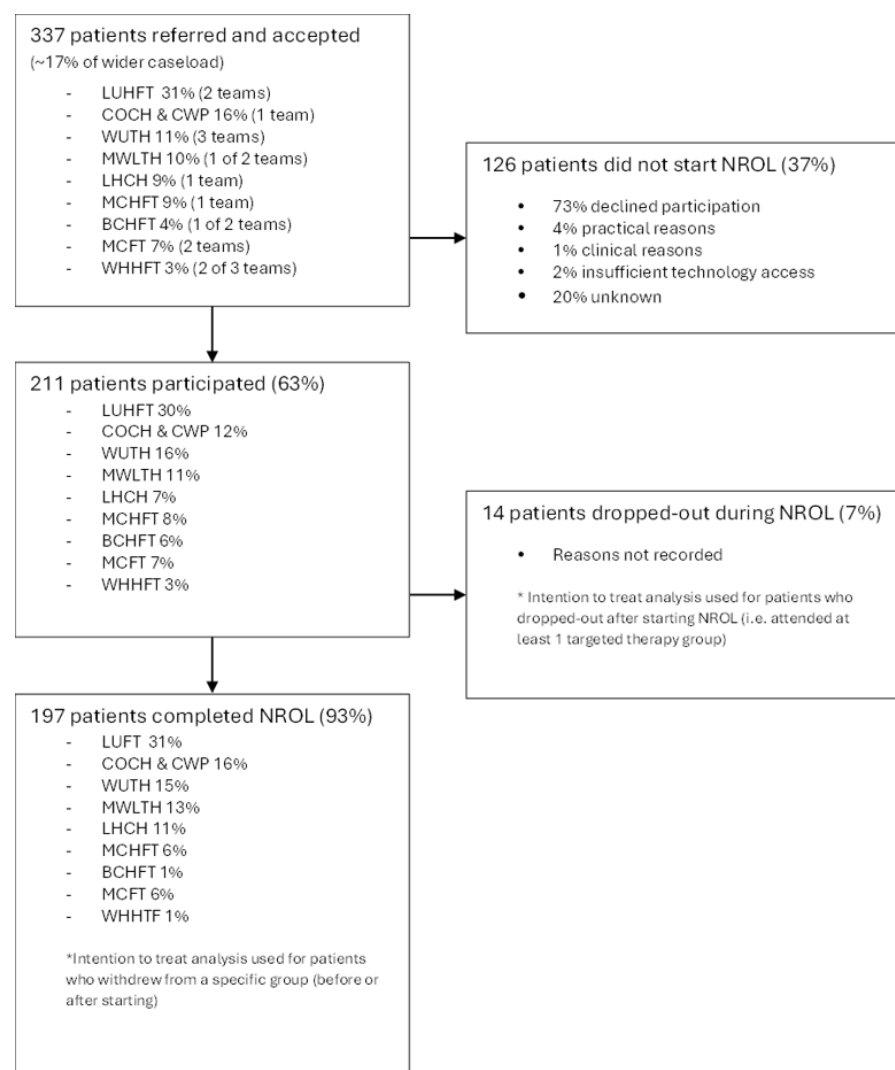


B: L&SC+ Expanded delivery (Annual, (Apr25-Mar26), 6 NROL blocks)

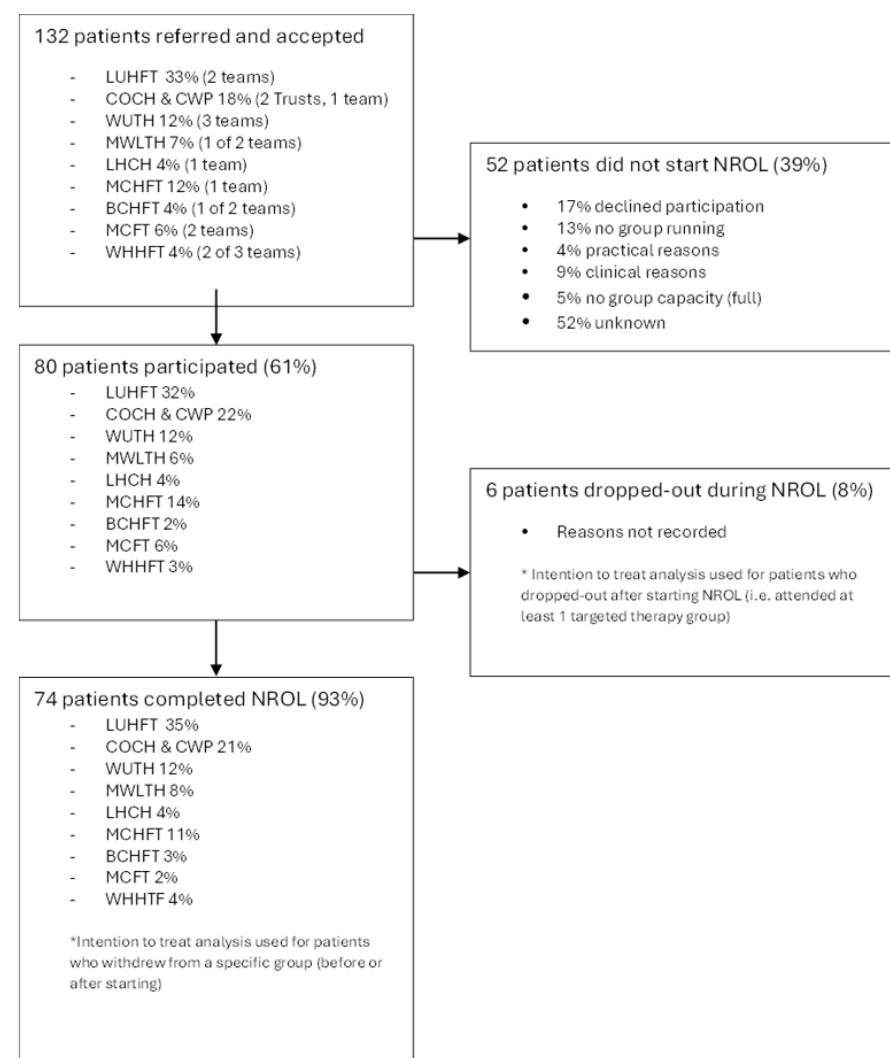


Appendix 5: NROL participation profiles for C&M ICS

A: C&M> Introduced delivery (Annual (Sep24-Sep25), 6 NROL blocks)



B: C&M Established delivery (Partial (Oct25-Jan26), 2 NROL blocks)



Appendix 6: Representativeness of patients referred to NROL to national and regional stroke populations ^{F10}

		National Stroke data	L&SC Stroke data		C&M Stroke data	
Demographic	Source	SSNAP annual audit results	L&SC SSNAP annual audit results	L&SC NROL Service data	C&M SSNAP annual audit results	C&M> NROL Service data
	Time window	Apr24-Mar25	Apr24-Mar25	Apr24-Mar25	Apr24-Mar25	Sep24-Mar25
	Patients	N= 92414	N = 3399	Stroke participants n = 169	N = 3664	Stroke participants n = 102
Age years, median (range)		76 (Q1:65, Q3:84)	75-78 (Q1:62-69, Q3:82-85)	61 (Q1:54, Q3:73)	74-77 (Q1: 63-67, Q3: 83-85)	61 (Q1:53, Q3:70.5)
Sex, male (%)		54%	52-58%	63%	49-55%	55%
Ethnicity	White	82%	86-99%	86%	86-99%	90%
	Asian	4%	0-9%	4%	<1-1%	2%
	Black	2%	0-<1%	1%	<1%	3%
	Other	2%	0-<1%	1%	<1-3%	0%
	Not stated/Not known	10%	<1-10%	8%	0-11%	5%

^{F10} The Sentinel Stroke National Audit Programme (SSNAP) results from routinely admitting acute stroke teams for patients admitted to and/or discharged from hospital between Apr24-Mar25 were used as a reference population (results from Apr25-Mar26 were not available at the time of this report).⁴¹ Community service results were available for Oct24-Mar25 and Apr25-Sep25, however not all NROL participating organisations were represented and datasets lacked ethnicity data. To ensure a consistent time window, L&SC NROL service data includes NROL participants with a stroke diagnosis between Apr24-Mar25 (74% of total participants) and C&M NROL service data includes NROL participants with a stroke diagnosis between Sep24-Mar25 (100% of total participants). Three demographic variables were reported across all sources and are presented.

Appendix 7: Differences or associations between patient characteristics and participation status in the L&SC ICB region^{F11}

Characteristics	L&SC Apr24-Mar26 NROL participants n=496	L&SC Apr24-Mar26 Did not start n=242	P-value
Age years, median (range)	61 (23–97)	63 (20-97)	0.109
Gender, male (%)	56%	49%	0.055
Ethnicity			
White	82%	78%	
Asian British or Asian	3%	3%	
Black British or Black	1%	<1%	
Other	1%	<1%	
Not reported/missing	14%	18%	
Index multiple deprivation, median (range)	5 (1–10)	5 (1-10)	0.080
IMD in 20% most deprived areas	22%	30%	0.029
Rurality, rural (%)	20%	23%	0.226
Living alone, yes (%)	17%	24%	0.137
Condition			0.846
Sudden	89%	88%	
Progressive/intermittent	11%	12%	
Chronicity			0.094
Subacute (1 week - <6m)	69%	76%	

^{F11} Did not start = Referred to NROL but did not attend any targeted therapy group sessions. Mann-Whitney U and χ^2 tests used. Ethnicity was not reviewed due to data missingness.

Appendix 8: NROL group offer per block across cases, for each region L&SC^{F12}

Type	Group	Group Name (max size)	L&SC						L&SC+					
			B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24
Targeted therapy	Physical	Upper Limb	Upper Limb (12)	Y	Y	Y	Y	Y	Y	Y ²	Y ²	Y ³	Y ³	Y ³
		Balance & Mobility	NROL with it (12)	Y	Y	Y	Y ³	Y	Y	Y ²	Y ²	Y ²	Y ²	Y ²
		Seated exercise	Seated Series (12)								Y	Y	Y	Y
	Talking	Cognitive Education	Cogs in Motion (6)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		Cognitive Processing	Cogs in Action (6)		Y		Y			Y		Y	Y	Y
		Aphasia (Mild)	ToTT (6-12)	Y (6)		Y (6)		Y (6)		Y (6)	Y (6)	Y (6)	Y (12)	Y (12)
		Aphasia (Moderate)	Language Links (6)									Y	Y	
		Dysarthria	Simply Speaking (6)		Y		Y		Y	Y	Y	Y	Y	Y
		Well-being	Living well (12)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		Fatigue	Fatigue (12)	Y	2Y	2Y	2Y	2Y	2Y	2Y	2Y	2Y	2Y	2Y
Community	Peer-support	Café NROL		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Aphasia peer-support	Aphasia Café									Y	Y	Y	Y

C&M

Type	Group	Group Name (max size)	C&M>						C&M	
			B1	B2	B3	B4	B5	B6	B7	B8
Targeted therapy	Physical	Upper Limb	Upper Limb (12)	Y	Y	Y	Y	Y	Y	Y
		Balance & Mobility	NROL with it (12)	Y	Y	Y	Y	Y	Y	Y
	Talking	Cognitive Education	Cogs in Motion (10)	Y	Y	Y	Y	Y	Y	Y
		Aphasia (Mild)	ToTT (8)	Y	Y	Y	Y		Y	
		Dysarthria	Simply Speaking (8)	Y	Y	Y	Y	Y		Y
		Well-being	Living well (8)	Y	Y	Y		Y	Y	Y
		Fatigue	Fatigue (12)				Y	Y	Y	Y
Community	Peer-support	Café NROL		Y	Y	Y	Y	Y	Y	Y

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^{F12} Superscript numbers indicate the number of sessions per week when >1; “2Y” indicates two cohorts run within the block. Bracketed numbers show the maximum number of participant allocations for the group. The Community groups have optional attendance; Peer-support group has optional attendance for all NROL participants, Aphasia peer-support group has optional attendance for all patients participating in an Aphasia group.