Providing emotional support during the process of multiple sclerosis diagnosis (PrEliMS): A feasibility randomised controlled trial

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Abstract

Objectives: To evaluate the feasibility and acceptability of an emotional support programme for newly diagnosed people with multiple sclerosis.

Design: Three-arm, mixed methods, randomised controlled trial comparing usual care, versus usual care plus nurse-specialist support, versus usual care plus nurse-specialist support plus peer support.

Participants: Community-dwelling adults within two years of diagnosis *or* undergoing diagnosis.

Interventions: PrEliMS involves information provision, emotional support, and strategies and techniques based on psychoeducation, Acceptance and Commitment Therapy principles, supportive listening. One version of the intervention was provided by nurse-specialists alone and the other was provided by nurse-specialists plus peer support.

Main measures: The main outcome of interest was the feasibility of proceeding to a definitive trial, exploring recruitment rate, acceptability, completion of outcome measures (perceived stress, mood, self-efficacy, psychological impact, and service use), and signal of efficacy.

Results: Of 40 participants randomised (mean age 36.2 years (SD = 14.8); 54% women; 85% with relapsing-remitting MS), 36 and 38 returned 3- and 6-month questionnaires, respectively. Participant interviews suggested the trial was largely feasible, and the intervention acceptable, with some amendments to trial procedures and intervention delivery noted. There were, however, no statistically significant differences between groups at follow-up for any measures, and effect-size estimates were small.

Conclusion: A definitive trial combining nurse-specialist and peer support adjustment to diagnosis intervention is warranted, but more work exploring the delivery and fidelity of the intervention is needed before this is pursued.

Introduction

Being diagnosed with multiple sclerosis can be stressful and psychologically demanding for patients and their families;[1] with people with multiple sclerosis describing the process as confusing and frustrating, eliciting feelings of anxiety, grief, anger, fear, and distress.[1, 2] These issues may be due to the unpredictable nature of multiple sclerosis, lack of a single diagnostic biomarker, and inconsistent service delivery. Therefore, the importance of providing accessible information, advice, and support at diagnosis is well recognised in both UK National Institute for Health and Care Excellence (NICE) guidelines[3] and the European Multiple Sclerosis Platform code of practice.[4]

Challenges faced during the diagnostic phase influence patients' perceptions of multiple sclerosis and their future relationship with healthcare teams.[1, 5] This is particularly important for rehabilitation, because many of the symptoms of multiple sclerosis require long-term input from rehabilitation specialists. Consequently, how this phase is managed may influence patients' adjustment to multiple sclerosis later; so supporting people with multiple sclerosis adequately around the diagnosis process is crucial. However, poor emotional support and information provision around this period is common.[2, 6]

Given this, and the lack of stakeholder *co-constructed* emotional support programmes being delivered in the UK for people with multiple sclerosis around diagnosis, we developed the "Providing emotional support around the multiple sclerosis diagnosis process" (PrEliMS) interventions. These were developed based on evidence from our two systematic reviews,[2, 6] focus groups with relevant stakeholders (people with multiple sclerosis, family members/carers and multiple sclerosis clinicians),[7] Patient and Public Involvement input,

clinical experiences, and the research teams' expertise in designing complex emotional support interventions.

In line with guidance for developing and evaluating complex interventions,[8] before conducting a definitive trial we aimed to evaluate key feasibility parameters: (1) feasibility and acceptability of trial procedures, intervention, and newly developed service pathway (2) intervention fidelity, and (3) outcome parameters to undertake a clinical- and cost-effectiveness analysis for a future randomised controlled trial (RCT).

Methods

Ethical approval was granted by the Health Research Authority London (Bloomsbury) Research Ethics Committee (18/LO/1468) and was prospectively registered (ClinicalTrials.gov NCT03735056). The study Sponsor was the University of Nottingham.

Participants were recruited from multiple sclerosis clinics at a UK National Health Service (NHS) Trust hospital outpatient neurology department between November 2018 and April 2020. A neurologist or multiple sclerosis nurse-specialist (henceforth referred to as 'nurse specialist') introduced the study to eligible patients during their clinic appointments and consent was obtained for a researcher to contact them. Patients were provided with an information pack by post or email and further screened for eligibility by the researchers. Eligible participants were: within two years of their multiple sclerosis diagnosis *or* were undergoing diagnosis process; aged ≥18 years, able to communicate in English and provide consent. We included both those who were recently diagnosed and those who were undergoing diagnosis process because multiple sclerosis diagnosis is a complex process that occurs over several months to several years. Patients were excluded if they had a severe co-

morbid psychiatric condition, were receiving or had received psychological interventions within the previous three months. Eligible participants completed consent and baseline assessments online, over the telephone with a researcher or by post according to their preference (see Table 1).

[Table 1]

Participants were then randomly allocated to usual care (Control), or usual care *plus* nurse-specialist support (Intervention 1), or usual care *plus* nurse-specialist *and* peer support (Intervention 2) on a 1:1:1 ratio. A pre-defined pseudo-random list, with block sizes of 3, 6 and 9, was generated by an independent, centralised online randomisation service (www.sealedenvelope.com), and maintained by the trial manager. Given the nature of the intervention, participants and intervention providers (nurse-specialist and peer support workers) could not be blinded. The researchers collecting outcome data (who were psychologists with Masters or post-doctoral training) and the researchers conducting the statistical analyses were blinded to treatment allocation.

We aimed to randomise up to 60 participants (20 participant per group), to offer sufficient information to inform the design of a Phase III RCT, as 10-20 per group is the recommended sample size for feasibility trials for standardised small (0.2) or medium (0.5) effect sizes.[15]

Interventions

PrEliMS is multi-faceted, involving various components and a range of strategies and techniques. It is person-based, underpinned by the conceptual understanding of adjustment to multiple sclerosis diagnosis.[2] This posits that providing resources and coping strategies

during the diagnosis process enhances adjustment to diagnosis (e.g., by reducing negative emotional responses, improving management techniques)[6]. A description of the intervention is presented using the recommended Template for Intervention Description and Replication checklist[16] in Supplementary Material 1. There are two PrEliMS interventions:

Intervention 1: Nurse-specialists provided standardised emotional support and advice to patients at diagnosis to establish and help sustain coping strategies. Participants received a one-to-one, face-to-face session in clinic, via videoconferencing, or telephone within two weeks of diagnosis. These calls were to be arranged as close to the 2-week post-diagnosis period as determined by the stakeholder-informed new service pathway; and for those who were diagnosed earlier, as soon as they were referred to the study. Sessions were to last up to 90 minutes and included answering questions about multiple sclerosis, providing psychoeducation, teaching Acceptance and Commitment Therapy-based strategies,[17] and referring to other services (where needed). Participants were provided with an Acceptance and Commitment Therapy-based self-help book ("Better living with a diagnosis of multiple sclerosis: Patient Workbook"). Additional support sessions, if required, were provided over phone. Nurse-specialists were trained and supervised by clinical psychologists (RdN and NM). Group-based training was delivered in a half-day session, with a 60-minute refresher session offered mid-trial. They received hour-long monthly supervision sessions from NM.

Intervention 2: Comprised Intervention 1 *plus* peer support. Peer support uses supportive listening to provide the opportunity to talk freely about experiences, including thoughts and feelings about diagnosis, in a non-judgmental, safe environment. Participants received a minimum of two sessions with a peer support worker (someone with multiple sclerosis or a family member or carer of a person with multiple sclerosis), recruited from local multiple

sclerosis charity branches. Peer support workers were trained and supported throughout the trial (as needed) by RdN and a post-doctoral researcher in health psychology (GT). Peer support sessions lasting up to 60 minutes were face-to-face or via telephone/videoconferencing, after the nurse-specialist support session, 2-6 weeks following diagnosis.

Participants in the control group received their usual clinical care from the multiple sclerosis clinics as per NICE guidelines, which recommends first appointment with multiple sclerosis Nurse Specialist to occur within 6 weeks of diagnosis.[3] Typically, this includes more information about what multiple sclerosis is, and the disease modifying therapies available and the pros and cons of each.

Participants in all groups were assessed 3- and 6-months post-randomisation using the measures outlined in Table 1, either online or by post.

The intervention fidelity (Intervention 1 and 2) was assessed through: (1) Session record forms completed by nurse-specialists and peer support workers (detailing topics discussed and information provided); (2) Time-sampling of audio-recordings of nurse-specialist support sessions.

Two researchers (JMM and GSA) conducted brief semi-structured interviews between the two follow-up periods with intervention providers (nurse-specialists and peer support workers) and people with multiple sclerosis (up to seven from each group). Both researchers were involved in other aspects of the trial (e.g., recruitment and data collection). Patient participants were sampled using a purposive, maximum-variation sampling strategy[18] to

ensure a variety of participants in terms of demographics (e.g., age, gender) and clinical characteristics (e.g., multiple sclerosis type) to assess acceptability of intervention and trial procedures. The interview schedules were developed with patient and public involvement partners (See Supplementary Material 2). Interviews were audio-recorded and transcribed verbatim.

The health economic evaluation focused on establishing the main cost drivers, necessary parameters, and suitable framework to undertake a full cost-effectiveness analysis in a future trial.

The Trial Management Group categorised the findings based on guidance for progression criteria to definitive trials,[19] to arrive at Red-Amber-Green ratings for each key feasibility outcome. The process for decision-making followed the ADePT framework[20] for identifying solutions to the issues identified.

A detailed description of the outcomes, how these mapped onto the aims of the feasibility study and how they were assessed can be found in Supplementary Material 3.

For quantitative data, analyses were conducted on an intention-to-treat basis using SPSS v25. Descriptive statistics were used to characterise the sample and to indicate retention and progression of participants through the trial. For effect-size estimation and sample size calculations for a definitive trial, multiple one-way analyses of variance (ANOVAs) were conducted to compare the different groups on all outcome measures at each follow-up. The Reliable Change Index method[21] was used to assess whether individual changes between baseline and follow-up were greater than that expected by chance and clinically significant.

Time sampling enabled us to determine whether the interventions were delivered according to the manual. Each one-minute unit of the audio data was coded using a coding scheme identifying the key intervention components, content of discussions was documented as either related to the intervention (patient-cued, based on the needs assessment) or unrelated. The initial coding frame was developed by the research team based on a consensus regarding what was judged to be the key components of the interventions. Additional codes were developed iteratively in an inductive manner by JMM and through discussion with the research team. The primary activity of the individual speaking (nurse-specialist or patient-participant) was also documented. To assess intervention fidelity, audio-recordings of nurse-specialist support sessions were rated to determine to what extent intervention delivery was congruent with the underpinning approach to emotional support (e.g., openness to difficult experiences and engagement in valued actions). The final coding framework had 12 items, 11 of which were scored as being congruent to the Acceptance and Commitment Therapy model (i.e., consistency with Acceptance and Commitment Therapy principles in the workbook; we used definitions from the validated Acceptance and Commitment Therapy Fidelity Measure).[22] These were scored 0 to 3 (No; Yes – somewhat; Yes – mostly; Yes – fully). The one item that documented incongruence was reversed scored 0 to 2 (Yes – fully; Yes – somewhat; No). Therefore, the total possible score was 35. There was no threshold for determining fidelity, and these scores were used descriptively.

For qualitative data, anonymised transcripts were analysed on NVivo v12 following framework analysis.[23] For each participant group, the interview guide (based on the trial aims) informed the development of the initial thematic framework.

Results

Forty people were recruited and randomised (see CONSORT, Figure 1) over 18 months. The groups were well-matched on demographic and clinical characteristics (Table 2). There were fewer men and people with relapsing-remitting multiple sclerosis in Intervention 2, and more people were in employment in Intervention 1, but these differences were not statistically significant. There were no statistically significant baseline differences between the groups for health-related quality of life (EQ-5D-5L).

[Table 2]

Feasibility results are presented based on the Red-Amber-Green progression criteria. Table 3 summarises the Red-Amber-Green ratings. Key themes with illustrative quotations are presented in Supplementary Material 4.

Feasibility and acceptability of trial procedures

Recruitment: We did not recruit our target sample (n=60). A lower rate of diagnosis (based on initial clinical input) during COVID-19 partly explains our failure to recruit our target number. Patient-participant interviews suggested that the perceived appropriateness of being approached about the study by a member of the clinical team (i.e., during the diagnosis process) was influenced by whether people were expecting to receive a diagnosis of multiple sclerosis or not. Where a diagnosis was unexpected, patients felt this was ‘too soon’ because they needed time to come to terms with the shock of the diagnosis. Others felt that timing was appropriate.

Randomisation: Most found the randomisation protocol acceptable, although some felt that Interventions 1 and 2 were 'better' than Control.

[Table 3]

Appropriateness of measures and feasibility of self-report data collection

We had 36 (90%) and 38 (95%) questionnaire returns at 3- and 6-months follow-up, respectively; however, completion rates for individual measures ranged between 32 to 36 (80-90%), with the lowest completion rate for the EQ-5D-5L. Participants reported the questionnaire completion time was acceptable and they liked having a choice between online or paper format. They considered the Multiple Sclerosis Self-Efficacy Scale (MSSE)[12] most difficult to complete (35; 88% completion rate) because they were uncertain how to answer some questions. Although, overall, participants felt that the questionnaires captured the most important aspects of their experiences, some thought questions were more relevant for those 'further along' in the disease progression.

Feasibility of delivering the intervention

Following randomisation, all Intervention 1 participants received the intervention and 11 (87%) received Intervention 2. Table 4 details progression through the trial and clinical care pathway during the diagnosis process. There were eight participants undergoing diagnosis when referred to the study; seven had had their diagnosis confirmed when they consented and completed the baseline questionnaires, but *all* had a confirmed multiple sclerosis diagnosis *before* they received the intervention.

[Table 4]

Participants in the usual care group met with a nurse-specialist within 6 weeks of their diagnosis. Due to service pressures, 22 (85%) of participants in Intervention 1 and 2 did not meet with a nurse-specialist within 2 weeks of receiving a diagnosis (as stipulated in the PrEliMS programme); however, 9 (82%) participants in Intervention 2 had their first session with a peer support worker within a month following their session with a nurse-specialist (as planned).

All 26 participants who received nurse-specialist support had one session with a nurse-specialist. Eighteen peer support worker sessions took place: with participants receiving one (n=6), two (n=3), or three sessions (n=2). Pre-COVID-19, most nurse-specialist and peer support worker sessions occurred face-to-face (21 (81%) and 8 (44%), respectively); the rest occurred via telephone during the pandemic. The nurse-specialist sessions lasted on average 50 minutes (range 20-80 minutes) and the peer support worker sessions lasted on average 68 minutes (range 10-120 minutes).

Intervention fidelity

Content of sessions: Eighty-five per cent of nurse-specialist session record forms were completed. Most frequent topics were signposting, information provision, and symptom management. Time-sampling of 10 audio-recorded sessions showed that 55% of time was spent discussing the PrEliMS intervention content (i.e., patient-cued discussions based on the needs assessment). This included providing emotional support (references to the workbook, discussing referral to GP/psychology services) and identifying patient needs (17%). People with multiple sclerosis considered the nurse-specialists as trustworthy sources of information.

However, many felt that nurses needed to focus *less* on medications, and suggested more discussion of the workbook content and emotional needs was needed.

Based on session record forms, the most common topics discussed during peer support worker sessions were signposting (18 (100% of) sessions), listening (14 sessions; 78%), and information provision (13 sessions; 72%). Indeed, both people with multiple sclerosis and nurse-specialists considered signposting, e.g., to relevant support groups, a key function of peer support. Peer support workers reported that some people with multiple sclerosis continued to attend the local support groups after the intervention ended.

Delivery of nurse specialist support: Assessment of how nurse-specialists delivered support sessions (n=10 recordings) showed that they mostly reviewed the needs assessment document with the patient-participant (6; 60%); provided additional information on emotional needs (5; 50%); discussed the intervention's underpinning processes/model (e.g., openness to difficult experiences) (5; 50%); and were suitably flexible and responsive to issues raised (8; 80%). Total fidelity scores were between 26% to 69%, with half the sessions scored above 60% (see Supplementary Material 5).

All nurse-specialists interviewed found the session record forms beneficial because they provided structure to sessions. The quality of the sessions improved as they became more experienced, but they felt that receiving more training on psychological concepts/adjustment to diagnosis would further help them.

Health Economics

The costs associated with Intervention 1 and 2 were estimated at £92 and £308 per participant, respectively. The most frequent resource use reported across the three groups were primary/community care, multiple sclerosis clinic, and therapy services. The key drivers of resource use at follow-up were home adaptations and hospital stays, which differed across the groups. Some issues with clarity of wording of items in the service use questionnaire were reported.

Exploration of efficacy

As a feasibility trial, we only explored the signal of efficacy here. Measures at baseline and results from the intention-to-treat analysis are presented in Table 5. There were no statistically significant differences between groups at 3- or 6-months follow-up for all measures, with small effect-size estimates[24] (between 0.005 and 0.086) indicating that group-allocation accounted for less than 9% of the variance in outcomes. Individual-level reliable changes by group allocation at 3- and 6-months follow-up are summarised in Table 5 and Supplementary Material 6.

[Table 5]

Power and sample size calculations, based on minimal clinically important difference (at 6-months follow-up) are presented in Table 6. Taking attrition into account , the sample size in a definitive trial would be between 162 and 186 participants, depending on the primary outcome measure chosen.

[Table 6]

Discussion

Overall, it appears it is feasible to conduct a definitive trial, the PrEliMS interventions are acceptable, and patients request such support. However, some changes to the design are required before this intervention is taken forward.

In terms of recruitment, the number of referrals (three per month) was lower than anticipated, but consistent with the diagnosis rate at multiple sclerosis clinics and is consistent with similar studies.[26] A longer recruitment period and/or additional study sites would improve recruitment rate. Of those approached, 67% met the eligibility criteria, were willing to be recruited, and consented to participate.

A strong preference for a particular treatment group, and differences in the acceptance of clinical equipoise determine whether patients agree to be randomised.[27] Although patients perceived the intervention groups as 'better' than control, all agreed to be randomised and none discontinued due to their group allocation. However, this may raise expectancy bias because we cannot blind participants to treatment allocation.[28] Therefore, clinical equipoise could be more clearly explained during the randomisation process.

Attrition was low across groups. Two participants did not receive the intervention (due to logistical and contact issues) in Intervention 2. Although only relevant to one participant, this highlighted potential challenges in organising peer support worker sessions if individuals live long distances from each other or are reluctant to receive support remotely (telephone or online). We may need to recruit more peer support workers from different regions and participants understand that sessions could be remotely-delivered.

Overall, outcome measure completion rates across all groups and time points were high. Generally, participants found the questionnaires easy and quick to complete. However, participants found the MSSE difficult, and the number of missing items suggest that this might need to be reconsidered for a definitive trial. There were also several missing EQ-5D-5L questionnaires, partly because our licence only included paper copies. Obtaining electronic versions of the EQ-5D-5L license may remedy this.

Although the nurse-specialist support intervention was delivered within the recommended NICE[3] timelines (of first appointment occurring within 6 weeks of diagnosis), only a small proportion of sessions occurred within our planned 2 weeks following diagnosis. The PrEliMS interventions were co-designed with key stakeholders[7] (people with multiple sclerosis, carers/family, healthcare professionals, including nurse-specialists) who jointly agreed that the optimal time for the first nurse-specialist appointment was 2 weeks post-diagnosis, but also acknowledged that the timing of the intervention depended on patients' needs and preferences. We found that it was not feasible to deliver the intervention as per the stakeholders' suggested timeframes because of nurse staffing constraints. Therefore, a more flexible person-centred approach is required.

Participants perceived the support provided by nurse-specialists as trustworthy and credible, but felt that the primary focus should not be on medication alone. Indeed, they felt that psychological aspects and how to obtain support and further information to be lacking from their initial diagnostic consultations.[29] As it may not be possible for nurse-specialists to deliver the intervention in their current workplan (due to capacity issues, experience of nurse-specialists with psychological aspects of multiple sclerosis), we suggest that another workforce (e.g., assistant psychologists) may be better placed to deliver the intervention.

Peer support was positively received. The key feasibility issue was needing more peer support workers from diverse locations to enable more in-person sessions if requested by people with multiple sclerosis.

As a feasibility trial, the study was not powered to detect between-group differences, therefore analyses only offer trends in the data. Exploratory analyses indicated predominantly small effect sizes between groups on all measures at both follow-up periods, consistent with the mixed findings in individual changes (see Supplementary Material 6 and 7) with no differences between the control and intervention groups. One reason could be due to contamination, in that by requesting nurse-specialists to complete session record forms, usual care may have inadvertently changed.

Furthermore, in our multiple sclerosis clinics, like in many others, with nurse-specialists' increasingly focusing on discussing and monitoring use of Disease Modifying Therapies,[30, 31] perhaps there is little time or resource allocated to discuss psychological issues. This is evidenced from the intervention fidelity findings and poses an implementation (including training) consideration in a definitive trial.

Although we recruited from different multiple sclerosis clinics, a limitation of this study is that people with multiple sclerosis and nurse-specialists were recruited from a single NHS centre and peer support workers from one multiple sclerosis charity, which may not therefore be representative of people accessing and delivering services elsewhere. Another limitation of is that we did not reach our recruitment target of 60 participants. However, we had set a higher recruitment target to account for possible dropouts. Furthermore, the number of

participants randomised into each group met the minimum recommended sample sizes of 10 per treatment group of 10 for standardised small or medium effect sizes.[15]

Another issue is the timing of the delivery of the intervention. We recruited people who were within two years of multiple sclerosis diagnosis *or* were undergoing diagnosis process. This timeframe was chosen because (i) the diagnostic process can be lengthy and complicated, and often there is no single date of diagnosis; (ii) our Patient and Public Involvement group members felt that the adjustment period was protracted, and having a shorter period would exclude those still experiencing adjustment difficulties, and (iii) findings from our meta-review[6] and stakeholder focus groups[7] indicated that it was important to balance the provision of reliable sources information, with the need to allow individuals to process the diagnosis in their own time, before providing them with further support. Consequently, while we elected to be inclusive, this has created a heterogenous group, raising issues related to heterogeneity of treatment effects.[32]

In conclusion, our findings suggest that it is largely feasible to conduct a definitive trial and that the PrEliMS interventions are acceptable and patients are requesting such support. However, some changes to the design are required. As the combination of nurse-specialist and peer support was identified as providing different, but complimentary, support to those newly diagnosed, and because we did not find a signal of efficacy in this feasibility trial, we suggest that future trials test our combination intervention (i.e., Intervention 2) compared to usual care. A cluster trial design may address issues of possible contamination of usual care, but some questions remain around whether outcomes can be improved by having a dedicated workforce to deliver the intervention, which may well be within the purview of psychology and/or rehabilitation specialists. Given that the delivery of the intervention by another

workforce has not been formally tested in our trial, a definitive trial may benefit from an internal pilot to assess any new issues in intervention delivery. Given the complexities in arriving at a diagnosis of multiple sclerosis and the increased pressures within clinical services, the timelines for the delivery of the intervention need to be more patient centred, flexible, and in keeping with service realities and patient needs. Based on the current NICE[3] guidelines, providing the intervention within 6 weeks of diagnosis appears more realistic.

Clinical messages:

- It is feasible to deliver such a programme, but it may need to be delivered by psychologists or other rehabilitation professionals.
- People with multiple sclerosis perceived the support provided by nurse-specialists as trustworthy and credible, but felt that the primary focus should not be on medication alone but should also cover emotional needs.
- Nurses may require additional support and training to address emotional and adjustment issues with people with multiple sclerosis.

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Table 1. Measures and data collection timepoints

Measure	**Domain assessed**	**Data collection timepoint**		
		Baseline	**3-month follow-up**	**6-month follow-up**
Demographics questionnaire (including information on their MS diagnosis)	Age, gender, ethnicity, highest education level attained, employment status, duration of MS diagnosis, how long it took to receive multiple sclerosis diagnosis	x		
Perceived Stress Scale 4-item (PSS-4)[9]	Level of perceived stress	x	x	x
Hospital Anxiety and Depression Scale (HADS)[10]	Level of mood disturbance	x	x	x
Multiple Sclerosis Impact Scale-29 (MSIS-29)– psychological subscale (MSIS-psych) (Rasch, version 2)[11]	Perceived psychological impact of MS	x	x	x

Multiple Sclerosis Self-Efficacy Scale (MSSE)[12]	Extent to which participants feel in control of their condition.	x	x	x
The EuroQol 5 Dimension 5 Level (EQ-5D-5L)[13]	Generic patient-reported measure of health-related quality of life	x	x	x
Bespoke service use questionnaire (adapted from a previous multi-centre multiple sclerosis trial)[14]	Use of health and social services	x	x	x

MS: multiple sclerosis

Table 2. Participant demographic and clinical characteristics

		Usual care (n=13)			Nurse-specialist support 1 (n=14)			Nurse-specialist and Peer support 2 (n=13)		
		n	**Mean**	**SD**	***n***	**Mean**	**SD**	***n***	**Mean**	**SD**
Age (years)		13	36.2	14.8	14	41.2	10	13	41.9	11.3
Time since diagnosis (days) (median)		12	21.5* (15.8)	21.7	14	75.6** (28.0)	19.3	13	14 (7.0)	15.1
Time to receive diagnosis (months)		12	8.8	7.6	13	18	19	12	11	10.2
			n			***n***			***n***	
Gender	Man		6			5			1	
	Woman		7			9			12	
Ethnicity	White		12			13			12	
	Black		0			1			1	
	Mixed ethnicity		1			0			0	
Education	Below GCSE		1			0			0	
	GCSE		4			9			3	
	A Level		3			3			2	
	Degree		3			1			6	
	Higher degree		1			1			2	
	Not known		1			0			0	
Employment status	Employed		9			12			9	
	Not employed		3			2			3	
	Voluntary		0			0			1	
	In education		1			0			0	
Type of MS	Relapsing Remitting MS		11			12			9	
	Primary Progressive MS		2			2			4	
	Secondary Progressive MS		0			0			0	

*one outlier (56 days); **two outliers (730 and 112 days); medians are provided; MS: multiple sclerosis

Table 3. Red/Amber/Green ratings and suggested improvements for progression to a definitive trial, by feasibility area

Progression criteria[2]		**Rating**	**Suggested changes**
Recruitment	Number of referrals	Amber	Longer recruitment period; additional sites
	Number of eligible patients, patient willingness to be recruited	Green	
Randomisation	Number of participants randomised	Green	Thoroughly explain randomisation process at enrolment to convey clinical equipoise
	Patient willingness		
Attrition	Number of participants received allocated intervention	Green	Clarify likelihood of remote delivery of support; consider recruiting peer volunteers from wider area
Appropriateness of measures	Completion rates, number of missing questionnaires	Amber	Acquire paper and online licences for all measures
	Acceptability	Amber	Consider alternative to Multiple Sclerosis Self-Efficacy Scale
Nurse-specialist support intervention	Feasibility of delivery	Red	Consider employing Assistant Psychologists to deliver the
	Acceptability	Amber	

Progression criteria[2]		**Rating**	**Suggested changes**
	Intervention fidelity	Amber	intervention to ensure sessions focus on emotional support needs and do not prioritize medical care (unrelated to emotional support).
Peer support intervention	Feasibility of delivery	Amber	Engage peer volunteers from wider geographical region
	Acceptability	Green	
	Intervention fidelity	Green	
Exploration of efficacy	Signal of efficacy	Amber	Consider further training package, and/or employing Assistant Psychologists to prevent sessions prioritising medical care
	Improvers and non-improvers	Amber	

Table 4. Progression through the patient care and trial pathway

Time in days	***n***	**Mean (SD)**	**Range**	**Planned timescale (protocol)**	**Proportion of participants who met protocol planned targets**
Time from point of diagnosis to first contact with research team	36[a]	11.8 (23.7)	0-112	-	-
Time from point of diagnosis to enrolment in study (consent and baseline completion)	38[b]	19.3 (24.4)	1-123	-	-
Time from point of diagnosis to MS Nurse session (Usual care)[c]	12[d]	46.3 (47.7)[e]	13-172	42	9 (75%)
Time from point of diagnosis to MS Nurse session (MS Nurse support 1)	14	39.7 (21.1)	13-79	14	2 (14%)
Time from point of diagnosis to MS Nurse session (MS Nurse + Peer support 2)	12	57.8 (36.1)	5-119	14	2 (17%)
Time from point of diagnosis to Peer support session (MS Nurse + Peer support 2)	11	83.9 (35.5)	33-134	42	2 (18%)
Time from MS Nurse support session to Peer support session (MS Nurse + Peer support 2)	11	22.1 (22.0)	3-65	28	9 (82%)

[a]Four participants missing as date of diagnosis was after referral. [b]Two participants missing as date of diagnosis was after baseline measure completion. [c]For the two-year period before PrEliMS, mean time from point of diagnosis to nurse-specialist appointment was 28 days (SD 23.5), range 0-66 days. [d]One participant is missing as they had not been seen in any nurse-led clinic. [e]Two outliers, 113 and 172 days, skewed the mean. MS: multiple sclerosis

Table 5. Descriptive statistics of outcome measures and effect sizes by group allocation (one-way ANOVA, between group differences)

Measure	Time point	Usual care		Intervention 1 Nurse-specialist support		Intervention 2 Nurse-specialist and Peer support					Effect size
		n	Mean (SD)	*n*	Mean (SD)	*n*	Mean (SD)	df	*F*	*p*	η^2_p [95% CI][c]
Perceived Stress Scale[a] *Score range 0 to 16*	Baseline	13	7.38 (3.1)	14	6.79 (3.6)	13	7.08 (2.7)	2, 39	0.121	0.887	
	3 months	13	5.69 (3.6)	13	6.00 (3.6)	12	6.67 (4.3)	2, 37	0.218	0.805	0.012 [0-0.10]
	6 months	13	6.77 (3.6)	13	6.31 (3.8)	13	6.31 (3.8)	2, 35	0.092	0.912	0.005 [0-0.06]
HADS Anxiety Scale[a] *Score range 0 to 21*	Baseline	13	9.00 (4.6)	14	7.93 (4.1)	13	10.54 (4.6)	2, 39	1.181	0.318	
	3 months	13	7.08 (4.0)	13	7.54 (3.9)	12	9.33 (6.1)	2, 37	0.784	0.464	0.041 [0-0.18]
	6 months	13	7.38 (4.4)	13	7.77 (4.1)	10	9.50 (5.1)	2, 35	0.686	0.511	0.038 [0-0.18]
HADS Depression Scale[a] *Score range 0 to 21*	Baseline	13	6.31 (5.4)	14	4.71 (3.9)	13	7.69 (4.1)	2, 39	1.499	0.237	
	3 months	13	5.85 (6.0)	12	5.83 (5.1)	12	7.83 (5.3)	2, 36	0.531	0.593	0.029 [0-0.16]
	6 months	13	5.85 (5.2)	13	6.15 (4.7)	10	7.60 (4.6)	2, 35	0.403	0.671	0.023 [0-0.14]
Multiple Sclerosis Impact Scale – Psychological Sub-Scale[a] *Score range 9 to 36*	Baseline	13	23.85 (6.6)	13	21.54 (5.3)	13	23.69 (7.5)	2, 38	0.507	0.606	
	3 months	13	20.38 (7.1)	13	20.23 (7.0)	12	21.92 (8.0)	2, 37	0.198	0.821	0.011 [0-0.10]
	6 months	13	20.69 (6.9)	13	21.85 (7.5)	10	23.20 (7.8)	2, 35	0.327	0.724	0.018 [0-0.13]
Multiple Sclerosis Self-Efficacy Scale[b] *Score range 14-84*	Baseline	10	50.40 (10.7)	14	53.86 (14.2)	13	46.23 (14.9)	2, 36	1.057	0.359	
	3 months	13	53.77 (13.0)	13	49.54 (14.3)	12	47.67 (13.2)	2, 37	0.674	0.516	0.035 [0-0.17]

Measure	Time point	Usual care		Intervention 1 Nurse-specialist support		Intervention 2 Nurse-specialist and Peer support					Effect size
		n	**Mean (SD)**	***n***	**Mean (SD)**	***n***	**Mean (SD)**	**df**	***F***	***p***	η^2_p **[95% CI]**[c]
EQ-5D-5L Visual Analogue Scale[b] *Score range 0 to 100*	6 months	13	51.46 (17.2)	12	50.58 (13.4)	10	47.70 (12.5)	2, 34	0.195	0.824	0.011 [0-0.10]
	Baseline	13	75.00 (15.0)	12	69.92 (22.2)	12	61.25 (26.8)	2, 36	1.273	0.293	
	3 months	12	69.29 (28.0)	10	72.50 (20.6)	11	67.73 (29.4)	2, 32	0.088	0.916	0.005 [0-0.07]
	6 months	13	76.92 (20.0)	12	62.08 (23.8)	7	70.71 (21.5)	2, 31	1.452	0.251	0.086 [0-0.26]

[a]Higher scores indicate greater stress, anxiety and depression. [b]Higher scores indicate greater self-efficacy and health; [c]n^2_p effect size index[1]: 0.01 small effect, 0.06 medium effect, 0.14 large effect. The EuroQol 5 Dimension 5 Level (EQ-5D-5L); Hospital Anxiety and Depression Scale (HADS); Multople Sclerosis (MS); Multiple Sclerosis Impact Scale-29 (MSIS-29)–psychological subscale (MSIS-psy); Multiple Sclerosis Self-Efficacy Scale (MSSE); Perceived Stress Scale 4-item (PSS-4).

Table 6. Sample size calculations based on minimal clinically important difference* (based on 6 months follow-up)

Measure	Minimal clinically important difference*	Sample size per group	Sample size per group with attrition	Total (2 groups)
Perceived stress scale	1.73 (0.5SD) points	78	87	174
MSIS-Psy	3-point difference (suggested); in PrEliMS sample 3.62 (0.5SD) points	78	87	174
MS Self-Efficacy scale (MSSE)	7.19 (0.5SD) points	78	89	178
HADS anxiety	Published cut-off 10 points; in PrEliMS sample 2.23 (0.5SD) points	73	81	162
HADS depression	Published cut-off 10 points; in PrEliMS 2.39 (0.5SD) points	84	93	186

Significance level (alpha) of 2.5%, power (i-beta) of 80%, two-tailed, calculated via G*Power; 0.5SD change considered clinically meaningful if there is no published minimal clinically important difference.[25] Hospital Anxiety and Depression Scale (HADS); Multiple Sclerosis (MS); Multiple Sclerosis Impact Scale-29 (MSIS-29)–psychological subscale (MSIS-psy); Multiple Sclerosis Self-Efficacy Scale (MSSE); Perceived Stress Scale 4-item (PSS-4).

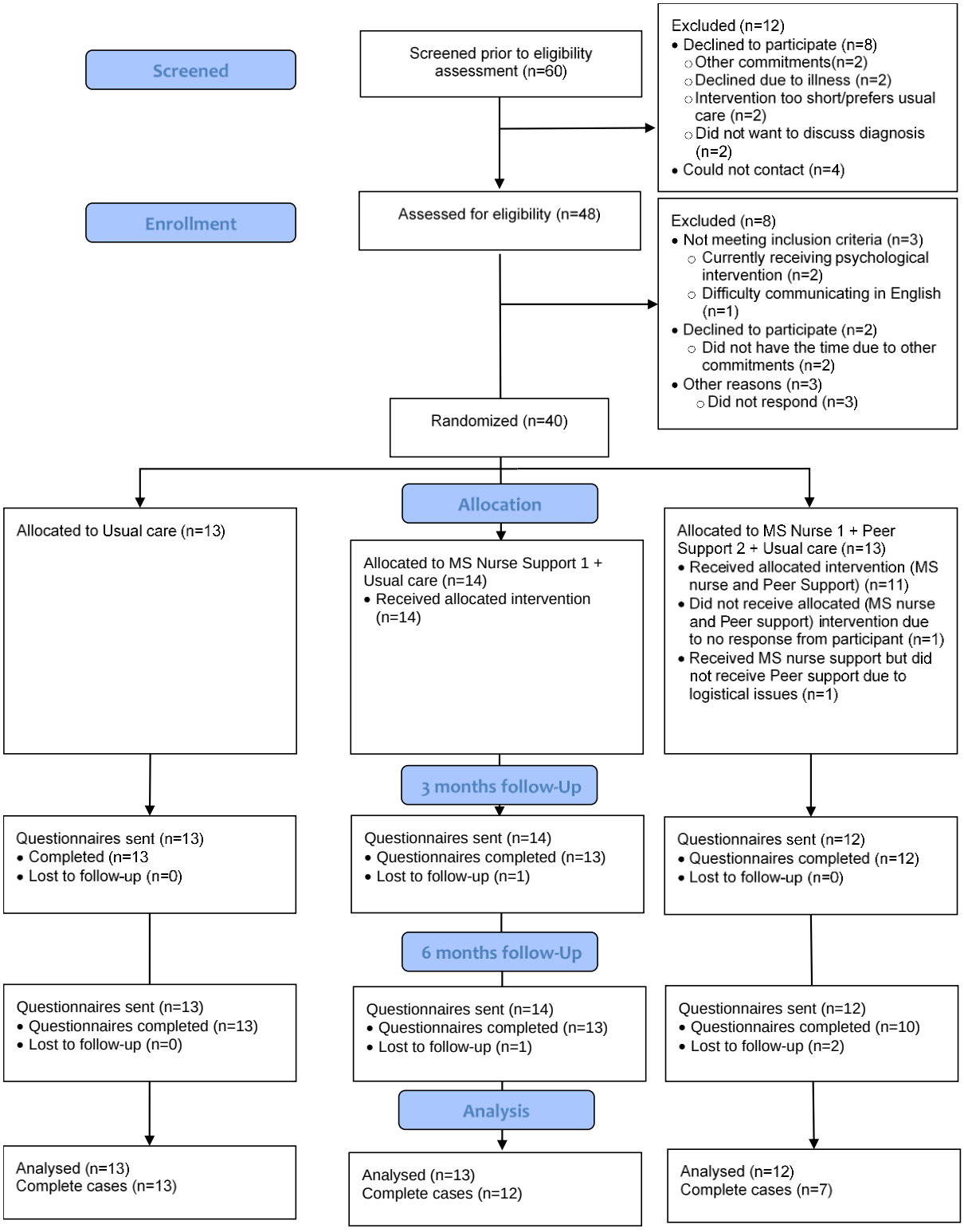

Figure 1. CONSORT flow diagram

Supplementary Materials

Supplementary Material 1. The PrEliMS Intervention Template for intervention and replication (TIDieR) checklist[3]

1.What is the **NAME** of the intervention?	An intervention to provide emotional support during the Multiple Sclerosis diagnosis process (PrEliMS)
2.**WHY** do the intervention?	*Intervention rationale:* The period surrounding MS diagnosis can be highly stressful for both the patients and their families due to long, complicated and challenging diagnosis process. Challenges faced during diagnosis may influence patients' perceptions of MS and their relationships with the healthcare team. The way in which the diagnostic phase is managed may contribute to how successfully patients adjust to MS. NICE and European MS Platform recommend providing accessible information, informed advice and support at diagnosis. There is currently poor support and information provision for people with MS around the diagnosis process.
	What are the underpinning theories? o Model of adjustment to MS diagnosis (developed based on PrEliMS meta-synthesis findings)[4]: People with MS experience several negative emotions and external stressors around the time of diagnosis, which might limit their ability to make sense of MS diagnosis and to adjust to this new and uncertain situation. However, coping and helpful resources might help reduce the negative impact of being diagnosed and facilitate the adjustment process to MS diagnosis o PrEliMS Meta-review findings[4]: o Factors relating to psychosocial adjustment (e.g., negative emotional responses, positive emotional responses, impact on daily life, the impact of family on adjustment, personal attributes, management techniques, and the diagnostic process). o Models of psychosocial adjustment: o Working model of adjustment[5] o Biopsychosocial model o Coping theory o Health Psychology models of health behaviours o Model of emotional adjustment and hope[6] o Model of the psychological impact of the unpredictability of MS[7] o Protection motivation model

	○ Social cognitive theory ○ Frameworks relevant to psychosocial adjustment in MS: ○ European MS Platform code of practice ○ International Classification of Functioning, Disability and Health framework ○ NICE guidelines ○ National Service Framework for long-term conditions ○ Processes associated with the following therapies/therapeutic interventions that served as models: ○ Cognitive Behavioural Therapy ○ Acceptance and Commitment Therapy ○ Mindfulness ○ Motivational interviewing ○ Psychoeducation ○ Supportive counselling/psychotherapy ○ Available interventions for psychosocial adjustment: Interventions varied from cognitive behavioural approaches, relaxation activities, physical activities, educational programmes, counselling, and social support groups. There were also coping-based, self-management and symptom management interventions. ○ Preliminary pathway developed based on literature and PPI input for providing emotional support and advice to people around the MS diagnosis process, bridging the gap between MS clinics to MS Society ○ Stakeholder views and feedback (Focus groups with people with MS, carers/families, health professionals, MS Society staff and volunteers): ○ Need for a point of contact to ask questions ○ Tailored support based on needs (when, how and what to receive) ○ Need for timely information and advice ○ Early referral to MS Society ○ Talking to someone with lived experience ○ MacMillan Cancer support – Just been diagnosed (example model) ○ Shift.ms (example model) ○ Person-based approach to intervention development
	Goals of the elements essential to the intervention? **MS Nurse Support:** To provide standardised support and advice to patients at diagnosis, to better cope with MS diagnosis and associated emotional demands, and improve their mood, self-efficacy and quality of life. **Peer Support:** Opportunity for newly diagnosed patients to discuss concerns, worries and problems and share feelings

	and experiences with another experienced patient (patient with lived experiences) in a non-judgmental, safe environment to help patients feel listened to, experience empathy, feel more empowered about their own feelings, and also help them find the most appropriate support.
3. **WHAT materials** were needed for the intervention?	*Training materials:* o MS Nurse training pack o Peer Support in Long Term Conditions document[8]
	Provider materials: o MS Nurse Support facilitator guide o Better Living with MS toolkit o Standardised referral letters o Peer Specialist Toolkit[9]
	Participant materials: o Supportive handouts
4. What **PROCEDURES** took place in the intervention?	*Recruitment of Peer Support Workers:* o MS Society local branches o MS Patient and Public Involvement Groups
	Provider training: o Group training for Neurologists and MS Nurses (provided by experienced clinical psychologists) o On-going supervision (provided by experienced clinical psychologists) and peer support for MS Nurses o Group training for Peer Support Workers (provided by experienced clinical psychologists) o Supervision training to MS nurses (provided by experienced clinical psychologists)
	Recruitment of patients: MS Clinics
	Intervention: o MS Nurse support: o Face-to-face/phone session with MS Nurse – included answering patients' questions about MS, identifying support needs, providing psychoeducation (e.g., teaching adaptive coping strategies), teaching acceptance and commitment strategies[10], and referring to other services (based on needs) o (for 'Peer Support' intervention component only) Triaging to a Peer Support Worker o Peer Support: Face-to-face//phone/email session with a Peer Support Worker (a patient/carer with lived experience) – included supportive listening and following the Mental Health Foundation's "Peer Support in Long Term Conditions' document[8] and the "Peer Specialist Toolkit" developed by the Veterans Integrated Service Network (VISN) 1 New England of Mental Illness Research Education and

	Clinical Centre (MIRECC)-Peer Education Centre, and the VISN 4 MIRECC-Resource Centre[9].
	Intervention structure: o MS Nurse Support: One face-to-face (or telephone during COVID-19 restrictions) session with MS Nurse within an average of 7 weeks of diagnosis with telephone contact as needed. Sessions lasted an average of 50 minutes (range 20-80 minutes). o Peer Support: Patients were triaged to a Peer Support Worker within one month following their session with the MS Nurse. Most participants received one face-to-face/phone session with the Peer Support Worker, scheduled at a convenient time (and location, where applicable) for both the Peer Support Worker and the patient. The sessions lasted an average of 60 minutes (range 5-120 minutes).
5. **WHO** was involved in the intervention?	*Intervention providers:* o MS Nurse support provided by Specialist MS Nurses who were trained to deliver the intervention o Peer Support provided by 'Peer Support Workers' who are patients/carers with lived experience and who were trained to deliver the intervention
	Participants: o Newly diagnosed MS patients (any type) and who were aged 18 years or over.
6. **HOW** was the intervention delivered?	o 'MS Nurse Support' intervention component delivered one-to-one, face-to-face/phone. o Phone call by the MS Nurse to supplement the sessions (instigated by patient based on needs) o 'Peer Support' intervention component delivered one-to-one: either face-to-face or over the phone or via email (follow-up sessions), based on patient preference. o Programme structure, i.e., number of sessions and frequency, was tailored to the patient based on preference and need. o Carers or family members were able to attend the sessions. o Intervention could be paused based on patient needs and can be placed on a waiting list until the patient is ready to engage. o Goal-setting was used to tailor the intervention to needs of participants
7. **WHERE** was the intervention delivered?	o MS Nurse Support: Hospital (e.g., MS Clinics) o Peer Support: Community (e.g., university, café, park), over the phone or via email (follow-up sessions).

8. **WHEN** was the intervention delivered? **HOW MUCH**?	○ MS Nurse Support: Appointment with an MS Nurse within 7 weeks (an average of 50 minutes). Peer support: Meeting with a Peer Support Worker 4 weeks of diagnosis (minimum of one session – each session an average of 60 minutes).
9. How was the intervention **TAILORED**?	The intervention was tailored according to needs, abilities, and comorbidities of the individual patient. Patients were asked to think about 5 top priority needs before they attended the MS Nurse session and to bring this list with them to tailor the information/support provided accordingly.
	Tailoring occurred through: ○ Content (information on MS and services, coping strategies, support) ○ Delivery (day, time, number of sessions, who delivers sessions [for Peer Support component only]) ○ Goal-setting (needs, aims) ○ Progression (readiness to connect to MS Society)
	Tailoring depended on: ○ Information needs: type of information on MS and services, amount of information ○ Emotional needs: willingness/readiness to talk to a patient/carer Support Worker, identifying mood problems – referral pathway ○ Social support: level of involvement of family members/carers ○ Comorbidities and physical/cognitive symptoms of patients ○ Environmental context
10. **MODIFICATIONS** to the intervention	*What, why, when and how:* The intervention was not modified during the course of the study.
11. **HOW WELL? PLANNED** (How the intervention adherence and fidelity was assessed?)	*How and by whom:* We requested MS Nurses and patients consent to audio-record sessions. Furthermore, MS Nurses and Peer Support Workers were requested to complete record forms detailing topics discussed during the sessions (including information provided).
	Strategies used to maintain/improve fidelity: These recorded sessions were compared to the intervention manual. We mapped the data onto the key elements of content, coverage, frequency and duration, paying attention to facilitation strategies, quality of the delivery and participant responsiveness[11]

12. **HOW WELL? ACTUAL** (the extent to which the intervention was delivered as planned)	○ MS Nurse support: Most of the MS Nurse support sessions took place within 7 weeks following diagnosis (planned timescale 2 weeks). During the support sessions only 55% of the time was spent discussing the PrEliMS intervention content (including workbook and emotional needs). ○ Peer Support: Most of the Peer Support sessions occurred almost 12 weeks following diagnosis (planned timescale 6 weeks). The topics discussed during the sessions as detailed on the record form were consistent with the goals (i.e., content) of the intervention. The minimum number of sessions that were *actually* delivered (one) were lower than those planned (minimum of two sessions).

MS: multiple sclerosis

Supplementary Material 2a. Semi-structured interview guide: Patient participants

[Please note: This is a semi-structured topic guide that is designed to be used flexibly with each participant. As such, the questions and prompts (presented as sub-questions) asked in each interview are likely to vary slightly.]

Opening question

1. Please can you tell me about your experience of being involved in the study?

Recruitment and group allocation

2. How did you come to be involved in the study?
    a. What did that feel like?
3. How did it feel to be allocated to your study group?
    a. How did it feel (not) to be allocated to receive the intervention (extra support from the Nurses and support workers)?

Study procedures

4. What did you think about the information we collected from you at the beginning and end of the study?
    a. How easy (or not) were the questionnaires to complete?
    b. What did you think about how many questionnaires you needed to complete?
    c. Did the questionnaires ask about things that were relevant for you, in relation to what the study was about?
    d. How would you rate the assessments on a scale of 1-10 (1 did not capture important aspects of my experience to 10 fully captured the important aspects of my experience)

For intervention participants only

5. How did you find the intervention (support programme)?
    a. What did you find helpful about the MS Nurse Support sessions? Any particular aspects?
    b. [Ask if in Peer Support Group] What did you find helpful about the Peer Support sessions? Any particular aspects?
    c. What did you find unhelpful about the support programme [Enhance MS Nurse Support / Peer Support sessions]? Any particular aspects?
    d. Were there any particular aspects which were good or bad?
6. How do you think we could improve the support programme in the future?
7. Would you recommend this support programme to other newly diagnosed people with multiple sclerosis?

Impact/Perceived benefits

8. Have you experienced any changes since taking part in this study?
    a. What are these changes?
    b. How do you make sense of these changes?

Other issues

9. Is there anything else you would like to tell me about?

Supplementary Material 2b. Semi-structured interview guide: Intervention Providers

[Please note: This is a semi-structured topic guide that is designed to be used flexibly with each participant. As such, the questions and prompts (presented as sub-questions) asked in each interview are likely to vary slightly.]

Opening question

1. Please can you tell me about your experience of being involved in the study?

Intervention delivery

2. Please can you tell me about your experiences of delivering the 'Enhanced MS Nurse Support' / 'Peer Support' [Ask as appropriate]?
    a. How easy/difficult was it to implement the support programme with newly diagnosed people with MS?
        i. MS nurses – ask them whether they think they are best placed to deliver the intervention. If not, who then?
    b. What went well?
    c. What were the difficulties and how did you overcome them?
    d. How did you find the training that you received?
    e. How did you find using the manual?
    f. How did you find the clinical supervision at site/by the trial therapists?
    g. How did you find the monitoring of your practice by the research study? What was it like using the workbook?
    h. How does the intervention compare to usual care? Is it the same/different?
    i. What are the possible reasons why there was such variation when participants were seen by the nurses (aim was for sessions to occur within 2 weeks of diagnosis? Some participants were not seen until over 12 weeks later)
3. How did participants find the support programme?
    a. Were there any particular aspects which were good or bad?
    b. Did participants experience any changes/benefits from the support programme?
4. How do you think the support programme could be improved in the future?
5. Would you recommend this support programme to other MS Nurses / Peer Support Workers [ask as appropriate] working with newly diagnosed people with MS?

Study procedures

6. Please can you tell me about the recruitment process?
    a. How could this be improved for a future trial?
7. How did you find the study procedures, i.e., working to the protocol?
    a. How could this be improved for a future trial?
8. What did you think about the measures we used at baseline and follow-ups?
    a. How would you rate the assessments on a scale of 1-10 (1 did not capture important aspects of the experience to 10 fully captured the important aspects of the experience)

Service barriers and facilitators **[For MS Nurses only]**

9. Please can you tell me about your experience of working on the trial within your department?
10. What are the main barriers to integrating the trial practice into the wider service of your department?

11. What are the main facilitators of integrating the trial practice into the wider service of your department?

Barriers and Facilitators **[For Peer Support Workers only]**

12. Please can you tell me about your experience of doing the sessions in community settings or online (via Skype)
13. What are the main barriers to deliver the peer support sessions in community settings / online?
14. What are the main facilitators to deliver the peer support sessions in community settings / online?

Other issues

15. Is there anything else you would like to tell me about?

Supplementary Material 3. Study objectives, outcome measures, data collection points and data sources

	Objective	Data/Outcome measure	Analysis	Data sources
1	**Feasibility of proceeding to a Phase III trial**			
	1. Feasibility of trial procedures	Feedback interview data from participants and service providers (i.e., questions about the research process/procedures, and suggested changes to the study)	Framework analysis	Semi-structured interview transcripts. Patient-participants: between 3- and 6-month follow-up. Service providers: after the end of recruitment.
	2. Acceptability of trial procedures	Feedback interview data on the trial procedures	Framework analysis	As above.
	3. Feasibility of randomisation protocol	Feedback interview data on randomisation protocol and willingness and acceptance of patients to be randomised	Framework analysis	As above.
	4. Feasibility of recruitment	Number of patients newly diagnosed with MS during the period of recruitment and referred to the clinical team	Frequencies / percentages	Referral, screening and recruitment logs. CONSORT diagram.
		Number of patients who met the eligibility criteria	Frequencies / percentages	As above.
		Number of consenting/randomised patients	Frequencies / percentages	As above.
		Reasons for non-participation	Frequencies / percentages	As above.
		Retention rates	Frequencies / percentages	As above
		Feedback interview data – participant views of recruitment	Framework analysis	Patient-participant semi-structured interviews transcripts.
	5. Estimating sample size needed for a Phase III RCT	Effect sizes from ANOVAs, standard deviations and attrition rates	Sample size calculation	Participant questionnaires, with data inputted into outcomes database (excel).
	6. Appropriateness of measures	Completion rates of outcome measures	Percentage	Participant log. Study CONSORT diagram.
		Number of missing online and postal data	Percentage	As above

	Objective	Data/Outcome measure	Analysis	Data sources
		Estimates of time (minutes) taken to complete measures (from online/phone data and feedback interviews)	Descriptive statistics	Participant log.
		Feedback interview data – participant views of the appropriateness of measures	Framework analysis	Patient-participant semi-structured interview transcripts
	7. Feasibility of self-report data collection	Number of missing online and postal data	Frequencies / percentages + partial breakdown by items (areas of difficulty?)	Participant log.
	8. Feasibility of audio recording support sessions	Number of participants consenting to audio recording	Frequencies / percentages	Consent form and Participant log.
		Number of support sessions audio recorded	Frequencies / percentages	As above.
		Feedback interviews – participant views of audio recording support sessions	Framework analysis	Patient-participant and MS nurse semi-structured interview transcripts.
2	**Feasibility of the MS diagnosis emotional support intervention**			
	1. Acceptability of intervention (Support 1 and Support 2)	Drop-out rate (and reasons for withdrawal)	Frequencies / percentages	Participant log.
		Number of nurse support & peer support sessions completed	Descriptive statistics / average percentage completion (and range)	As above.
		Feedback interview data	Framework analysis	Patient-participant and MS nurse semi-structured interview transcripts
	2. Feasibility of delivering Support 1 (MS nurse) intervention	Operational issues in delivering intervention through feedback interview data	Framework analysis	MS nurse semi-structured interview transcripts.
		Missed and rescheduled support sessions	Percentage	Participant log
		Length of sessions (minutes)	Average (SD)	Session audio recordings
	3. Feasibility of delivering Support 2 (peer support) intervention	Operational issues in delivering intervention through feedback interview data	Framework analysis	MS nurse and peer support worker semi-structured interview transcripts.

	Objective	Data/Outcome measure	Analysis	Data sources
		Missed and rescheduled support sessions	Percentage	Participant log.
		Length of sessions	Average (SD)	Peer support worker session record forms.
	4. Credibility of intervention	Feedback interview data	Framework analysis	Patient-participant, MS nurse and peer support worker semi-structured interview transcripts
	5. Fidelity of intervention	Sample of support sessions audio data	Percentage	Session audio recordings.
		Content of sessions as reported on the MS nurse and Peer support worker record forms	Fidelity rating against criteria for PrEliMS model consistency - Time-sampling, based on minute-by-minute coding of content, and saliency analysis of intervention transcripts	Nurse support session record form.
	6. Documentation of usual care further	Using service use questionnaire	Frequencies / percentages / descriptive statistics	Participant questionnaires, with data inputted into outcomes database (excel).
		Feedback interview data	Framework analysis	Patient-participant and MS nurse semi-structured interview transcripts
	7. Feasibility of collecting data for an economic evaluation using a bespoke service use questionnaire	Number of missing or clearly invalid service use questionnaire (SUQ) data	Frequencies / percentages + partial breakdown by items (areas of difficulty?)	Participant questionnaires, with data inputted into outcomes database (excel).
		Completion rates	Frequencies / percentages / descriptive statistics	As above.
		Exploration of possible ceiling effects	Descriptive statistics	As above.
		Feedback interview data	Framework analysis	Patient-participant semi-structured interview transcripts
3	**Other outcomes**			

	Objective	Data/Outcome measure	Analysis	Data sources
	1. Perceived stress	PSS4 (Baseline and follow-up [3 & 6 months])	Individual changes – Reliable Change Index (RCI) and Clinically Significant Change (CSC)	Participant questionnaires, with data inputted into outcomes database (excel).
	2. Mood	HADS (Baseline and follow-up [3 & 6 months])	Individual changes – Reliable Change Index (RCI) and Clinically Significant Change (CSC)	As above.
	3. Psychological impact of MS	MSIS-29 – psychological subscale (Baseline and follow-up [3 & 6 months])	Individual changes – Reliable Change Index (RCI) and Clinically Significant Change (CSC)	As above.
	4. Self-efficacy	MSSE (Baseline and follow-up [3 & 6 months])	Individual changes – Reliable Change Index (RCI) and Clinically Significant Change (CSC)	As above.
	5. Health-related quality of life	EQ-5D-5L (Baseline and follow-up [3 & 6 months])	Individual changes – Reliable Change Index (RCI) and Clinically Significant Change (CSC)	As above.
	6. Exploration of effectiveness	PSS4, HADS, MSIS, MSSE	ANOVA	As above.
	7. Exploration of resource use and costs	Service use questionnaire alongside resource use and costs of PrEliMS vs usual care	Descriptive analysis of resource use and costs based on available cases.	As above.

Supplementary Material 4. Patient-participant, nurse-specialist and peer support worker feedback interviews: key themes and subthemes and illustrative examples

Theme	**Sub-theme**	**Illustrative quotes**
Research processes	Recruitment	1. When he [neurologist] said about the study, I think that was good because I feel it's always good to participate in things that are going to improve the way a condition is handled or maybe just provide that extra bit of information. (Woman, aged 51-60, 4 days since diagnosis, Usual Care group) 2. I can't remember exactly when I was asked to join the study, so possibly it weren't the right time […] it's not a great time" (Man, aged 51-60, 1 week since diagnosis, MS Nurse support group) 3. I didn't think it [being introduced to the study during the diagnosis process] was too bad […] I think I also didn't take the news as bad as other people would. (Male, aged 21-30, 6 weeks since diagnosis, Usual Care group) 4. I think either way, it [recruitment] should be done within a short space of time […] if you hear about it [study] you can start processing things, but if you hear about it today or two months later, you're going to try and start having another conversation and rehashing all of that information. (Female, aged 41-50, 3 weeks since diagnosis, Intervention 2 group)

Theme	Sub-theme	Illustrative quotes
	Randomisation	1. Obviously I was devastated by getting the news [diagnosis], so to be on the study I felt I was going to get the maximum help I could get, which really did make me feel more positive. (Female, aged 51-60, 1 day since diagnosis, Intervention 1 group) 2. [I] certainly think that you definitely [...] want to be in [at] least my group. (Male, aged 51-60, 1 week since diagnosis, Intervention 1 group) 3. I did want the third group [Intervention 2], to be honest, because with being totally ignorant to MS, it would have been good to have the full support and indeed the support group (Male, aged 41-50, 1 month since diagnosis, Intervention 1 group) 4. I felt fine, no feelings either way really, I kind of knew that by taking part you're agreeing to, you know, the terms of the study and that if you're not happy I can change my mind later. I felt fine, no feelings either way really, especially because there's no change to the care I would have received anyway. (Female, aged 31-40, 1 week since diagnosis, Usual Care group)
Study questionnaires	Appropriateness of measures –	1. I did think they [questionnaires] were relevant, whether or not it happened to me or not, but yeah, I would think so. (Female, aged 31-40, 2 months since diagnosis, Intervention 2 group)

Theme	Sub-theme	Illustrative quotes
	relevance of content	2. I think the questions were quite broad enough in terms of physical wellbeing and mental wellbeing and, you know, support and things like that, but I think, I remember thinking at the time yeah there's quite a few questions but you can understand why if you were trying to get a holistic picture of how people are doing post diagnosis, because all of those things factor into that, so yeah I can understand why the questions were as they were (Female, aged 31-40, 1 week since diagnosis, Usual Care group) 3. The questionnaires ask things about you know, my day to day activities aren't affected in the slightest. I don't need anybody to help me do anything. I don't see the consultant and the MS nurse regularly. I haven't been put on any medication yet. I was diagnosed in August […] I didn't feel like you probably get much out of my questionnaire because a lot of it was like yeah, I'm fine. No that doesn't apply. (Female, aged 31-40, undergoing diagnosis, Intervention 1 group)
	Feasibility of data collection - format, and	1. The questionnaires were, I'd say, exactly how I'd imagine them. It takes me about 15 minutes to do each one (Male, aged 21-30, 3 weeks since diagnosis, Usual Care group) 2. The amount of questionnaires was fine (Female, aged 41-50, 4 weeks since diagnosis, Intervention 1 group)

Theme	Sub-theme	Illustrative quotes
	ease of completion	3. A couple of times I didn't know whether to answer yes or no. I may have got it [MSSE questionnaire] wrong, the wrong way round. (Female, aged 60+, 3 weeks since diagnosis, Intervention 2 group) 4. I've filled the questions [MSSE questionnaire] out, but then I think to myself I've scored that the wrong way round, should have been on the other way. (Female, aged 41-50, 4 weeks since diagnosis, Intervention 1 group)
MS Nurse Support	Feasibility of delivery - timing of the sessions	1. Yeah, but it would have been nice perhaps to have somebody say to me, like, this is going to be a bit of a shock, we're going to, you know, in a couple of days you'll see an MS nurse and to suggest that I did write down any problems that I was having so that you had someone to talk to them, you know, a bit more structure to talk to them about. (Female, aged 51-60, 1 day since diagnosis, Intervention 2 group) 2. *Interviewer*: So, when do you think you would have benefited from seeing the MS nurse after your diagnosis, at which point do you think would it have been best for you? Interviewee: I think week after. I mean, I don't know if that's too early, but I think you need to be in there straightaway

Theme	Sub-theme	Illustrative quotes
		with it, to be honest, I really do, because it's the most frightening period. (Female, aged 41-50, 4 weeks since diagnosis, Intervention1 group) 3. *Interviewer*: So, our plan was to recruit newly diagnosed patients, and then within 2 weeks they receive PrEliMS. How has that worked in practice? *MS Nurse*: So, in practice, not so well, because the nurse capacity has been a problem recently, and we haven't been able to fulfil that at all [„„] If in the event we see them [patients] for newly diagnosed counselling, we often do see them quite soon after to discuss the treatment anyway. So, it sort of happens. *Interviewer*: So practically speaking, would you say it's realistic or not to have it [first MS Nurse Support session] within those first 2 weeks, take into account the capacity issues. *MS Nurse*: No, not at the moment. Interviewer: What would be more feasible then? *MS Nurse*: Within 6 weeks.
	Content of sessions	1.Interviewer: What was particularly helpful about that session with the MS nurse? Interviewee: I think it was the sort of information and support and the fact I know if something was happening, who to call and I know where to go to. (Female, aged 21-30, 6 days since diagnosis, Intervention 2 group)

Theme	Sub-theme	Illustrative quotes
		2. The thing that I found helpful, or the best thing, I suppose was a little bit better understanding of what the condition [multiple sclerosis) was. (Male, aged 51-60, 1 week since diagnosis, Intervention 1 group) 3. Just that for me, I kind of zoned in on the emotional support around how you feel and how you react to the diagnosis, and thought I would get you know, more information and more of an insight. (Female, aged 31-40, undergoing diagnosis, Intervention 1 group)
Peer Support	Content of sessions	1. I was quite angry all the time and I didn't know why I was angry all the time. I didn't understand what that was until again I spoke to the support worker there. I never really talked to anybody, and this has kind of made me have to talk to somebody I guess, otherwise I'd have been a mess. So that's the biggest thing that I've taken from it, is it's OK to talk about it. (Female, aged 31-40, 2 months since diagnosis, Intervention 2 group) 2. It's the feeling, the outlook. It's just – I'm young still, I'm 23 if I dare say that. And speaking to someone who's a bit older, who's – I think she [Peer Support Worker) was around 50-odd, and still, there's nothing stopping her. MS isn't stopping her – yeah. Better outlook on life. (Female, aged 21-30, 6 days since diagnosis, Intervention 2 group)

Theme	Sub-theme	Illustrative quotes
		3. So she's got experience in that way as well. So, she was saying if you need any advice in terms of like TIT and she had a lot of information on that, and all these things, so she said if you ever want any help with that, just let me know, and I've got all these numbers I can give you. It wasn't just – obviously with her daughter with MS – but she also worked with the MS society, she just had all that experience there. (Female, aged 31-40, 1 week since diagnosis, Intervention 1 group) 4. They [patient-participant] found it [local MS Society support group] quite useful because, you know, if they didn't they wouldn't continue […] like my first person, I think if he didn't find that [support group] useful or if he didn't like me or didn't think it was worthwhile he'd just be like 'no it's OK' and that would be it and maybe he wouldn't then come to our get togethers, etc., but because he stayed engaged, I believe that obviously that's been successful. (Peer Support Worker)

Supplementary Material 5. Fidelity of delivery of multiple sclerosis nurse specialist support.

Session recordings	**Nurse check-in**	**Needs review**	**Outcomes identified**	**Support - information**	**Support - emotional**	**Refer workbook**	**Explain next steps**	**Discussions congruent**	***Advice inconsistent***	**Nurse flexibility**	**Session record form completed**	**Consistency form recording**	**Total**	**%**
Recording 1	2	2	1	2	1	2	1	2	1	2	2	1	**19**	54
Recording 2	1	1	1	1	0	0	0	1	1	1	1	1	**9**	26
Recording 3	2	2	2	2	2	2	2	3	2	2	2	1	**24**	69
Recording 4	2	2	2	2	2	2	1	3	2	2	2	2	**24**	69
Recording 5	2	2	1	2	2	2	1	1	2	1	2	1	**19**	54
Recording 6	2	2	2	2	2	2	2	3	2	2	2	1	**24**	69
Recording 7	2	2	1	2	2	2	2	2	1	2	2	2	**22**	63
Recording 8	0	2	1	2	2	2	1	2	2	2	2	2	**20**	57
Recording 9	2	2	1	2	N/A	2	2	2	2	2	2	2	**21**	60
Recording 10	2	2	1	2	2	1	1	2	2	1	0	N/A	**16**	46
Total	**17**	**19**	**13**	**19**	**15**	**17**	**13**	**21**	**17**	**17**	**17**	**13**		

Key for scoring: 0 No; 1 Yes - Somewhat; 2 Yes - Mostly 3: Yes - Fully. '*Advice inconsistent*' category was reverse scored: 0 Yes - Fully; 1 Yes - Somewhat; 2 No.
N/A: Not available.

Supplementary Material 6. Individual changes: Reliable and clinically significant changes - baseline to 3 months

Measure	Reference values	Usual care n (%)			Intervention 1 Nurse-specialist support n (%)			Intervention 2 Nurse-specialist and Peer support n (%)		
		No change	Improved	Deteriorated	No change	Improved	Deteriorated	No change	Improved	Deteriorated
HADS anxiety	Mean reliability (Cronbach's alpha) score of 0.83[12]; MS population[23], cut-offs[24]	11 (85)	2 (2*) (15)	0	13 (100)	0	0	6 (60)	2 (1*) (20)	2 (20)
HADS depression	Mean reliability (Cronbach's alpha) 0.82[12], MS population[13], cut-offs[14]	11 (85)	1 (1*) (8)	1 (8)	8 (67)	1 (1*) (8)	3 (25)	11 (92)	0	1 (8)
Perceived stress scale (PSS-4)	Mean reliability (Cronbach's alpha) 0.84[15], normative data[16]	10 (77)	3 (2*) (23)	0	9 (64)	3 (3*) (21)	2 (14)	7 (58)	3 (3*) (25)	2 (17)
MS Self-efficacy scale (MSSE)[a]		1[b] (10)	7 (70)	2 (20)	0	5 (42)	7 (58)	0	5 (42)	7 (58)
MSIS-Psy	Mean reliability (Cronbach's alpha) 0.80[17]	11 (85)	2 (15)	0	11 (92)	1 (8)	0	10 (83)	1 (8)	1 (8)

Reliable Change at $p<0.05$; *Clinically significant change; [a]Reporting trends – an increase (positive) or decrease in individual scores; [b]No change in scores.
Hospital Anxiety and Depression Scale (HADS); Multiple Sclerosis (MS); Multiple Sclerosis Impact Scale-29 (MSIS-29)–psychological subscale (MSIS-psych); Multiple Sclerosis Self-Efficacy Scale (MSSE); Perceived Stress Scale 4-item (PSS-4).

Supplementary Material 7. Individual changes: Reliable and clinically significant changes – baseline to 6 months

Measure	Usual care n (%)			Intervention 1 Nurse-specialist support n (%)			Intervention 2 Nurse-specialist and Peer support n (%)		
	No change	Improved	Deteriorated	No change	Improved	Deteriorated	No change	Improved	Deteriorated
HADS anxiety	10 (77)	2 (2*) (15)	1 (8)	11 (84)	1 (1*) (8)	1 (8)	7 (70)	2 (1*) (20)	1 (10)
HADS depression	9 (70)	2 (2*) (15)	2 (15)	10 (77)	0	3 (23)	10 (100)	0	0
Perceived stress scale (PSS-4)	11 (84)	1 (1*) (8)	1 (8)	7 (54)	3 (3*) (23)	3 (23)	6 (60)	2 (2*) (20)	2 (20)
MS Self-efficacy scale (MSSE) [a]	0	6 (60)	4 (40)	2 [b] (18)	2 (18)	7 (64)	1 [b] (10)	4 (40)	5 (50)
MSIS-Psy	11 (85)	2 (15)	0	11 (92)	0	1 (8)	8 (80)	1 (10)	1 (10)

Reliable Change at $p<0.05$; *Clinically significant change; [a]Reporting trends – an increase (positive) or decrease in individual scores; [b]No change in scores, Hospital Anxiety and Depression Scale (HADS); Multiple Sclerosis: MS; Multiple Sclerosis Impact Scale-29 (MSIS-29)–psychological subscale (MSIS-psych); Multiple Sclerosis Self-Efficacy Scale (MSSE); Perceived Stress Scale 4-item (PSS-4).

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