National Institute for Health and Care Excellence

Final

Multiple sclerosis in adults: management

[B] Evidence reviews for coordination of care: the role of MS nurse specialists and other healthcare professionals

NICE guideline NG220

Evidence reviews underpinning recommendations 1.3.1 to 1.3.2 and research recommendations in the NICE guideline

June 2022

Final

These evidence reviews were developed by the Guideline Development Team NGC

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Contents

1 Coordination of care: the role of MS nurse specialists and other healthcare professionals

1.1 Review question

Effectiveness: What is the clinical and cost effectiveness of processes of care, including the role of MS specialist nurses and other healthcare professionals, to improve care coordination and health outcomes in adults with MS?

Qualitative: What information, education and support do adults with MS (themes relating to coordination of care only) and their families and carers find most useful?

1.1.1 Introduction

People with MS face a variety of symptoms and disabilities that arise unpredictably and change over time. Their physical, emotional and social needs may therefore require action from more than one health professional at any time and it's important that these interventions are timely and co-ordinated.

A variety of models have been developed to address this need, but it's recognised some people with MS still find it difficult to access treatment, advice and support from the right people when they need it most.

The importance of adequately co-ordinated, appropriate and comprehensive care is widely acknowledged and is a function for many people with MS undertaken by a MS Specialist Nurse or other health care professional, but guidance is still needed on the processes or roles that would deliver this most effectively.

1.1.2 Summary of the protocol

For full details see the review protocol in Appendix A.

Table 1: PICO characteristics of effectiveness review question

Population	Adults (≥18 years) with MS, including people receiving palliative care.
Interventions	A process of care where an individual healthcare professional (HCP) or group of HCPs are central to coordination of care and the single point of contact such as: • MS nurse specialists • Physiotherapists • Occupational therapists • Key workers • Social prescribers • MDT where the single point of contact is shared, not specified or changes
Comparisons	• Compared to each other • Usual care (where there is no single point of contact)
Outcomes	• Reduction of hospital admissions for: ○ UTI

	○ Pressure sores ○ Falls ○ Respiratory infections • Reduction/prevention of unplanned hospital admissions • Reduction in consultant or GP appointments • Treatment adherence • Relapse rates • Improvement in mental health • Patient / carer satisfaction • Functional scales that quantify level of disability, such as the Expanded Disability Status Scale (EDSS), the Multiple Sclerosis Functional Composite (MSFC), the Cambridge Multiple Sclerosis Basic Score (CAMBS), the Functional Assessment of Multiple Sclerosis (FAMS) • Health-related Quality of Life, for example EQ-5D, SF-36, Leeds MS quality of life scale, MS Impact Scale. • Impact on patients and carers (formal and informal). Follow up: • 3-12 months (minimum of 3 months but can include 1-3 months and downgrade) • >12 months (data from >12 months follow up may be included but will be downgraded as at >12 months it is more likely that other factors such as progression may occur, which would make it more difficult to be sure any effects on outcome are due to healthcare professionals and care coordination)
Study design	• Systematic review/meta-analyses of RCT or cohort studies • RCT • Non-randomised or quasi-randomised studies • Prospective/retrospective cohort studies (comparative only) that have adjusted for relevant confounders (for example age and severity of disease) • Audits / service evaluations

Table 2: PICO characteristics of qualitative review question

Objective	To explore perceptions and experiences of patients with MS, their families and carers in order to determine their information and support needs.
Population and setting	Inclusion: Adults (≥18 years) with MS Exclusion: Children and young people (≤18 years)
Context	Perceptions and experiences of adults with MS (themes relating to coordination of care only) their families and carers regarding the information, education and support they find most useful. Themes may include: • Preferred format of information provision (e.g. face-to-face discussion, remotely, paper, electronic, who gives the information)

	• Content of information (e.g., symptom reduction, timing of intervention) • Information sources other than healthcare professionals (e.g. support groups, online resources, telephone helpline, Apps) • The need for consistency in the information that is provided (especially when provided from more than one source) • Information needs for carers to be considered independently from the needs of the person they care for • Timing of information (timely, repeated when necessary, adapted to change in progression) • Decision making (sometimes being vague and euphemistic so that people with MS and their families and carers go away unable to plan • Greater understanding of own condition • Confidence in self-management • Impact of treatment on lifestyle and lifestyle on treatment • Impact on family • Impact on sexual function • Impact on cognition • Psychological support (e.g., for support with anxiety, fear, confidence) • Delivery of support (e.g. patient's GP, specialist nurse, peer groups) • Speed of response from nurse, consultant etc. • Transition from relapsing remitting to progressive • Role of the MS nurse or health care professional central to coordination of care and their impact on patient experience • Information needs for adults with MS who may become pregnant
Review strategy	Synthesis of qualitative research. Results presented in narrative, diagram and table format. Quality of the evidence will be assessed by a GRADE CerQual approach for each review finding.

1.1.3 Methods and process

This evidence review was developed using the methods and process described in Developing NICE guidelines: the manual. Methods specific to this review question are described in the review protocol in appendix A and the methods document.

Declarations of interest were recorded according to NICE's conflicts of interest policy.

The evidence from the qualitative review on information and support was combined with this evidence review after the protocol was drafted. The qualitative evidence review was conducted to provide further detail of how coordinated care could be delivered. For details of the search strategy and evidence tables for the qualitative review see evidence review A.

A number of studies have been identified that report on the value of the MS specialist nurse (Mynors 2012, Mynors 2015, Bowen 2016, Willmington 2017, Leary 2015, Hannan 2018, Punshon 2021, Hopper 2020)[3, 13, 14, 20, 27-29, 36]. These were identified through a review of the evidence or the call for evidence (see section 1.1.4.2). None of these studies were included mainly due to the absence of a comparator. For full details of exclusion see Appendix J.

1.1.4 Effectiveness evidence

1.1.4.1 Included studies

Two non-randomised studies were included. One compared standard clinical service at 4 MS centres, each involving an MS nurse, to standard clinical service at 2 centres not involving an MS specialist nurse[10]and the other study compared a multidisciplinary MS care protocol to 'traditional' care[16].

These studies are summarised in Table 2 below. Evidence from these studies is summarised in section 1.1.6 on the summary of effectiveness evidence section.

See also the study selection flow chart in Appendix C and study evidence tables in Appendix D.

Call for evidence

The committee identified coordination of care as an area of the scope with limited published evidence. The committee were aware of reports and studies assessing the role of the MS nurse specialist that are currently being conducted but not published or completed but not published. As this review is of high priority for health economic modelling and is a topic where there is limited published evidence, the committee proposed a call for evidence to identify any relevant literature not identified in the searches. The committee agreed to consider a wider variety of evidence to inform their decision making including non-randomised trials, reports, audits and surveys and included these in the call for evidence. Submissions were received from 18 separate organisations or individuals consisting of a variety of reports, commissioned audits or references to publications. All documents and references were checked for relevance to the review question according to the quantitative clinical review protocol. No relevant clinical evidence was obtained that matched the quantitative review protocol, but four reports were summarised as part of the health economic evidence section (see 1.1.10 Summary of health economic studies included in the qualitative evidence). Some references to qualitative studies were submitted and these had already been identified in the search for the information and support for patients (evidence review A). See excluded studies from the call for evidence in Table 20 in Appendix J.

Qualitative evidence

Qualitative evidence on patient and carer views and their perceptions on coordination of care have been included as part of the review on the information and support needs for patients, families and carers. Themes identified relevant to coordination of care have been included in this review document, but evidence tables and other information such as clinical evidence selection is provided in evidence review A. The committee considered the evidence from both the quantitative evidence and qualitative evidence reviews together when making their recommendations. The quantitative evidence review was used to inform recommendations on the clinical and cost effectiveness of different ways of delivering co-ordinated care. The qualitative review was used to add further detail to these recommendations, for example what roles and functions and health professional may have to fulfil. The findings from these two reviews are therefore presented together in this evidence review. Included studies and findings from this qualitative evidence is presented in this report.

In the qualitative review, four studies were questionnaire-based but had a qualitative component (for example, open questions where qualitative responses were required) that was analysed qualitatively and these were included alongside the other included studies which were interview-based (sixteen studies), focus group-based (three studies) or involved a mixture of focus groups and interviews (two studies).

See evidence review A for evidence tables for qualitative evidence.

1.1.4.2 Excluded studies

Differences to the review on coordination of care in CG186

This question has a different approach to the review on coordination of care in the previous NICE guideline (2014) (CG186), and the following studies were excluded from this review; Kirker 1995[18], Wilson 1998[43] and Johnson 2003[17] were excluded because they were non comparative studies, Warner 2005[41] was specific to MS nurses administering IV methylprednisolone, and Pozzilli 2002[35] compared home-based MDT to usual care. This study did include a co-ordinating single point of contact, but it was a telephone operator and not an HCP.

See the excluded studies list in Appendix J.

1.1.5 Summary of studies included in the effectiveness evidence

Table 3: Summary of studies included in the evidence review

Study	Intervention and comparison	Population	Outcomes	Comments
Forbes 2006[10] N=616 Non-randomised controlled trial UK	**Clinical service including specialist MS nurse** n=293 A programme including an MS specialist nurse as a central point of contact which was established to focus on implementing national standards for MS was evaluated across 4 centres. The role of the MS nurse included psychological, social and physical assessments and interventions, coordination and care management and education and support. **Clinical service without a specialist MS nurse (control)** n=323 Two centres where there was low to moderate specialist MS resources and did not have an established MS nurse role. Care provided mainly by neurologists.	Adults with MS mostly progressive MS MS nurse group Mean age (SD): 47.5 (10.8) Type of MS: Relapsing remitting 82 (32%), progressive 163 (56%), other 31 (12%) Control group: Mean age (SD): 50.7 (10.3) Type of MS: Relapsing remitting 89 (30%), progressive 181 (56%), other 38 (14%)	Reduction in hospital admissions in past 12 months Experience and severity of MS related problems (surrogate outcome) Impact of care process (surrogate outcome) Quality of life (SF-36 short form health survey, MSIS-29)	Included in the previous guideline LOW (GRADE) Non RCT, and serious indirectness 50% response rate with no analysis of non-responders. Complex intervention which involved changing a number of factors at the same time.

Study	Intervention and comparison	Population	Outcomes	Comments
Jansen 2006[16] N=173 Prospective cohort Holland	**Transmural care model for MS (TCMMS)** n=80 Multidisciplinary (MD) care protocol that facilitates cooperation among healthcare professionals in various settings such as primary care, hospitals and rehabilitation centres. A nurse acts as the case manager and biannual assessments are made by a MD team, leading to an integrated care pathway being formulated. **Traditional care** n=96 Authors do not report a clear explanation of what traditional care entails but mention that in the Netherlands, care for people with MS is usually provided by their GP or Neurologist and that they receive only a few healthcare services.	Adults with MS TCMMS group Mean age (SD): 51 (9.7) years Disease duration: 12 years Tradition care group Mean age (SD): 45 (NR) Disease duration: 9 years Type of MS: not reported	Use of healthcare in past 10 months Healthcare needs – based on international classification of impairments, disabilities and handicap (ICIDH). Continuity of care (Dutch questionnaire covering supply of health care services, cooperation among healthcare professionals and continuity of care when in transition to another healthcare professional) (surrogate outcome) Quality of life (RAND 36)	Included in the previous guideline VERY LOW (GRADE) Non-randomised comparison study. Significant differences in baseline characteristics between groups for use of rehab specialist, nurse specialist and physical therapist. Limited recording of baseline demographic details so unable to assess comparability of groups. >25% drop-out with no analysis of people who did not complete the study.

1.1.6 Summary of the effectiveness evidence

A meta-analysis of the data was not appropriate due significant differences in interventions, comparators, populations, study designs as well as reporting of the data. Therefore, a narrative summary including summary tables are presented separately for each study.

Forbes 2006

This study compared clinical service at 4 MS centres with established MS nurse specialist programme, to clinical service at 2 centres where an MS specialist nurse role had not been established.

Table 4: Differences in resource utilisation and care processes in groups involving an MS nurse and adults with MS in groups not involving an MS nurse

Outcome	P value	Quality
Hospital admission 12 months	Chi square p=0.26	Very low
Availability of a contact person	Group x time interaction p<0.001	Very low
Availability of help in an emergency	Group x time p=0.1	Very low
Help with urinary problems	Group x time p=0.3	Very low
Help with fatigue	Group x time p=0.71	Very low
Help with bowel problems	Group x time p=0.5	Very low
Help with pressure sores	Group x time p=0.001	Very low

Quality of life and function at 24 months were generally poorer in the MS nurse group than the groups without an MS nurse after adjustment for baseline values. The uncertainty of the direction of the effect was high, except for SF36 general health and SF 36 energy vitality, where a clear effect favouring the group without MS nurses was observed. Table 5 and Table 6 summarise this information:

Table 5: Difference in quality of life between adults with MS in groups involving an MS nurse and adults with MS in groups not involving an MS nurse

Quality of life	Mean difference (intervention – control at 24 month follow up, adjusted for baseline values). Negative values indicate a worse outcome for the MS nurse groups	*p values*	*Quality*
SF36 physical function	-2.81 (- 5.45 to 10.1)	0.04	
SF36 role physical	-2.21(-5.8 to 1.4)	0.22	
SF36 mental health	1.32 (-1.2 to 3.8)	0.31	Very low
SF36 social functioning	-1.61(-6.3 to 1.6)	0.67	Very low
SF36 bodily pain	-4.09(-7.2 to 0.9)	0.01	Very low
SF36 general health	-5.35(-8.1 to -2.5)	<0.001*	Very low
SF36 energy vitality	-2.82 (-5.5 to -0.1)	0.04*	Very low

* Statistically significant difference between groups and certainty in direction of effect

Table 6: Difference in function between adults with MS in groups involving an MS nurse and adults with MS in groups not involving an MS nurse

Function	**MD (95% CIs) [Intervention – control] at follow up – adjusted for baseline inequality. Negative values indicate a worse outcome for the intervention group.**	***p values***	***Quality***
MSIS psychological	-2.38(-5.2 to 0.4)	0.09	Very low
MSIS physical	-1.83(-4.2 to 0.5)	0.13	Very low

Jansen 2006

This prospective cohort study compared a multidisciplinary MS care protocol to ‘traditional’ care. Data were not reported but both groups were reported to have similar judgements of co-ordination of care at follow up.

In terms of healthcare use, there were differences at baseline between groups for use of rehab specialist, nurse specialist and physical therapist but no adjustments were made for these differences. Therefore, it is possible that ten-month findings were confounded by these baseline differences.

Table 7: Healthcare use in the multidisciplinary and traditional care groups

Healthcare professional	**Multidisciplinary group at 10 months (%)**	**Control group at 10 months (%)**	**Between group p**	**Baseline equivalence?**	**Quality**
Neurologist	64/80 (80)	47/96 (49)	<0.001	Y	Very low
GP	59/80 (74)	51/96 (53)	0.01	Y	Very low
Rehab specialist	17/80 (21)	11/96 (12)	NS	N – strongly favouring study group	Very low
Nurse specialist	40/80 (50)	29/96 (30)	0.01	N – favouring comparison group [NB the baseline bias goes against the 10-month effect direction so the direction of effect favouring study group at 10 months can be taken as valid]	Very low
Physical therapist	45/80 (56)	37/96 (39)	0.02	N – favouring study group	Very low
Occupational therapist	15/80 (19)	9/96 (9)	NS	Y	Very low
Social worker	12/80 (15)	8/96 (8)	NS	Y	Very low

The multidisciplinary care group people experienced better quality of life at 10 months in terms of feeling more energetic and vital, and showing fewer changes in general health. It is unclear, however, whether these changes in general health were adverse changes or not. This analysis was adjusted for baseline differences in quality of life (Table 8).

Table 8: Quality of life in the multidisciplinary and traditional care groups

Quality of life variable	**Standardised regression co-efficient (95% confidence interval). This co-efficient, adjusted for baseline values, refers to the increase in the SF36 variable in the multidisciplinary group compared to the traditional care group. Hence a positive value indicates a benefit for the multidisciplinary group.**	***p***	***Quality***
SF36 Physical functioning	-1.662 (-6.099 to 2.856)	0.476	Very low
SF36 Social function	2.532 (-3.836 to 8.901)	0.434	Very low
SF36 role limitations (physical)	6.053 (-4.283 to 16.389)	0.249	Very low
SF36 role limitations (emotional)	7.602 (-4.426 to 19.632)	0.214	Very low
SF36 Mental health	-0.037 (-4.313 to 4.239)	0.986	Very low
SF36 Energy and vitality	4.698 (0.423 to 8.973)	0.031*	Very low
SF36 Bodily pain	0.497 (-5.869 to 6.863)	0.878	Very low
SF36 General health	-0.537 (-5.094 to 4.019)	0.816	Very low

* Statistically significant difference between groups

1.1.7 Qualitative evidence

1.1.7.1 Included studies

General MS population – coordination of care-related themes

The qualitative review on information and support included twenty-six studies (from twenty-seven papers) that covered some themes relevant to coordination of care in the general MS population. The studies included in this section varied in terms of the population and aims. Some focused specifically on coordination of care areas (for example, getting opinions on specific roles such as MS or neurological nurses) and others had more general aims but contained some discussion of coordination of care issues. All but three of the studies were themes reported solely from the perspective of the person with MS or condition; of the remaining three studies, one reported family/carer perspectives only while the other two reported perspectives of both people with MS and family/informal caregivers. Most studies were small, with <100 people included; the exceptions were three studies (n=445-757) where the qualitative component was only through free-text responses to questionnaire, rather than using formal qualitative methods such as interviews or focus groups. One study[1] that was included aimed to identify experiences of people with long-term neurological conditions and the roles of neurological nurses in their care, which included a proportion of people with MS. Despite being a mixed population, this study was judged by the committee to be relevant to include but there were minor concerns about relevance. Studies that were not based in the UK[9, 12, 19, 21, 23, 24, 32-34, 37-39] were also considered to have minor concerns about relevance for this section of the review, given that coordination of care may vary across countries and experiences may therefore differ. Additionally, one study[18] looking at the effect of a single MS nurse was considered to have moderate concerns about relevance as it was published in 1995 and roles and experiences may have changed substantially since that time.

1.1.8 Summary of studies included in the qualitative evidence

Included studies tables are presented below. See Appendix D in evidence review A for full evidence tables.

General MS population – coordination of care themes

Table 9: Summary of studies included in the evidence review

Study	Design	Population	Research aim	Comments
Aspinal 2012[1] UK N=71 (19 with MS)	In-depth telephone or face-to-face interviews with analysis using Framework method.	People with long-term neurological conditions (19/71 had MS)	To assess the effect of English National Service Framework on integrated services on integrated services and continuity of care	Minor concerns about relevance - indirect population as includes people with various types of long-term neurological conditions
Blundell Jones 2014[2] UK N=10	Semi-structured interviews with analysis using interpretative phenomenological approach.	Women with MS	To explore how women with MS coped with their emotions.	

Study	Design	Population	Research aim	Comments
Browne 2015[4] Ireland N=19	Semi-structured interviews with thematic analysis.	People with MS and bladder dysfunction	To explore in depth how bladder dysfunction interferes with quality of life for people with MS.	
Defriez 2003[7] UK N=18	Semi-structured interviews with thematic analysis.	People with MS	To explore the patients' perception of their current care provision and unmet needs	
Edmonds 2007[8] UK N=32	Semi-structured interviews with thematic analysis using constant comparative approach.	People with severe MS	To explore the needs of those people severely affected by MS	
Falet 2020[9] Canada N=29	Semi-structured interviews with inductive thematic analysis	People with severe MS and their informal care providers	To better understand patient and care provider perspectives on the optimal role of their neurologist.	No concerns about relevance despite being non-UK based as topics covered are not related to structure of care and may be relevant across countries
Forbes 2007[11] UK N=445 people responded to a qualitative component of a questionnaire	Postal questionnaire with a qualitative component asking about one thing that would be most helpful in meeting their current needs, with specific method of analysis for qualitative component unclear	People with MS	To identify what people with multiple sclerosis perceive to be important to meeting their needs	
Goicochea Briceno 2021[12] Spain N=26 (16 people with MS and 10 family/carers)	Focus groups with analysis performed through phenomenological approach.	People with MS and their family/caregivers	To learn the experience of patients and their caregivers of the medical care received in the Gregorio Maranon Hospital Demyelinating Unit	
Hunter 2021[15]	Semi-structured interviews with thematic analysis.	People with MS	To develop an in-depth understanding of	

Study	Design	Population	Research aim	Comments
UK N=14			the experiences of individuals living with MS and its impact upon the family system from the perspective of the person with MS	
Johnson, 2003[17] UK N=24	In-depth interviews with thematic analysis.	People with MS	To gain insight into MS specialist nurse roles	
Kirker 1995[18] UK N=71	Interviews, with type of analysis not described, but appears to just be a summary of main results and no formal qualitative methods.	People with MS	To assess the workload and benefits of an MS liaison nurse	Moderate concerns about relevance due to the study being fairly old and possibly less representative of practice now
Learmonth, 2017[19] USA N=50	Semi-structured interviews with thematic analysis.	People with MS	To explore the needs and wants of patients with MS regarding exercise promotion through healthcare providers	Minor concerns about relevance due to the study being non-UK based and it being unclear how relevant it is to UK practice in terms of coordination of care.
Lowden, 2014[21] Canada N=9	Semi-structured interviews with analysis using phenomenological approach.	People with relapsing-remitting MS with at least 2 relapses in the past 2 years	To explore the lived experience of making a first decision about treatment with disease-modifying therapies for relapsing-remitting MS	Minor concerns about relevance due to the study being non-UK based and it being unclear how relevant it is to UK practice in terms of coordination of care.
Markwick, 2014[22] UK N=757 included a free-text comment	Electronic questionnaire with a qualitative component asking about MS services, with content analysis performed	People with MS	To perform content analysis on the views of people with MS about MS services, focussing on physiotherapy provision	
Masoudi, 2015[23] Iran N=23	In-depth, unstructured interviews with inductive thematic analysis	People with MS	To identify continuity of care from the experience and perspective of patients with MS at two teaching hospitals and the	Minor concerns about relevance due to the study being non-UK based and it being unclear how relevant it is to UK practice in terms of coordination of care.

Study	Design	Population	Research aim	Comments
			MS Society in Ahvaz, Iran	
McCurry 2013[24] USA N=6	In-depth interviews with thematic content analysis	Family caregivers of those with MS	To explore the decisions made by informal caregivers of multiple sclerosis care recipients and the resources they use to inform those decisions.	Minor concerns about relevance due to the study being non-UK based and it being unclear how relevant it is to UK practice in terms of coordination of care.
Methley 2017[26] UK N-24	Semi-structured interviews with thematic analysis by constant comparative analysis method	People with MS	To explore perspectives and experiences of people with MS and healthcare professionals of UK healthcare services for MS	
Methley 2017[25] UK N=24	Semi-structured interviews with thematic analysis by constant comparative analysis method	People with MS	To explore perspectives and experiences of people with multiple sclerosis and health care professionals of mental health support for MS in the UK	
Pearce 2020[32] Canada N=16	In-depth interviews with convergent methods (questions added or removed as interview process progressed) and thematic analysis	People with MS	To explore patient experiences with the uncertainty that MS introduces to their lives and the role of communication with their physicians for managing uncertainty	Minor concerns about relevance due to the study being non-UK based and it being unclear how relevant it is to UK practice in terms of coordination of care.
Petrin 2020[33] and Petrin 2021[34] Canada N=48	Focus groups (n=38) or semi-structured interviews (n=10), with analysis through constant comparison analysis.	People with MS	To investigate the health-care access experiences of Ontarians with MS as they manage their condition.	Minor concerns about relevance due to the study being non-UK based and it being unclear how relevant it is to UK practice in terms of coordination of care.
Rintell 2012[37] USA N=54	Semi-structured focus groups with thematic analysis	People with MS	To obtain multiple sclerosis patients' report on their experience receiving mental health care	Minor concerns about relevance due to the study being non-UK based and it being unclear how relevant it is to UK practice in terms of coordination of care.

Study	Design	Population	Research aim	Comments
Senders 2016[38] USA N=34	Semi-structured focus groups with inductive thematic analysis	People with MS	To further understand how stress is addressed in the MS medical visit	Minor concerns about relevance due to the study being non-UK based and it being unclear how relevant it is to UK practice in terms of coordination of care.
Sweet 2013[39] Canada N=21	Semi-structured interviews (n=14) or focus groups (n=7), with analysis by direct content analysis	People with MS	To examine the preferred sources and methods for acquiring physical activity information of individuals with multiple sclerosis	Minor concerns about relevance due to the study being non-UK based and it being unclear how relevant it is to UK practice in terms of coordination of care.
Ward-Abel 2010[40] UK N=750 questionnaires returned but proportion with free-text response unclear	Postal questionnaire with a qualitative component asking about MS nurse experience, with analysis method unclear and appear to just summarise the findings	People with MS	To perform an audit of patient experiences of the MS nurse role	
Warner 2005[41] UK N= unclear	Structured interviews focusing on patient satisfaction across themes associated with service delivery, with qualitative methods mentioned but details not provided	People with MS	To perform an audit of patient pathway into treatment following a relapse	
While 2009[42] UK N=65	Questionnaire with a qualitative component asking about MS nurse role, with thematic analysis using content analysis	People with MS	To describe the perceived role of nurses and other MS carers from perspective of different stakeholders	

1.1.9 Summary of qualitative evidence

Interpretations and explanations from the included studies were synthesised to gain an insight into themes present across the body of evidence as a whole. The main concepts found in each individual study which were relevant to our review question were drawn together to inform understanding of overarching themes, with subthemes identified within some of these main findings.

General MS population – coordination of care themes

Narrative summary of review findings

See Appendix F for full GRADE-CERQual tables.

Review finding (theme) 1: Organisation of care and individuals with a central coordination role

Organisation of care and individuals with a central coordination role was identified as an important theme across studies. Various subthemes contribute to the main finding as they feed into the idea that organisation of care is an important factor to patients and carers, with some reporting how they would like care to be improved and others reporting positive aspects of someone with a central treatment coordination role, usually MS nurses. Subthemes contributing to this main finding included the perceived benefit of having care delivered by as few individuals as possible, the importance of developing a consistent and personal relationship and the ability of clinicians to respond to changing needs of the person, the role of health care professionals in supporting, educating, guiding and helping to access services, coordination and communication across levels of care, allowing people with MS and carers to maintain usual activities and relationships and promoting self-confidence and the ability to cope, as well as the importance of the patient or carer knowing who to contact. These are discussed in more detail below under separate headings.

Subtheme – Care delivered by fewer professionals and developing a consistent and personal relationship – eight studies

A common statement across studies was the preference for care to be delivered by as few healthcare professionals as possible. Reasons for this were most commonly the fact that people felt it frustrating to have to repeat themselves to multiple different professionals and it was also difficult to juggle multiple appointments with different individuals. The frustration of repeating oneself was mentioned in terms of repeating the situation to different types of clinician and also in the context of being assigned a new clinician when the previous one leaves. The latter is unavoidable in terms of organising care but further contributes to the finding that people prefer to be in contact with the same individuals and want to avoid repeating themselves as much as possible, meaning care delivered by as few professionals as possible is ideal. Consistent professional relationships were also reported to increase trust and reassurance among people with MS, meaning they felt able to talk more freely and openly. One study where people had access to a neurological nurse specialist reported the importance of these individuals in reducing the number of professionals required to deliver care and also the number of appointments they needed to attend based on the specialist advice they could provide themselves. Multiple studies where people had access to a neurological or MS nurse specialist or contact with a single professional valued this and reported reassurance, trust and the ability to discuss their condition freely.

Explanation of quality assessment: There was a judgement of moderate confidence in this finding due to concerns about methodological limitations and possibly relevance, but the fairly large number of studies identified contributing to this theme meant moderate confidence was thought to be appropriate.

Subtheme – Knowing who to contact – fifteen studies (from sixteen papers)

The need for people with MS and their carers to have a known point of contact was evident across multiple studies. Evidence for this comes directly from some studies reporting positive experiences of having a single point of contact and also indirectly from others where frustration and confusion about having to facilitate communication between services and not knowing which professional is responsible for specific symptoms of MS was reported. Positive experiences of neurological nurse specialists or MS nurse specialists were described, which included how their role as a point of contact and source of support was reassuring - just the knowledge that they had access to them via email or telephone if needed provided reassurance, even if they never needed to use the service. Others found it easier and quicker to contact the nurse rather than other professionals and also did not want to waste the time of other professionals. Having a well-defined support network of professionals and knowing who to contact was felt to have improved experiences of care and confidence in accessing services for some and the role of a single point of contact in advising and organising appointments and treatment sessions was clear across multiple studies. However, one study where MS nurses were available indicated that there may still be issues for some in terms of accessing relevant information, as they reported that in many cases information was obtained by chance rather than through professionals, though it was unclear whether they had actively asked a point of contact about any of the areas they felt information was lacking on.

Other studies where there did not appear to be a single point of contact available or where this was unclear also highlighted the potential need for a single point of contact. A lack of clarity about who was responsible for specific symptoms suggested uncertainty about who the person should contact and there was a desire for increased coordination of care and a single point of contact to help guide people with MS to the correct services. It was also highlighted that determining how and when to seek care appropriate for their health concern required work and knowledge on the part of people. Some people from one study stated that the choice of service often depended on ease of access, meaning they defaulted to services that were easiest to access such as emergency departments or walk-in clinics. Some people specifically expressed a need for a point of contact that could be accessed 24 hours a day, while others indirectly suggested this need as they described limited opportunity to discuss issues with neurologists due to limited time and number of appointments, something which a point of contact in between these appointments may improve.

Often, the reason for wanting or appreciating a point of contact in between appointments was due to the limited number of appointments with neurologists each year and also limited time within these appointments to discuss all concerns. Some were also concerned about wasting the time of other professionals and a point of contact to discuss concerns with initially may alleviate these concerns. As previously mentioned, another key reason for wanting a point of contact was to navigate services and make sure they were referred to the correct service as and when needed, as it was sometimes unclear who was responsible for which symptoms.

Explanation of quality assessment: There was a judgement of moderate confidence in this finding due to concerns about methodological limitations and possibly relevance, but the fairly large number of studies identified contributing to this theme meant moderate confidence was thought to be appropriate.

Subtheme – Roles of those with a central coordination role

Experiences of those that had access to someone with a coordination role, which was a neurology or MS nurse in most cases, highlighted the roles and benefits of these individuals for people with MS and are explained separately below under five different themes. In addition to studies where there was experience of someone involved in coordination, others where this may not have been the case and where issues with any of the themes occurred are also included as someone involved in coordination of care may have improved the experiences of these people with MS and their carers.

Subtheme within 'Roles of those with a central coordination role' subtheme – Supporting, educating, guiding and accessing services – twenty-one studies

Responses from people that had experience of a neurology or MS nurse involved in their care indicated that these professionals had a large and important role in providing support, educating people with MS, as well as their family and carers. They also in helped people to navigate and access services. People highlighted the importance of advice about disease management such as medication regimes and ways of managing their condition and identifying exacerbations. This allowed proactive care and for issues to be dealt with before they became major issues. People also highlighted that they were key in providing additional types of information and support, such as advice about planning for the future in terms of barriers at work, education, social and leisure activities, and being put in touch with voluntary organisations which allowed access to further information and the opportunity to join peer support groups. Some people also sought emotional support primarily through MS nurses, although others felt that the emotional and mental health side of MS was neglected by services in general and was not addressed enough by MS nurses. One study based in Iran suggested that nurses did not provide sufficient information across different elements of the condition (for example diet), but it was unclear whether this was referring to general nurses or MS nurses and unclear if their role included coordination of care. However, these described limitations in terms of information and support in some studies still highlight how someone with a coordination role may help to improve these experiences by putting people in touch with the correct services or organisations.

People often commented that support from neurology or MS nurses was 'invaluable' and they were often considered to be the first port of call when support or advice was needed. The flexible way in which they provided support, by being just a telephone call away, allowed people fears to be allayed. In addition, fears could be addressed as and when they arose, highlighting the importance of having a point of contact that is accessible as soon as possible.

GPs were also highlighted by some as being important sources of support due to them being closer in terms of geography to people and relatively easy to access. One study demonstrated that people saw neurologists as well placed to accompany patients through progression of their disease and as an important source of information, education, support and reassurance. Examples include information about research and emerging treatments and the availability of aids to improve quality of life, as well as psychological support and reassurance about their condition. Positive descriptions of healthcare professionals included those who took responsibility for the responsiveness of care and continued contact with a single professional was valued. It was reassuring as they knew they would be able to access services if they knew there was someone to contact that could help them navigate services.

For groups of people where it was unclear if there was access to an MS nurse or another professional coordinating care, a lack of knowledge around the current healthcare service and the ability to navigate these services effectively was highlighted.   Some people expressed the sense of having to fight for services, aids and benefits and a lack of information about what was available to them in terms of care and other elements of life such as financial support. Navigating the systems was described as exhausting by some people, with some choosing to use services that were most easily accessible to them such as emergency departments and walk-in clinics as other services were difficult to gain access to. Some people specifically wanted the provision of or increased access to an MS nurse. In the context of bladder symptoms, this meant that people with MS were self-managing without advice from professionals as they did not know who to talk to about this symptom. Having someone with a coordination role could benefit these people with MS by advising them where possible and helping them to access the right services for their symptoms, though it was unclear whether they already had someone in a coordination role already. Others highlighted the limited time available to discuss issues at appointments with those treating them, suggesting a point of contact in between appointments for support and advice would be an improvement for these people.

Explanation of quality assessment: There was a judgement of moderate confidence in this finding due to concerns about methodological limitations and possibly relevance. However, the fairly large number of studies identified contributing to this theme meant moderate confidence was thought to be appropriate.

Subtheme within 'Roles of those with a central coordination role' subtheme – Coordinating and aiding communication across care – thirteen studies (from fourteen papers)

For those that had access to a neurology or MS nurse, coordination of services and facilitating and improving communication between different levels of care was described as one of their roles by many people. Compared to other services from which people were discharged once an issue was resolved, neurology nurse specialists kept people with MS on their lists permanently, which allowed support to be ongoing and meant that interruptions in long-term care could be picked up and other professionals kept informed about changes in health of each person with MS in their role as a coordinator. Their knowledge in forward-planning allowed them to coordinate care and meant that the most appropriate professionals were involved in a person's care at any one time. Their role in coordinating services and information reduced the need for people to have to repeat themselves to different professionals, which was highlighted as a frustration for many. These roles helped to bridge the gap between primary and secondary care for some people and resolve problems with communication and coordination across services. Many felt that without this support it would have been difficult to navigate services and facilitate communication.

For those where they did not appear to have access to an MS nurse or another professional coordinating care, a desire for increased coordination of their healthcare was common. Frustration at the compartmentalisation of departments and having to facilitate communication between services themselves was expressed. The lack of communication and coordination sometimes meant that issues raised in one service were not resolved. Some people also felt that when specific problems arose, there should be an easier referral to different specialists. Issues with being given conflicting information or treatments from different providers were also described by some, also caused by poor communication. One carer that initially struggled to coordinate care themselves expressed relief when they were provided with help with this by a social worker and others described healthcare professionals that took responsibility for the responsiveness of care positively. Some commented that compartmentalisation was still an issue even when they had access to MS nurses, suggesting that they may not always have a role in coordinating care currently. However, this still highlights how improved coordination and communication between services through a care coordinator, regardless of who this is provided by, may improve patient experience.

Explanation of quality assessment: There was a judgement of moderate confidence in this finding due to concerns about methodological limitations and possibly relevance, but the fairly large number of studies identified contributing to this theme meant moderate confidence was thought to be appropriate.

Subtheme within ‘Roles of those with a central coordination role’ subtheme – Responding to changing needs – five studies

Respondents that had access to an MS or neurological nurse described how the long-term relationship they established and the flexibility in which they were able to provide services, information and support was valuable in terms of responding to the changing needs of people with MS which, as a long-term condition, often involved changing needs for example when experiencing relapses or new issues emerging. People reported that the long-term relationship and increased time for nurses to listen to them compared to other professionals, as well as their increased expertise in the condition, allowed them to understand the person as well as the condition and subsequently offer bespoke services and information in response to the person’s needs at that particular time-point. People valued ongoing access to services as and when they needed it and praised the flexibility in which nurses were able to provide support. This included the knowledge and support available at any time as well as the option of nurses visiting them at home rather than having to attend hospital to see them, which could be more difficult at times depending on the condition of the person. The knowledge of this flexibility in response to their needs was also reassuring for some when concerns about the future and whether they would be well enough to attend appointments arose, as they knew they would still be able to have access to services, and some also felt more comfortable discussing more sensitive issues at home with a nurse rather than in a hospital.

For those where it was unclear whether they had access to an MS nurse or another point of contact, comments were made reflecting the need for improved referral to different specialists when specific problems arose and the fact that the fast onset and severe disability caused by MS relapses meant services needed to be highly responsive to minimise distress and disability. People also expressed the need to stay “in the loop” and maintain contact with services in order to access information and emergency treatment and sometimes felt abandoned without regular follow-up, although the extent of this differed depending on the severity of MS and options for treatments. People also highlighted the importance of healthcare providers taking a patient-centred approach, which involves viewing patients as a whole and actively communicating with patients in order to deliver shared decision making between providers and patients, taking into account the person’s lived experience with MS. The patient-centred approach was described as being associated with improved functioning, participation and independence, while when this approach was not taken feelings of being invalidated and left with concerns that had not been addressed were described.

These observations highlight the importance of services and support being responsive to the changing and specific needs of each individual and their carers, which may be improved through having flexible access to a single point of contact and more coordinated care.

Explanation of quality assessment: There was a judgement of low confidence in this finding due to concerns about methodological limitations, adequacy and possibly relevance.

Subtheme within ‘Roles of those with a central coordination role’ subtheme – Promoting self-confidence and the ability to cope – three studies

Another advantage reported by people that had access to a neurological or MS nurse was that the regular review and follow-up, and the flexible way in which support could be provided, led to people feeling better supported, having some control over service use and therefore able to cope. Nurses helped people and their families to learn coping mechanisms and improve their confidence in self-managing the condition as people with MS were aware that if they did need help, they would be able to access it quickly via their nurse, giving them increased personal agency as well as choice and control.

For a group where it was unclear if a point of contact and care coordinator was available, they reported a general lack of information concerning bladder symptoms and difficulty navigating services. This lack of support could have contributed to the difficulties they also described in effectively self-managing their condition and symptoms as people with MS were unable to get sufficient advice, something which may be improved if a point of contact involved in coordination of care was available to guide them to the right resources or professional, reducing the need for them to try to cope alone without professional input.

Explanation of quality assessment: There was a judgement of low confidence in this finding due to concerns about methodological limitations, adequacy and possibly relevance.

Subtheme within 'Roles of those with a central coordination role' subtheme – Helping maintain usual activities and relationships – one study

Respondents from one study that had access to a neurological nurse specialist described how the flexible nature of the service helped them to maintain preferred social and personal relationships and allowed them to participate in activities that maintained or enhanced their quality of life. Examples given included assistance with taking invasive medications at home rather than travelling to the hospital multiple times to receive the treatment, which was beneficial for some in terms of working commitments and minimising disruption to family life. This highlights how someone acting as a point of contact with a role in coordinating care could help to adapt services and care to the needs of those receiving care and allow important relationships and roles to be maintained.

Explanation of quality assessment: There was a judgement of low confidence in this finding due to concerns about methodological limitations, adequacy and relevance.

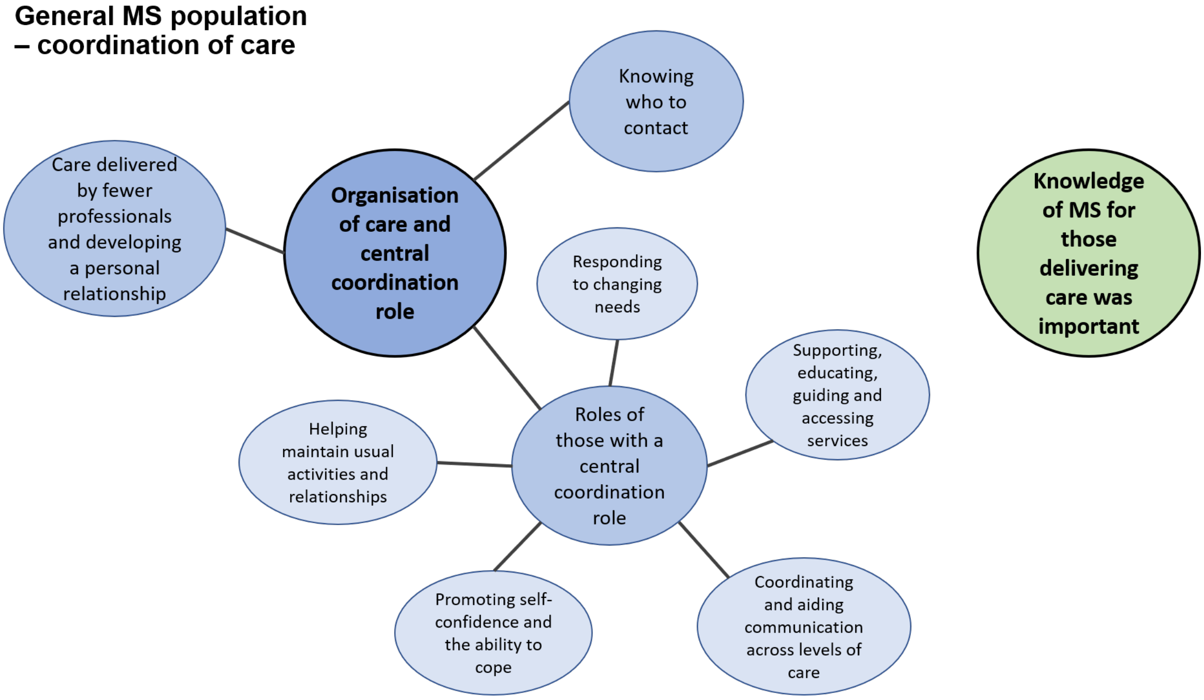
Review finding (theme) 2: Knowledge of MS for those delivering care was important - thirteen studies (from fourteen papers)

For those with access to a neurological or MS nurse specialist, their expertise and increased knowledge of MS was valued and considered reassuring when asking for information and support. In addition to providing reassurance, nurse expertise meant that they could provide advice about medication and management and be proactive in terms of providing care to avoid issues becoming major issues and in some cases reduce the requirement for interventions from other professionals. People compared MS nurses with GPs in terms of their knowledge of MS and the feeling that GPs had limited understanding of MS was common among people, sometimes leading to them feeling unsupported. The increased understanding MS nurses had of the condition meant they were considered to be a lifeline. Some considered MS nurses to have an increased understanding of their condition compared to multiple other professionals, including GPs, neurologists, physiotherapists and occupational therapists, and preferred to contact them for that reason.

Other studies that did not specifically report on direct experiences of MS nurses also highlighted the importance of having access to a point of contact with increased knowledge of MS, as many people commented on the perceived lack of knowledge GPs had about MS, the services and support available and the skills involved in its management. Although many expressed an understanding that as general practitioners, they would not have in-depth knowledge and appreciated the support they did receive, they still wanted support from someone that did have an increased understanding as this could lead to a feeling of being poorly understood and isolated. People described experiences of feeling invalidated or dismissed by providers, noting the provider's knowledge of MS. For example, issues would be immediately ascribed to MS without consideration of other possibilities or MS not considered as a contributing factor for a certain health concern. Some expressed a wish to have increased access to or provision of an MS nurse specifically, while others stated that they preferred care from an MS specialist or neurologist but due to permeability barriers they were often reliant on general practitioners. Some also found occupational therapists, physiotherapists and community nurses to be quite knowledgeable. It was also noted by some that though specialists might be very knowledgeable about the condition, they sometimes lacked the 'lived' experience of MS.

Explanation of quality assessment: There was a judgement of moderate confidence in this finding due to concerns about methodological limitations.

Figure 1: Main review findings and details – coordination of care in general MS population



1.1.10 Summary of health economic studies included in the qualitative evidence

1.1.10.1 Included studies

No health economic studies were included.

1.1.10.2 Excluded studies

No relevant health economic studies were excluded due to assessment of limited applicability or methodological limitations.

A number of studies have been identified that report on the value of the MS specialist nurse (Mynors 2012, Mynors 2015, Bowen 2016, Willmington 2017, Leary 2015, Hannan 2018, Punshon 2021, Hopper 2020)[3, 13, 14, 20, 27-29, 36]. None of these studies met our criteria for assessment of applicability or methodology as they were not economic evaluations and/or did not include a comparator, therefore they have not been added to the included or excluded study lists. In the absence of evidence, a summary of their findings is included in the unit cost section of this report.

See also the health economic study selection flow chart in Appendix G.

1.1.11 Unit costs

Relevant unit costs are provided below to aid consideration of cost effectiveness.

Table 10: Unit cost of health care professionals

Resource	Unit costs (per working hour, including qualifications) (a)	Total annual cost	Source
MS specialist Nurse (band 6/7)	£52 / £61	£77,471 / £92,234	PSSRU 2020[6]
MS specialist pharmacist (band 7/8a)	£64 / £74	£93,501 / £109,786	PSSRU 2020[6], hospital-based pharmacist
Hospital Occupational therapist (OT) (band 6/7)	£52 / £62	£80,485 / £97,342	PSSRU 2020[6], Hospital-based OT
Community Occupational therapist (OT) (band 6/7)	£50 / £60	£77,109 / £93,501	PSSRU 2020[6], Community-based OT
GP	£153	£278,759	PSSRU 2020[6]

(a) Note: Costs per working hour include salary, salary oncosts, overheads (management and other non-care staff costs including administration and estates staff), capital overheads and qualification costs (with individual and productivity costs excluded)

Table 11: Unit costs of health care professional visits and hospital admissions

Visit or hospital admission type	Unit costs	Source
Visits		
Neurology: non-admitted face to face attendance, follow up	£169	HRG code: WF01A NHS reference costs 2018/2019[31]
A&E: weighted average of admitted and non-admitted A&E attendances	£166	HRG code: VB01Z to VB11Z NHS reference costs 2018/2019[31]

Visit or hospital admission type	Unit costs	Source
MS specialist Nurse (band 6/7) surgery appointment (15min)	£13 / £15	Surgery consultation time by a clinical nurse specialist from PSSRU 2015[5], Page 175. Unit costs from PSSRU 2020[6].
MS specialist Nurse (band 6/7) home visit (25 min)	£22 / £25	Home consultation time by a clinical nurse specialist from PSSRU 2015[5], Page 175. Unit costs from PSSRU 2020[6].
MS specialist Nurse (band 6/7) telephone (6 min)	£5 / £6	Telephone appointment time by a clinical nurse specialist from PSSRU 2015[5], Page 175. Unit costs from PSSRU 2020[6].
GP: 9.22 min consultation	£37	Unit cost and duration from PSSRU 2020[6]
Hospital admissions		
Kidney or urinary tract infections – short stay (non-elected)	£452	HRG code: LA04H to LA04S NHS reference costs 2018/2019[31]
Kidney or urinary tract infections – long stay (non-elected)	£2,652	
Kidney or urinary tract infections – elective inpatient	£2,533	
Kidney or urinary tract infections – day case	£273	HRG code: LA04P to LA04S NHS reference costs 2018/2019[31]
Medical care of patients with MS – short stay (non-elected)	£512	HRG code: AA30C to AA30F NHS reference costs 2018/2019[31]
Medical care of patients with MS – long stay (non-elected)	£4,018	
Medical care of patients with MS – elective inpatient	£2,742	
Medical care of patients with MS – day case	£612	

Summary of literature reporting on the value of an MS nurse

Mynors 2012

The first paper, a report by Mynors 2012[28], provided illustrative costs and savings associated with a new MS specialist nurse post using the MS Society cost calculator (2011 edition). This tool is an excel spread sheet which can be used to calculate the actual cost of employing a MS specialist nurse against the cost savings from avoided admissions and other attendances, based on national tariff. The total annual cost (excluding cost savings) for one MS specialist nurse post was estimated to be £63,980 (2011 UK pounds). The cost components considered in the analysis were salary, overheads, telephone, mileage, computer, shared clinic receptionist, clinic room and secretarial support (see Table 12).

The report also considered the potential cost savings in terms of saved outpatient appointments and emergency admissions associated with one MS specialist nurse post. These were illustrative figures which assumed a saving of 300 outpatient appointments and 40 emergency admissions were attributed to the creation of one MS specialist nurse post. Using the national tariff, the authors calculated the expected cost savings to commissioners. The total estimated cost saving was £54,000 for each post (see Table 13). In addition, the report calculated that to breakeven, one MS specialist nurse would need to save 199 outpatient appointments and 21 emergency admissions (see Table 14). Two case studies estimating savings associated with an MS specialist nurse were presented in the report, the figures differed from the cost analysis summarised below.

Table 12: Costs associated with a new MS specialist nurse post (a)

Breakdown	Unit cost (£, 2011)	Assumptions (2011)
Salary	35,000	Band 7 mid-point
On-costs	5,950	17% of salary
Telephone	480	£40 per month
Mileage	791	40 miles per week, 46 weeks per year
Computer	500	
Clinic receptionist (shared)	5,888	4 clinics per week, £36 per clinic
Clinic room cost	7,360	4 clinics per week, £40 per clinic
Secretarial support	8,011	
Total Cost	**63,980**	

(a) Mynors 2012[28]

Table 13: Illustrative cash releasing savings (a)

	Number saved	Unit cost (£, 2011)	Total saving (£, 2011)
Neurology follow up outpatient appointment	300	91	27,300
Neurology emergency admissions	30	2,331	69,930
Other emergency admissions (e.g. UTI)	10	2,056	20,560
TOTAL SAVING			**117,790**
NET CASH RELEASING SAVING TO COMMISSIONER			**53,810**

(a) Source: Mynors 2012[28]

Table 14: Breakeven assumptions (a)

	Number saved	Unit cost (£, 2011)	Total saving (£, 2011)
Neurology follow up outpatient appointment	199	91	18,109
Neurology emergency admissions	10	2,331	23,310
Other emergency admissions (e.g. UTI)	11	2,056	22,616
TOTAL SAVING			**64,035**

(a) Source: Mynors 2012[28]

GEMSS 2015

GEMSS (Generating Evidence in Multiple Sclerosis Services) reported on the findings of their MS specialist nurse evaluation project (Mynors 2015, Bowen 2016[3, 29]). The findings of GEMSS are based on the data collected during 2014/5 by 34 MS specialist nurses working across 15 services in England and Scotland.

Included in the report is a cost-consequence analysis of employing an MS specialist nurse. Of note the outcomes of people with access to an MS nurse are not compared to people without access to an MS nurse as there was no control group in GEMSS. The results of the GEMSS patient and healthcare professional surveys suggests that MS specialist nurse input for people with MS can save money elsewhere in the health system by:

- Preventing hospital admissions and unscheduled care by undertaking early assessment and treatment of relapses, infections and other symptoms.
- Undertaking patient education on self-management and routine preventative work, to prevent symptoms becoming problematic and complications arising.
- Reducing the need for people with MS (pwMS) to see other, more costly professionals, such as GPs and neurologists.

These savings were estimated by asking patients what they would have done if they had not had an MS specialist nurse in the past year. More than a third of respondents said that they would have struggled on their own, with the associated risk that complications of MS would potentially not be dealt with until they were at the point of crisis, requiring unscheduled care. However, nearly half the respondents said that they would have made more use of other services: GPs, neurologists and Accident and Emergency (A&E).

Based on these results, an estimate of the cost for ambulatory care which would have been necessary, had the MS specialist nurse services not been available was presented (using conservative assumptions). They assumed that each person who said they would have seen their GP ‘more’ or gone to A&E would have done so only once during the year, and we have not made any assumption that the A&E visits would have resulted in a hospital admission.

For additional neurology appointments, only 19% of pwMS said that they would have needed to see their neurologist more if the MS specialist nurse had not been there, but the authors note that this is an underestimate. In order to comply with the NICE CG186 recommendations, the authors state that everyone with MS would need to see a neurologist once a year in the absence of an MS specialist nurse, for a comprehensive, specialist annual review. They also assumed (conservatively) that people taking oral or self-injected DMDs would need two neurologist appointments in a year, and those on IV DMDs would need four. When compared to current neurologist contact measured by the GEMSS patient survey (an average of 0.74 consultations with a neurologist per year per pwMS), they calculate that, without an MS nurse, each person on the caseload on average would need an additional 0.68 neurologist consultations each year.

The authors note that even on this very conservative basis, applying these results across a ‘sustainable’ caseload of 358 pwMS, each whole time equivalent (WTE) nurse would have saved the NHS £53.6K in these ambulatory care costs, as shown in Table 15. Across the average caseload per WTE of the participating GEMSS nurses, which is 511 pwMS per WTE nurse, the saving per WTE nurse rises to £77.4K.

Table 15: Conservative modelling of outpatient health service costs saved by MS specialist nurse services

	Additional required per year per person on caseload without the MSSN service	Number avoided (based on caseload of 358 pwMS)	Unit cost	Cost avoided	Source for cost data
Neurologist consultations	0.68	243	£174	£42,359	NHS reference costs 2012-13
A&E visits	0.05	18	£114	£2,041	NHS reference costs 2012-13
GP visits	0.39	140	£66	£9,215	PSSRU unit costs of health and social care 2013, 17.2 minute consultation
Total ambulatory care costs avoided				**£53,614**	

Mynors 2015[29]

The GEMSS patient survey also asked pwMS whether they were admitted to hospital in the past year and whether they thought it was related to their MS. The study found that the number of hospital admissions in this cohort seemed low (9.5%) compared to Public Health England data (17%). The authors noted that one explanation could be that those who have been admitted are less likely to have responded to the survey due to ill health (or ongoing hospitalisation), but another possible explanation is the preventative work carried out by MS specialist nurses and other members of the multidisciplinary team. The GEMSS MS specialist nurses recorded the number of times they responded to pwMS contacting their services about an acute deterioration of their symptoms, including suspected relapses, infections, bladder and bowel symptoms and crises relating to their home situation. These amounted to an average of 157 such contacts per WTE MS specialist nurse during the year. The authors note that if only a relatively small share of such interventions result in a prevented admission (estimated cost of an emergency admission £1,820), the savings are considerable.

Finally, the authors highlight that there are wider societal benefits of MS specialist nurse services. The GEMSS patient survey reported that 5.9% of respondents said that the MS specialist nurse service had helped them stay in employment.

Leary 2015[20] is a retrospective service evaluation of an established UK MS nursing service. The case study reports on the impact of the introduction of proactive nurse-led management and a rapid response service on rates of emergency presentation, hospital admission, and bed use. The proactive management included the appointment of an extra 6 MS specialist nurse hours per week and the reallocation of some administrative work to allow more time to be spent on proactive as opposed to reactive case management and a rapid response service to emergency physical and psychosocial issues. During a 10-year period, moving from reactive management to proactive management demonstrated an increase in complex specialist nursing interventions and led to a decrease in emergency presentation and bed use at the local acute-care centre. Reduction in utilisation was from a mean of 2,700 bed-days per year (2002–2006) to a mean of 198 bed-days per year (2007–2013).

Willmington Healthcare and the MS trust 2017[27] published analyses of English Hospital Episode Statistics (HES) from 2015/16, showing there were 26,679 emergency hospital admissions for people with MS in England compared to 23,665 in 2013/14, and this cost the NHS a total of £46m. The report found that nearly one in five of the 89,030 people living with MS in England were admitted to hospital as an emergency in 2015/16. The average cost per admission was £1,733 and the average length of stay was 8.2 days.

The authors note the most common reasons for emergency MS admissions are often preventable with proactive care: infections (urinary tract and respiratory), bowel problems including constipation, and MS itself (including MS relapse). The report found that urinary tract infections accounted for 14 percent of emergency admissions for MS in 2015/16 and they cost £2,639 per patient. In addition, emergency admissions in people with MS for respiratory issues cost the NHS a total of £5.4m and for bladder and bowel related issues a total of £10.4m (£2,512 per admission).

A business case by **Hopper 2020**[14] reports survey results around the variability of MS nurse service provision in Hampshire for people with MS. The survey found trends suggesting that patients with the lowest engagement with an MS specialist nurse had the highest percentage attendance at GP, district nurse and NHS walk-ins. Similarly, these patients were more likely to have hospital admissions. The author clarifies that the survey does not prove that an MS specialist nurse would affect admissions to NHS facilities, but the data presented shows that there may be an association between the MS specialist nurse system and admissions to NHS facilities.

Hannan 2018[13] is a report of the 2018 MS Trust Nurse Mapping Survey. It provides a summary of the current provision of MS specialist nurses in the UK. The survey found that the number of whole time equivalent (WTE) MS specialist nurses in the UK has increased from 241.2 in 2016 to 250.32 in 2018. This gives an average of one nurse per 379 people with MS. The MS trust suggests that a sustainable caseload for one MS nurse is 315. The authors therefore conclude that the increase in MS specialist nurses has not been rapid enough to counteract the lower sustainable caseload figure and increase in the number of people with MS. They suggested that an additional 61 and 105 new MS specialist nurses (depending on which MS prevalence figure is used) are required to ensure the caseload is sustainable for MS specialist nurses.

Punshon 2021[36] is an MS trust funded study to look into the sustainable caseload for an MS nurse. In this study they suggest a new sustainable caseload of 315 per whole time equivalent MS specialist nurse. This is reduced from the current caseload of 358. The authors report factors such as travel time, complexity of caseload, changing drug therapies and societal issues such as the benefits system contributed to driving demand/workload.

Finally, in the clinical review, one paper[10] reported quality of life differences between groups with an MS nurse compared to groups without an MS nurse. Quality of life and function at 24 months were generally poorer in the MS nurse groups than the groups without an MS nurse after adjustment for baseline values. Furthermore, there was no significant reduction in the hospital admission rate in the past 12 months in the groups with MS nurses relative to the groups without MS nurses. This contradicts the findings from the papers above. Together, the decreased quality of life and lack of reduction in hospital admissions would indicate that an MS nurse would not be cost-effective.

1.1.12 Evidence statements

Effectiveness/Qualitative

One non-randomised study (n=753) reported on statistical significance only with no other data provided. Results showed that there is a statistically significant increase in the availability of a contact person when an MS nurse was introduced. The only significant finding in relation to MS complications was a reduction in the incidence of pressure ulcers in the intervention sites. The evidence was rated as low quality.

One non-randomised study (n=173) reported on the proportion of patients accessing health care professionals showing an increase in the MS nurse group for a rehabilitation therapist, a nurse specialist and physical therapist. Statistical significance was reported only for quality of life and showed a difference in favour of the intervention group for energy and vitality. The evidence was rated as ‘Very Low’ quality.

For qualitative evidence on coordination of care themes, all evidence is summarised in GRADE-CERQual tables in Appendix F

Economic

- No relevant economic evaluations were identified.

1.1.13 The committee’s discussion and interpretation of the evidence

The committee discussed the evidence for this review alongside the findings from the review on information and support for patients (Evidence review A) and this is noted where relevant.

The focus of the question has changed since the last guideline from the effectiveness of general processes of care such as regular review and centralised or electronic records to the effectiveness of the role of a health care professional (HCP) who is central to the process. This role includes the provision of advice and support to manage symptoms and relapses, care planning and directing to appropriate services. Although this role may be carried out by an MS nurse specialist, at scope consultation stakeholders noted that this role is also being carried out by other health care professionals such as physiotherapists and occupational therapists.

1.1.13.1. The outcomes that matter most

The committee acknowledged that co-ordination of care by a specific healthcare professional is difficult to measure. Studies on multidisciplinary teams (MDTs) are usually designed to examine overall changes as a result of implementing a team rather than the effects of specific roles within those teams. Therefore, the impact of particular roles within MDTs may be lost within the multiple interactions occurring during the course of provision of care. The committee agreed that in principle, having a single point of contact within an MDT should help reduce healthcare needs such as hospital admissions, additional GP or consultant appointments and improve quality of life. Therefore, the following outcomes were prioritised for this review: reduction or prevention of unplanned hospital admissions, reduction in consultant or GP appointments, treatment adherence, relapse rates, improvement in mental health, patient or carer satisfaction, functional scales that quantify level of disability, Health-related Quality of Life and impact on patients and carers. These outcomes were considered to be of equal importance the committees decision-making.

Due to the inherent difficulties in conducting research in this field and the sparsity of published studies, the committee wished to consider a wider variety of evidence to inform their decision making. A call for evidence was conducted to seek further evidence from stakeholders including non-randomised trials, reports, audits and surveys. In addition, the committee agreed that the patient perspective was particularly important to consider in this review question and wished to seek evidence on patient experience and perceptions of coordination of care by conducting a qualitative review on co-ordination of care in the general MS population. This qualitative review was a sub-question in a review on information and support needs (the remainder of the review is presented in evidence review A).

1.1.13.2 The quality of the evidence

<u>Review of the clinical effectiveness</u>

A literature search was conducted to look for randomised and non-randomised comparative studies on processes of care which include a single point of contact compared to processes of care where there is no single point of contact. No new studies that had been published since the last MS guideline were identified. A call for evidence did not identify any additional studies that had not already been identified or had already been considered for inclusion in the review.

Two non-randomised studies were included, with all outcomes being assessed as very low quality. One compared standard clinical service at 4 MS centres, each involving an MS nurse, to standard clinical service at 2 centres not involving an MS specialist nurse; and the other study compared a multidisciplinary MS care protocol to ‘traditional’ care. Both of these were already included in the previous guideline. Both studies were rated as very low quality primarily due to the lack of adjustment for differences in potential confounders.

The committee noted the difficulties of assessing the implementation of a MS nurse on outcomes including resource utilisation. For example, the role often changes throughout the trial duration, is multifaceted and is not uniform across services. Furthermore, interventions – in order to be successful – may need to include changes to clinician behaviour, changes to how practices are organised, enhanced information systems and providing education and support to people with MS and their carers.

Qualitative review of relating to the information and support needs of people with MS to the coordination of care

A total of twenty-six qualitative studies (from twenty-seven papers) were included in the review that covered coordination of care-related themes in the general MS population. The majority (seventeen studies) were interview-based, three were focus group-based, two (from three papers) involved a mixture of interviews and focus groups and four involved qualitative components of a questionnaire. In terms of setting, fourteen studies were UK-based, with the others being set in Canada (five studies), USA (four studies), Ireland (one study), Spain (one study) and Iran (one study).

General MS population – themes related to coordination of care only

A total of twenty-six qualitative studies (from twenty-seven papers) were included in the review that covered coordination of care-related themes in the general MS population. The majority (seventeen studies) were interview-based, three were focus group-based, two (from three papers) involved a mixture of interviews and focus groups and four involved qualitative components of a questionnaire. In terms of setting, fourteen studies were UK-based, with the others being set in Canada (five studies), USA (four studies), Ireland (one study), Spain (one study) and Iran (one study).

Of the eight findings that were identified and presented, moderate confidence was present for five of the findings and low confidence for three of the findings based on GRADE CERQual, which reflects downgrading of quality by one and two increments, respectively. Concerns about methodological limitations, either minor or moderate depending on the finding, was one factor contributing to downgrading of evidence quality. Common factors contributing to methodological limitations were a lack of consideration and/or discussion of the role of the researcher and how this may have affected study design and subsequent results, no mention of whether and how results were validated and no mention of data saturation. For those where the confidence in the finding was low, this was because fewer studies reported on that finding, meaning that in addition to methodological concerns there were also concerns about adequacy and there was less confidence in the finding compared to those where there were no concerns about adequacy. For all findings, there were no concerns about coherence.

There were also some minor concerns about relevance for seven of the eight findings identified. This was because there were concerns about relevance for almost half, half or the majority of the studies contributing to the finding. The most common reason for concerns about relevance in studies was being non-UK based, as coordination of care is likely to differ across countries and may be different to the system in the UK. Additionally, one study involved a mixed population of people with different types of long-term neurological conditions, of which MS made up ~27%, and was therefore indirectly applicable to the population the review focused on. There were concerns about a further study as although it was UK-based and aimed to assess the workload and benefits of a single MS liaison nurse, it was published in 1995 and practice and roles of MS nurses may have changed substantially since then. However, it was not thought to be appropriate to use minor concerns about relevance as a reason to downgrade findings another increment and instead confidence in the finding was primarily based on methodological limitations and adequacy, with relevance concerns considered alongside this.

1.1.13.3 Benefits and harms

Review of the clinical effectiveness

Forbes 2006 showed that the implementation of MS nurses led to an increase in the availability of a contact person compared to the comparison group. There was limited impact on MS complications. There was a small but statistically significant worsening of physical and symptoms scales of thee SF36 compared to the comparison group.

Jansen 2006 reported that more MS patients from the intervention group (involving a multidisciplinary care model facilitating cooperation among healthcare professionals, with a nurse acting as case manager and biannual assessments by a multidisciplinary team) consulted specialists than people in the comparison group (traditional care, no clear definition provided but mentions that in the Netherlands care for people with MS is usually provided by GPs or neurologists) and had more healthcare needs. There were no reported differences in judgements of continuity of care of health-related quality of life.

Qualitative review of relating to the information and support needs of people with MS to the coordination of care

Within the qualitative review, themes of care delivered by fewer professionals and developing a consistent and personal relationship; knowing who to contact; roles related to coordination of care that may improve the experience of people with MS and their carers (supporting, educating, guiding and accessing services; coordinating and aiding communication across levels of care; responding to changing needs; promoting self-confidence and the ability to cope; and helping maintain usual activities and relationships); and knowledge of MS for those delivering care were identified.

These findings about roles of those coordinating care were useful in highlighting how having a point of contact and someone coordinating care could improve the experience of people with MS and their carers. The evidence highlighted either that people with access to someone coordinating care felt these were benefits or reported issues with these areas in those where it was not clear whether someone was coordinating care. They represent possible ways in which having a point of contact involved in care coordination could improve experiences of services. The theme 'knowing who to contact' also highlighted the direct importance of a point of contact coordinating care. This was already covered by an existing recommendation that involved provision of a point of contact that could coordinate care and help people to access services.

Based on a further finding in the qualitative review which emphasised the importance of MS knowledge in healthcare professionals communicating with people with MS and their carers, the committee amended the existing recommendation to emphasise that the point of contact should have access to appropriate healthcare professionals, such as an MS nurse.

Because the available clinical and health economic evidence was limited, the committee were not able to specify that the point of contact should have knowledge of MS as this may represent a change in practice and a resource impact. Instead, a point of contact with knowledge of MS services, which would include the point of contact having access to appropriate healthcare professionals, was included as this also covers systems where the point of contact may not currently have knowledge of MS but who is able to get the relevant healthcare professional to contact the person with MS in order to respond to concerns. The committee noted that although MS nurses are a point of contact for many people with MS, there is still variation in practice and specifying this role in a recommendation would have a resource impact. The committee made a research recommendation for comparative studies to be conducted looking at patient and carer outcomes as well as resource utilisation (see Appendix K).In addition to the limited clinical and health economic evidence, there were also concerns that specifying that the point of contact should be an MS nurse or another professional with MS knowledge could mean that they would be inundated with requests for basic information such as date of next appointments if all queries were to go through them which would have a negative effect on their ability to complete other tasks and see patients.

The remaining finding, which there was moderate confidence in, was care being delivered by fewer professionals and developing consistent and personal relationships. This issue is not specifically covered by a recommendation under coordination of care but the statement that professionals who can best meet the needs of the person with MS should be involved and the fact that care should be coordinated suggests that the most appropriate professionals should be involved in the person’s care at any single time-point. Many of the comments about developing consistent relationships from the evidence were related to specific healthcare professionals leaving and being replaced by new professionals, which is something that could not be addressed by a recommendation. The patient experience guideline contains recommendations on continuity of care and relationships in terms of assessing the need for this on an individual level and how this will be achieved and a reference to this guideline was made.

Overall

Taking into account the limited evidence and the low quality of the evidence of the quantitative review the committee were unable to recommend a specific model for how care should be coordinated but emphasised how important it is for people with MS and their carers. A comprehensive model of care involves many health professionals from the community and hospital and from health and social care. The committee acknowledged that different health professionals are able to coordinate care and highlighted that in a number of different services this is provided by MS nurses.

The committee considered that it was not appropriate both on the current evidence base and on their knowledge of differing service organisation, to recommend one model for co-ordination of care. They did consider that due to the complexity and low prevalence of MS, every person with the disease should be able to access healthcare professionals who are knowledgeable. The committee did not think there was evidence that first point of contact and professional with responsibility for co-ordination had to be carried out by a specified health professional.

The committee considered that while it might be possible to define a core multi-disciplinary team of people who are involved in patient care for example, a neurologist, MS nurse, physiotherapist, occupational therapist and neuropharmacist/specialist MS pharmacist (new addition to the recommendation), individual patients might have more need of management from other health care professionals and edited the existing recommendation. A multi-disciplinary team approach should encompass all these perspectives as well as those of patient and family. They noted that the MDT may be supported by administrative support for example a pathway coordinator.

The committee made a research recommendation emphasising the importance of conducting comparative intervention studies so that the benefits and resource savings of a service to coordinate care can be evaluated.

1.1.13.4 Cost effectiveness and resource use

No relevant health economic evaluation studies comparing interventions to improve coordination of care were included in the evidence review. Several studies were identified that reported on the value of the MS specialist nurse, however, none of these studies met the criteria for assessment of applicability or methodology as they were not economic evaluations and/or did not include a comparator, therefore they have not been added to the included or excluded study lists. Instead, a summary of their findings was presented to the committee to aid consideration of cost-effectiveness.

The first analysis (Mynors, 2012) was a report for the MS Trust which produced illustrative figures suggesting that a new MS nurse post could yield a saving to commissioners of £54,000 if they could save 300 outpatient appointments and 40 emergency admissions. This was done using the MS Society cost calculator. The committee were informed that it would be challenging to update these calculations using current unit costs as the MS Society cost calculator is no longer published and it is unclear which Health Resource Group (HRG) codes were used to estimate neurology and other emergency admissions. The GEMSS (Generating Evidence in Multiple Sclerosis Services) 2015 report included a cost-consequence analysis of employing an MS specialist nurse. This was done using the results from the GEMSS patient and healthcare professional surveys, which asked patients what they would have done if they had not had an MS nurse in the past year. The report estimated that when the survey results, alongside a number of conservative assumptions, were applied across a 'sustainable' caseload of 358 people with MS, each whole time equivalent (WTE) nurse would have saved the NHS £53.6K in ambulatory care costs. Leary (2015) was a retrospective service evaluation of an established UK MS nursing service and although it did not adequately address the clinical question for this review, it did report that moving from reactive to proactive MS specialist nurse-led management resulted in a reduction in health care resource utilisation from a mean of 2,700 bed-days per year (2002–2006) to a mean of 198 bed-days per year (2007–2013). Similarly, a report from Willmington Healthcare and the MS trust (2017) did not directly address the review question but rather suggested where savings could be made if MS nurses, or other HCP provided proactive care. The authors noted that the most common reasons for emergency MS admissions are often preventable with proactive care, as the report found that UTIs accounted for 14% of emergency admissions for MS from 2015 to 2016 at a typical cost of £2,639 per patient.

Survey data by Hopper (2020) showed a potential association between the MS specialist nurse system and admissions to NHS facilities, as the results reported trends suggesting that patients with the lowest engagement with an MS specialist nurse had the highest percentage of attendance at GP, district nurse and NHS walk-ins, and that these patients are more likely to have hospital admissions. A couple of papers specifically reported on the caseloads of MS nurses in the UK. Hannan (2018) reported results from the MS Trust nurse mapping survey and found an average of one WTE MS nurse per 379 people with MS in the UK. The MS trust suggests that a sustainable caseload for one MS nurse is 315. The authors concluded that the increase in MS specialist nurses has not been rapid enough to counteract the lower sustainable caseload figure and increase in the number of people with MS. Likewise, Punshon (2021) found that the current recommended UK caseload of 358 people with MS per full-time equivalent appears to be too high, with a considerable amount of work left undone. The authors reported factors such as travel time, complexity of caseload, changing drug therapies and societal issues such as the benefits system contributed to driving demand and workload. Finally, in the clinical review, one paper (Forbes, 2006) reported decreased quality of life and function at 24 months, as well as a lack of reduction in hospital admissions in the past 12 months in groups with an MS nurse groups compared to groups without an MS nurse, after adjustment for baseline values. This contradicts the findings from the papers above and would indicate that an MS nurse would not be cost-effective.

Unit cost tables were also presented to the committee. The tables included the costs associated with staff providing coordination of care to people with MS, according to the studies previously mentioned, as well as the cost of professional visits and hospital admissions. Due to lack the clinical data it was not possible to undertake any further health economic analyses. Based on their clinical experience, the committee suggested that MS nurses may realise some of the savings suggested in the reports summarised above, but they acknowledged that none of these reports provide robust economic evidence upon which to base a recommendation. Therefore, taking into consideration the limitations of current clinical and health economic evidence the committee agreed that little change could be made from the previous guideline. As noted in the ‘benefits and harms’ section, based on the qualitative review, the committee amended the existing recommendation to emphasise that the point of contact should have access to appropriate healthcare professionals. There was insufficient evidence to enable the committee to name any specific healthcare professionals as the first point of contact or co-ordinators. They did specify however that the point of contact should have knowledge of MS services. The amendment of this recommendation should not result in a large change in practice and therefore will not have a significant resource impact. The committee also expanded on which healthcare professionals may be included in the multidisciplinary team. This was based on committee experience and opinion. Finally, the committee made a research recommendation emphasising the importance of conducting comparative intervention studies so that the benefits and resource savings of a service to coordinate care can be evaluated.

1.1.14 Recommendations supported by this evidence review

This evidence review supports recommendations 1.3.1 to 1.3.2 and the research recommendation on coordination of care.

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Appendices

Appendix A – Review protocols

Review protocol for coordination of care (effectiveness)

ID	Field	Content
0.	PROSPERO registration number	CRD42021229689
1.	Review title	Coordination of care
2.	Review question	What is the clinical and cost effectiveness of processes of care, including the role of MS specialist nurses and other healthcare professionals, to improve care coordination and health outcomes in adults with MS?
3.	Objective	To determine the effectiveness of a health care professional who is central to the coordination of care in improving health outcomes for patients with MS
4.	Searches	The following databases (from inception) will be searched: • Cochrane Central Register of Controlled Trials (CENTRAL) • Cochrane Database of Systematic Reviews (CDSR) • Embase • MEDLINE • CINAHL • AMED • Epistemonikos Searches will be restricted by:

		- Date limitations: the role of central coordinators of MS care such as the MS nurse specialists was established in the late 1990. Therefore, this search will be restricted to the last 25 years (1995 onwards) - English language studies - Human studies Other searches: - A call for evidence will be conducted The searches may be re-run 6 weeks before the final committee meeting and further studies retrieved for inclusion if relevant. The full search strategies will be published in the final review.
5.	Condition or domain being studied	Multiple sclerosis
6.	Population	Inclusion: Adults (≥18 years) with MS, including people receiving palliative care. Exclusion: Children and young people (≤18 years).
7.	Intervention	A process of care where an individual healthcare professional (HCP) or group of HCPs are central to coordination of care and the single point of contact such as: - MS nurse specialists

		• Physiotherapists • Occupational therapists • Key workers • Social prescribers • MDT where the single point of contact is shared, not specified or changes
8.	Comparator /	• Compared to each other • Usual care (where there is no single point of contact)
9.	Types of study to be included	• Systematic review/meta-analyses of RCT or cohort studies • RCT • Non-randomised or quasi-randomised studies • Prospective/retrospective cohort studies (comparative only) that have adjusted for relevant confounders (for example age and severity of disease) • Audits / service evaluations • Studies conducted outside a UK setting may be included Published NMAs and IPDs will be considered for inclusion.
10.	Other exclusion criteria	Non-English language studies. Conference abstracts will be excluded as it is expected there will be sufficient full text published studies available.
11.	Context	This review will inform the update of the following recommendation in CG 186: 1.3.1. Care for people with MS using a coordinated multidisciplinary approach. Involve professionals who can best meet the needs of the person with MS and who have expertise in managing MS including:

		• consultant neurologists • MS nurses • physiotherapists and occupational therapists • speech and language therapists, psychologists, dietitians, social care and continence specialists • GPs. 1.3.2. Offer the person with MS an appropriate single point of contact to coordinate care and help them access services.
12.	Primary outcomes (critical outcomes)	All outcomes are considered equally important for decision making and therefore have all been rated as critical. • Reduction of hospital admissions for: ○ UTI ○ Pressure sores ○ Falls ○ Respiratory infections • Reduction/prevention of unplanned hospital admissions • Reduction in consultant or GP appointments • Treatment adherence • Relapse rates • Improvement in mental health • Patient / carer satisfaction

		• Functional scales that quantify level of disability, such as the Expanded Disability Status Scale (EDSS), the Multiple Sclerosis Functional Composite (MSFC), the Cambridge Multiple Sclerosis Basic Score (CAMBS), the Functional Assessment of Multiple Sclerosis (FAMS) • Health-related Quality of Life, for example EQ-5D, SF-36, Leeds MS quality of life scale, MS Impact Scale. • Impact on patients and carers (formal and informal). • Follow up/Timepoints • 3-12 months (minimum of 3 months but can include 1-3 months and downgrade) • >12 months (data from >12 months follow up may be included but will be downgraded)
13.	Secondary outcomes (important outcomes)	n/a (see above)
14.	Data extraction (selection and coding)	All references identified by the searches and from other sources will be uploaded into EPPI reviewer and de-duplicated. 10% of the abstracts will be reviewed by two reviewers, with any disagreements resolved by discussion or, if necessary, a third independent reviewer. The full text of potentially eligible studies will be retrieved and will be assessed in line with the criteria outlined above. A standardised form will be used to extract data from studies (see Developing NICE guidelines: the manual section 6.4). 10% of all evidence reviews are quality assured by a senior research fellow. This includes checking: • papers were included /excluded appropriately • a sample of the data extractions • correct methods are used to synthesise data • a sample of the risk of bias assessments

		Disagreements between the review authors over the risk of bias in particular studies will be resolved by discussion, with involvement of a third review author where necessary. Study investigators may be contacted for missing data where time and resources allow.
15.	Risk of bias (quality) assessment	Risk of bias will be assessed using the appropriate checklist as described in Developing NICE guidelines: the manual. The following checklist will be used according to study design being assessed: • Systematic reviews: Risk of Bias in Systematic Reviews (ROBIS) • Randomised Controlled Trial: Cochrane RoB (2.0) • Non randomised study, including cohort studies: Cochrane ROBINS-I 10% of all evidence reviews are quality assured by a senior research fellow. This includes checking: • papers were included /excluded appropriately • a sample of the data extractions • correct methods are used to synthesise data • a sample of the risk of bias assessments Disagreements between the review authors over the risk of bias in particular studies will be resolved by discussion, with involvement of a third review author where necessary.
16.	Strategy for data synthesis	Pairwise meta-analyses will be performed using Cochrane Review Manager (RevMan5). Fixed-effects (Mantel-Haenszel) techniques will be used to calculate risk ratios for the binary outcomes where possible. Continuous outcomes will be analysed using an inverse variance method for pooling weighted mean differences.

		To maximise the amount of data for meta-analysis, where multiple scales have been used for an outcome such as mobility, fatigue or spasticity, the most commonly reported ones across studies will be extracted and meta-analysed with priority given to those included in CG 186. Where available, outcome data from new studies will be meta-analysed with corresponding data included in CG 186. Heterogeneity between the studies in effect measures will be assessed using the I^2 statistic and visually inspected. An I^2 value greater than 50% will be considered indicative of substantial heterogeneity. Sensitivity analyses will be conducted based on pre-specified subgroups using stratified meta-analysis to explore the heterogeneity in effect estimates. If this does not explain the heterogeneity, the results will be presented pooled using random-effects. GRADEpro will be used to assess the quality of evidence for each outcome, taking into account individual study quality and the meta-analysis results. The 4 main quality elements (risk of bias, indirectness, inconsistency and imprecision) will be appraised for each outcome. Publication bias is tested for when there are more than 5 studies for an outcome. The risk of bias across all available evidence was evaluated for each outcome using an adaptation of the 'Grading of Recommendations Assessment, Development and Evaluation (GRADE) toolbox' developed by the international GRADE working group http://www.gradeworkinggroup.org/ Where meta-analysis is not possible, data will be presented and quality assessed individually per outcome. If sufficient data is available, meta-regression or NMA-meta-regression will be conducted. WinBUGS will be used for network meta-analysis, if possible, given the data identified.
17.	Analysis of sub-groups	Subgroups that will be investigated if heterogeneity is present: • According to type (relapsing remitting MS, secondary progressive MS, and primary progressive MS) • According to disability (EDSS <6 and EDSS ≥6) • Disease modifying treatment status (currently using and not currently using) • Patients with and without comorbidities • People receiving palliative care These subgroups have been identified as having varying degrees of complexity of needs which may influence the effectiveness of the intervention.

18.	Type and method of review	☒	Intervention	
		☐	Diagnostic	
		☐	Prognostic	
		☐	Qualitative	
		☐	Epidemiologic	
		☐	Service Delivery	
		☐	Other (please specify)	
19.	Language	English		
20.	Country	England		
21.	Anticipated or actual start date	October 2020		
22.	Anticipated completion date	July 2022		
23.	Stage of review at time of this submission	Review stage	Started	Completed
		Preliminary searches	☑	☐
		Piloting of the study selection process	☐	☐
		Formal screening of search results against eligibility criteria	☐	☐
		Data extraction	☐	☐

		Risk of bias (quality) assessment	☐	☐
		Data analysis	☐	☐
24.	Named contact	5a. Named contact National Guideline Centre 5b Named contact e-mail MultipleSclerosisUpdate@nice.org.uk 5e Organisational affiliation of the review National Institute for Health and Care Excellence (NICE) and the National Guideline Centre		
25.	Review team members	From the National Guideline Centre: • Dr Sharon Swain [Guideline lead] • Dr Saoussen Ftouh [Senior systematic reviewer] • Nicole Downes [Systematic reviewer] • Emma Carter [Health economist] • Lina Gulhane [Information specialist] • Emma Clegg [Information specialist] • Kate Ashmore [Project Manager]		
26.	Funding sources/sponsor	This systematic review is being completed by the National Guideline Centre which receives funding from NICE.		

27.	Conflicts of interest	All guideline committee members and anyone who has direct input into NICE guidelines (including the evidence review team and expert witnesses) must declare any potential conflicts of interest in line with NICE's code of practice for declaring and dealing with conflicts of interest. Any relevant interests, or changes to interests, will also be declared publicly at the start of each guideline committee meeting. Before each meeting, any potential conflicts of interest will be considered by the guideline committee Chair and a senior member of the development team. Any decisions to exclude a person from all or part of a meeting will be documented. Any changes to a member's declaration of interests will be recorded in the minutes of the meeting. Declarations of interests will be published with the final guideline.	
28.	Collaborators	Development of this systematic review will be overseen by an advisory committee who will use the review to inform the development of evidence-based recommendations in line with section 3 of Developing NICE guidelines: the manual. Members of the guideline committee are available on the NICE website.	
29.	Other registration details		
30.	Reference/URL for published protocol		
31.	Dissemination plans	NICE may use a range of different methods to raise awareness of the guideline. These include standard approaches such as: • notifying registered stakeholders of publication • publicising the guideline through NICE's newsletter and alerts • issuing a press release or briefing as appropriate, posting news articles on the NICE website, using social media channels, and publicising the guideline within NICE.	
32.	Keywords	Multiple sclerosis, coordination of care, MS nurse specialist, occupational therapist, physiotherapist	
33.	Details of existing review of same topic by same authors	None	
34.	Current review status	☒	Ongoing

		☐	Completed but not published
		☐	Completed and published
		☐	Completed, published and being updated
		☐	Discontinued
35..	Additional information		
36.	Details of final publication	www.nice.org.uk	

Review protocol for information and support for patients (themes relating to coordination of care only), their families and carers

ID	Field	Content
0.	PROSPERO registration number	CRD42021229745
1.	Review title	Information and support for MS patients, their families and carers.
2.	Review question	2.1 What information, education and support do a) adults with clinically isolated syndrome b) adults with MS c) adults with MS receiving palliative care d) adults with MS who may become pregnant, and their families and carers find most useful?
3.	Objective	To explore perceptions and experiences of patients with MS, their families and carers in order to determine their information and support needs.
4.	Searches	Key papers:

		Davies F, Edwards A, Brain K, Edwards M, Jones R, Wallbank R, et al. BMJ Open. 2015;5(7): e007674. O'Loughlin E, Hourihan S, Chataway J, Playford ED, Riazi A. Disabil Rehabil. 2017;39(18):1821-8. Davies F, Wood F, Brain KE, Edwards M, Jones R, Wallbank R, et al. International Journal of MS Care. 2016;0(0) The following databases will be searched: • Cochrane Central Register of Controlled Trials (CENTRAL) • Cochrane Database of Systematic Reviews (CDSR) • Embase • MEDLINE • CINAHL • PsycINFO • Epistemonikos Searches will be restricted by: • Date limitations: 2010 onwards. The MS patients experience has changed significantly over the years particularly with the advent of the MS nurse specialists. Clinically isolated syndrome also became a possible diagnosis around this time. • English language studies • Human studies • Any other filters

		The searches may be re-run 6 weeks before the final committee meeting and further studies retrieved for inclusion if relevant. The full search strategies will be published in the final review. Medline search strategy to be quality assured using the PRESS evidence-based checklist (see methods chapter for full details).
5.	Condition or domain being studied	Multiple Sclerosis
6.	Population	Inclusion: Adults (≥18 years) with MS, including: - people receiving palliative care - people with clinically isolated syndrome - people who may become pregnant, - families and carers Exclusion: Children and young people (≤18 years)
7.	Phenomena of interest	Perceptions and experiences of adults with MS, including people receiving palliative care and people with clinically isolated syndrome, people who may become pregnant their families and carers regarding the information, education and support they find most useful.
8.	Comparator/Reference standard/Confounding factors	Not applicable

9.	Types of study to be included	Qualitative interview and focus group studies (including studies using grounded theory, phenomenology or other appropriate qualitative approaches, including survey data or other types of questionnaires only if they provided analysis from open-ended questions).
10.	Other exclusion criteria	Quantitative studies (i.e. closed questionnaire surveys) Non-English language studies. Conference abstracts will be excluded because they are unlikely to contain enough information to assess whether the population matches the review question in terms of previous medication use, or enough detail on outcome definitions, or on the methodology to assess the risk of bias of the study.
11.	Context	This review will inform the update of recommendations 1.2.2-1.2.9 in CG 186
12.	Primary outcomes (critical outcomes)	Themes will be derived from the evidence identified for this review and may include: • Preferred format of information provision (e.g. face-to-face discussion, remotely, paper, electronic, who gives the information) • Content of information (e.g., symptom reduction, timing of intervention) • Information sources other than healthcare professionals (e.g. support groups, online resources, telephone helpline, Apps) • The need for consistency in the information that is provided (especially when provided from more than one source) • Information needs for carers to be considered independently from the needs of the person they care for

		• Timing of information (timely, repeated when necessary, adapted to change in progression) • Decision making (sometimes being vague and euphemistic so that people with MS and their families and carers go away unable to plan • Greater understanding of own condition • Confidence in self-management • Impact of treatment on lifestyle and lifestyle on treatment • Impact on family • Impact on sexual function • Impact on cognition • Psychological support (e.g., for support with anxiety, fear, confidence) • Delivery of support (e.g. patient's GP, specialist nurse, peer groups) • Speed of response from nurse, consultant etc. • Transition from relapsing remitting to progressive • Role of the MS nurse or health care professional central to coordination of care and their impact on patient experience • Information needs for adults with MS who may become pregnant
13.	Secondary outcomes (important outcomes)	Not applicable
14.	Data extraction (selection and coding)	All references identified by the searches and from other sources will be uploaded into EPPI reviewer and de-duplicated.10% of the abstracts will be reviewed by two reviewers, with any disagreements resolved by discussion or, if necessary, a third independent reviewer. The full text of potentially eligible studies will be retrieved and will be assessed in line with the criteria outlined above. A standardised form will be used to extract data from studies (see Developing NICE guidelines: the manual section 6.4). Additional qualitative studies will be added to the review until themes within the analysis become saturated; i.e. studies will only be included if they contribute towards the development of existing themes or to the development of new

		themes. The point at which data saturation is reached will be noted within the review. 10% of all evidence reviews are quality assured by a senior research fellow. This includes checking: • papers were included /excluded appropriately • a sample of the data extractions • correct methods are used to synthesise data • a sample of the risk of bias assessments Disagreements between the review authors over the risk of bias in particular studies will be resolved by discussion, with involvement of a third review author where necessary. Once saturation is considered to have been reached (all the themes are already covered in the data extraction) data from other included papers will not be extracted or critically appraised, but the paper will still be read to check for any additional themes and will be noted in the included studies. The point at which data extraction is reached will be noted within the review.
15.	Risk of bias (quality) assessment	Risk of bias will be assessed using the Critical Appraisal Skills Programme (CASP) qualitative checklist, as described in Developing NICE guidelines: the manual.
16.	Strategy for data synthesis	The synthesis of qualitative data will follow a thematic analysis approach. Information will be synthesised into main review findings. Results will be presented in a detailed narrative and in table format with summary statements of main review findings. GRADE CERQual will be used to synthesise the qualitative data and assess the certainty of evidence for each review finding.

17.	Analysis of sub-groups	If suggested by the evidence and where possible, themes may be reported separately for: - patients, families and carers - adults with clinically isolated syndrome - adults with MS - adults with MS receiving palliative care - adults with MS who may become pregnant		
18.	Type and method of review	☐	Intervention	
		☐	Diagnostic	
		☐	Prognostic	
		☒	Qualitative	
		☐	Epidemiologic	
		☐	Service Delivery	
		☐	Other (please specify)	
19.	Language	English		
20.	Country	England		
21.	Anticipated or actual start date	October 2020		
22.	Anticipated completion date	July 2022		
23.	Stage of review at time of this submission	Review stage	Started	Completed
		Preliminary searches	☑	☐

		Piloting of the study selection process	☐	☐
		Formal screening of search results against eligibility criteria	☐	☐
		Data extraction	☐	☐
		Risk of bias (quality) assessment	☐	☐
		Data analysis	☐	☐
24.	Named contact	5a. Named contact National Guideline Centre 5b Named contact e-mail MultipleSclerosisUpdate@nice.org.uk 5e Organisational affiliation of the review National Institute for Health and Care Excellence (NICE) and the National Guideline Centre		
25.	Review team members	From the National Guideline Centre: Dr Sharon Swain [Guideline lead] Dr Saoussen Ftouh [Senior systematic reviewer] Nicole Downes [Systematic reviewer] Sophia Kemmis Betty [Senior health economist] Lina Gulhane [Information specialist]		

		Emma Clegg [Information specialist] Kate Ashmore [Project Manager]
26.	Funding sources/sponsor	This systematic review is being completed by the National Guideline Centre which receives funding from NICE.
27.	Conflicts of interest	All guideline committee members and anyone who has direct input into NICE guidelines (including the evidence review team and expert witnesses) must declare any potential conflicts of interest in line with NICE's code of practice for declaring and dealing with conflicts of interest. Any relevant interests, or changes to interests, will also be declared publicly at the start of each guideline committee meeting. Before each meeting, any potential conflicts of interest will be considered by the guideline committee Chair and a senior member of the development team. Any decisions to exclude a person from all or part of a meeting will be documented. Any changes to a member's declaration of interests will be recorded in the minutes of the meeting. Declarations of interests will be published with the final guideline.
28.	Collaborators	Development of this systematic review will be overseen by an advisory committee who will use the review to inform the development of evidence-based recommendations in line with section 3 of Developing NICE guidelines: the manual. Members of the guideline committee are available on the NICE website.
29.	Other registration details	
30.	Reference/URL for published protocol	
31.	Dissemination plans	NICE may use a range of different methods to raise awareness of the guideline. These include standard approaches such as: • notifying registered stakeholders of publication • publicising the guideline through NICE's newsletter and alerts

		• issuing a press release or briefing as appropriate, posting news articles on the NICE website, using social media channels, and publicising the guideline within NICE.	
32.	Keywords		
33.	Details of existing review of same topic by same authors	None	
34.	Current review status	☒	Ongoing
		☐	Completed but not published
		☐	Completed and published
		☐	Completed, published and being updated
		☐	Discontinued
35..	Additional information		
36.	Details of final publication	www.nice.org.uk	

Health economic review protocol

Review question	**All questions – health economic evidence**
Objectives	To identify health economic studies relevant to any of the review questions.
Search criteria	• Populations, interventions and comparators must be as specified in the clinical review protocol above. • Studies must be of a relevant health economic study design (cost–utility analysis, cost-effectiveness analysis, cost–benefit analysis, cost–consequences analysis, comparative cost analysis). • Studies must not be a letter, editorial or commentary, or a review of health economic evaluations. (Recent reviews will be ordered although not reviewed. The bibliographies will be checked for relevant studies, which will then be ordered.) • Unpublished reports will not be considered unless submitted as part of a call for evidence.

	• Studies must be in English.
Search strategy	A health economic study search will be undertaken using population-specific terms and a health economic study filter – see appendix B below. For questions being updated, the search will be run from 2014, which was the cut-off date for the searches conducted for NICE guideline CG186.
Review strategy	Studies not meeting any of the search criteria above will be excluded. Studies published before 2005, abstract-only studies and studies from non-OECD countries or the USA will also be excluded. Studies published after 2005 that were included in the previous guideline will be reassessed for inclusion and may be included or selectively excluded based on their relevance to the questions covered in this update and whether more applicable evidence is also identified. Each remaining study will be assessed for applicability and methodological limitations using the NICE economic evaluation checklist which can be found in appendix H of Developing NICE guidelines: the manual (2014).[30] **Inclusion and exclusion criteria** • If a study is rated as both 'Directly applicable' and with 'Minor limitations', then it will be included in the guideline. A health economic evidence table will be completed, and it will be included in the health economic evidence profile. • If a study is rated as either 'Not applicable' or with 'Very serious limitations', then it will usually be excluded from the guideline. If it is excluded, then a health economic evidence table will not be completed, and it will not be included in the health economic evidence profile. • If a study is rated as 'Partially applicable', with 'Potentially serious limitations' or both then there is discretion over whether it should be included. **Where there is discretion** The health economist will make a decision based on the relative applicability and quality of the available evidence for that question, in discussion with the guideline committee if required. The ultimate aim is to include health economic studies that are helpful for decision-making in the context of the guideline and the current NHS setting. If several studies are considered of sufficiently high applicability and methodological quality that they could all be included, then the health economist, in discussion with the committee if required, may decide to include only the most applicable studies and to selectively exclude the remaining studies. All studies excluded on the basis of applicability or methodological limitations will be listed with explanation in the excluded health economic studies appendix below.

	The health economist will be guided by the following hierarchies. *Setting:* • UK NHS (most applicable). • OECD countries with predominantly public health insurance systems (for example, France, Germany, Sweden). • OECD countries with predominantly private health insurance systems (for example, Switzerland). • Studies set in non-OECD countries or in the USA will be excluded before being assessed for applicability and methodological limitations. *Health economic study type:* • Cost–utility analysis (most applicable). • Other type of full economic evaluation (cost–benefit analysis, cost-effectiveness analysis, cost–consequences analysis). • Comparative cost analysis. • Non-comparative cost analyses including cost-of-illness studies will be excluded before being assessed for applicability and methodological limitations. *Year of analysis:* • The more recent the study, the more applicable it will be. • Studies published in 2005 or later (including any such studies included in the previous guideline) but that depend on unit costs and resource data entirely or predominantly from before 2005 will be rated as ‘Not applicable’. • Studies published before 2005 (including any such studies included in the previous guideline) will be excluded before being assessed for applicability and methodological limitations. *Quality and relevance of effectiveness data used in the health economic analysis:* • The more closely the clinical effectiveness data used in the health economic analysis match with the outcomes of the studies included in the clinical review the more useful the analysis will be for decision-making in the guideline.

Appendix B – Literature search strategies

This literature search strategy was used for the following review:

- The clinical and cost effectiveness of processes of care, including the role of MS specialist nurses and other healthcare professionals, to improve care coordination and health outcomes in adults with MS

The literature searches for this review are detailed below and complied with the methodology outlined in Developing NICE guidelines: the manual.[30]

For more information, please see the Methodology review published as part of the accompanying documents for this guideline.

B.1 Clinical search literature search strategy

Searches were constructed using a PICO framework where population (P) terms were combined with Intervention (I) and in some cases Comparison (C) terms. Outcomes (O) are rarely used in search strategies for interventions as these concepts may not be well described in title, abstract or indexes and therefore difficult to retrieve. Search filters were applied to the search where appropriate.

Table 16: Database date parameters and filters used

Database	Dates searched	Search filter used
Medline (OVID)	01 January 1995 – 08 September 2021	Randomised controlled trials Systematic review studies Observational studies Exclusions (animal studies, letters, comments, children)
Embase (OVID)	01 January 1995 – 08 September 2021	Randomised controlled trials Systematic review studies Observational studies Exclusions (animal studies, letters, comments, conference abstracts, children)
The Cochrane Library (Wiley)	Cochrane Reviews 1995 to 2021 Issue 9 of 12 CENTRAL 1995 to 2021 Issue 9 of 12	None Exclusions (conference abstracts & clinical trials)
CINAHL, Current Nursing and Allied Health Literature (EBSCO)	01 January 1995 – 08 September 2021	Human; Clinical Queries: Therapy - High Sensitivity, Review - High Sensitivity, Qualitative - High Sensitivity; Age Groups: All Adult; Language: English Exclusions (Medline Records)
AMED, Allied and Complementary Medicine (OVID)	01 January 1995 – 08 September 2021	None Language – English; journal article or "review"

Database	Dates searched	Search filter used
Epistemonikos (The Epistemonikos Foundation)	01 January 1995 – 08 September 2021	Systematic Reviews Exclusions (Cochrane Reviews)

Medline (Ovid) search terms

1.	exp Multiple Sclerosis/
2.	((multiple or disseminated) adj2 scleros*).ti,ab.
3.	encephalomyelitis disseminata.ti,ab.
4.	MS.ti.
5.	Myelitis, Transverse/
6.	transverse myelitis.ti,ab.
7.	or/1-6
8.	*Demyelinating Diseases/
9.	*Demyelinating Autoimmune Diseases, CNS/
10.	(Demyelinat* adj2 (syndrome* or disease* or autoimmun*)).ti,ab.
11.	(Chronic Cerebrospinal Venous Insufficiency or CCSVI).ti,ab.
12.	Venous Insufficiency/cf, co, di, dg, et [Cerebrospinal Fluid, Complications, Diagnosis, Diagnostic Imaging, Etiology]
13.	(Devic* adj (disease or syndrome)).ti,ab.
14.	((clinical* isolat* or radiological* isolat*) adj2 syndrome*).ti,ab.
15.	exp Optic Neuritis/
16.	((neuromyelitis or neuritis or neuropapillitis) adj2 (retrobulbar or optic*)).ti,ab.
17.	(NMO or NMOSD).ti,ab.
18.	or/1-17
19.	letter/
20.	editorial/
21.	news/
22.	exp historical article/
23.	Anecdotes as Topic/
24.	comment/
25.	case report/
26.	(letter or comment*).ti.
27.	or/19-26
28.	randomized controlled trial/ or random*.ti,ab.
29.	27 not 28
30.	animals/ not humans/
31.	exp Animals, Laboratory/
32.	exp Animal Experimentation/
33.	exp Models, Animal/
34.	exp Rodentia/
35.	(rat or rats or rodent* or mouse or mice).ti.
36.	or/29-35
37.	18 not 36
38.	limit 37 to English language

39.	(exp child/ or exp pediatrics/ or exp infant/) not (exp adolescent/ or exp adult/ or exp middle age/ or exp aged/)
40.	38 not 39
41.	"Delivery of Health Care, Integrated"/
42.	exp Patient Care Management/
43.	"Continuity of Patient Care"/
44.	"quality of health care"/ or clinical competence/ or process assessment, health care/
45.	exp Interprofessional Relations/
46.	exp Health Services Accessibility/
47.	Program Evaluation/
48.	(interdisciplin* or inter-disciplin* or interprofession* or inter-profession* or multidisciplin* or multi-disciplin* or multi-profession* or multiprofession* or transprofession* or trans-profession* or integrat* or network*or MDC or MDT or IDT).ti,ab.
49.	(team* adj2 (approach* or treat* or care* or caring or model* or plan* or strateg*)).ti,ab.
50.	((integrat* or comprehensive or collaborat* or model or approach or strateg* or program* or plan* or pathway or co-ordinat* or coordinat* or continuity or continuum) adj3 (care or caring or service* or health* or treat* or advis* or advice* or intervention* or manag* or team* or staff* or communicat* or relation* or inform* or practice* or evaluat*)).ti,ab.
51.	case management.ti,ab.
52.	(shared care or one-stop clinic* or one stop clinic* or patient management).ti,ab.
53.	((person-cent* or person cent* or patient-cent* or patient cent* or patient) adj2 (care or caring or health*)).ti,ab.
54.	((regular* or proactiv*) adj2 (review* or monitor* or check-up* or checkup* or followup* or follow-up*)).ti,ab.
55.	exp Multiple Sclerosis/nu [Nursing]
56.	nursing/ or specialties, nursing/ or advanced practice nursing/ or community health nursing/ or home health nursing/ or neuroscience nursing/ or public health nursing/ or rehabilitation nursing/
57.	Nurse's Role/
58.	exp nurses/ or exp nursing staff/
59.	((specialist* or multiple sclerosis or MS) adj2 nurs*).ti,ab.
60.	((nurs* or nursing) adj (role or clinic* or practitioner* or care or service* or team)).ti,ab.
61.	Physical Therapists/
62.	Physical Therapy Department, Hospital/
63.	allied health personnel/ or community health workers/ or home health aides/ or licensed practical nurses/ or nursing assistants/ or physical therapist assistants/
64.	(health adj2 (professional* or aide* or personnel or community* or worker* or assistant*)).ti,ab.
65.	(physical therap* or physiotherap*).ti,ab.
66.	Occupational Therapy/
67.	Rehabilitation/
68.	Physical Therapy Modalities/
69.	physical rehab*.ti,ab.
70.	occupational therap*.ti,ab.
71.	(key worker* or keyworker*).ti,ab.
72.	(social prescrib* or link worker* or community referral* or community health worker*).ti,ab.
73.	or/41-72

74.	40 and 73
75.	randomized controlled trial.pt.
76.	controlled clinical trial.pt.
77.	randomi#ed.ti,ab.
78.	placebo.ab.
79.	randomly.ti,ab.
80.	Clinical Trials as topic.sh.
81.	trial.ti.
82.	or/75-81
83.	Meta-Analysis/
84.	exp Meta-Analysis as Topic/
85.	(meta analy* or metanaly* or metaanaly* or meta regression).ti,ab.
86.	((systematic* or evidence*) adj3 (review* or overview*)).ti,ab.
87.	(reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab.
88.	(search strategy or search criteria or systematic search or study selection or data extraction).ab.
89.	(search* adj4 literature).ab.
90.	(medline or pubmed or cochrane or embase or psychlit or psyclit or psychinfo or psycinfo or cinahl or science citation index or bids or cancerlit).ab.
91.	cochrane.jw.
92.	((multiple treatment* or indirect or mixed) adj2 comparison*).ti,ab.
93.	or/83-92
94.	74 and (82 or 93)
95.	Epidemiologic studies/
96.	Observational study/
97.	exp Cohort studies/
98.	(cohort adj (study or studies or analys* or data)).ti,ab.
99.	((follow up or observational or uncontrolled or non randomi#ed or epidemiologic*) adj (study or studies or data)).ti,ab.
100.	((longitudinal or retrospective or prospective) and (study or studies or review or analys* or cohort* or data)).ti,ab.
101.	Controlled Before-After Studies/
102.	Historically Controlled Study/
103.	Interrupted Time Series Analysis/
104.	(before adj2 after adj2 (study or studies or data)).ti,ab.
105.	exp case control study/
106.	case control*.ti,ab.
107.	Cross-sectional studies/
108.	(cross sectional and (study or studies or review or analys* or cohort* or data)).ti,ab.
109.	or/95-108
110.	74 and 109
111.	94 or 110

Embase (Ovid) search terms

1.	exp Multiple Sclerosis/
2.	((multiple or disseminated) adj2 scleros*).ti,ab.

3.	encephalomyelitis disseminata.ti,ab.
4.	MS.ti.
5.	myelitis/
6.	transverse myelitis.ti,ab.
7.	or/1-6
8.	demyelinating disease/
9.	(Demyelinat* adj2 (syndrome* or disease* or autoimmun*)).ti,ab.
10.	(Chronic Cerebrospinal Venous Insufficiency or CCSVI).ti,ab.
11.	vein insufficiency/co, di, et [Complication, Diagnosis, Etiology]
12.	(Devic* adj (disease or syndrome)).ti,ab.
13.	((clinical* isolat* or radiological* isolat*) adj2 syndrome*).ti,ab.
14.	exp optic neuritis/
15.	((neuromyelitis or neuritis or neuropapillitis) adj2 (retrobulbar or optic*)).ti,ab.
16.	(NMO or NMOSD).ti,ab.
17.	or/1-16
18.	letter.pt. or letter/
19.	note.pt.
20.	editorial.pt.
21.	(conference abstract or conference paper).pt.
22.	case report/ or case study/
23.	(letter or comment*).ti.
24.	or/18-23
25.	randomized controlled trial/ or random*.ti,ab.
26.	24 not 25
27.	animal/ not human/
28.	nonhuman/
29.	exp Animal Experiment/
30.	exp Experimental Animal/
31.	animal model/
32.	exp Rodent/
33.	(rat or rats or rodent* or mouse or mice).ti.
34.	or/26-33
35.	17 not 34
36.	(exp child/ or exp pediatrics/) not (exp adult/ or exp adolescent/)
37.	35 not 36
38.	limit 37 to English language
39.	exp patient care/
40.	exp team nursing/
41.	integrated health care system/
42.	health care/ or health service/ or nursing/ or patient care/ or rehabilitation/
43.	patient care planning/
44.	health care quality/
45.	public relations/
46.	health care access/
47.	program evaluation/

48.	(interdisciplin* or inter-disciplin* or interprofession* or inter-profession* or multidisciplin* or multi-disciplin* or multi-profession* or multiprofession* or transprofession* or trans-profession* or integrat* or network*or MDC or MDT or IDT).ti,ab.
49.	(team* adj2 (approach* or treat* or care* or caring or model* or plan* or strateg*)).ti,ab.
50.	((integrat* or comprehensive or collaborat* or model or approach or strateg* or program* or plan* or pathway or co-ordinat* or coordinat* or continuity or continuum) adj3 (care or caring or service* or health* or treat* or advis* or advice* or intervention* or manag* or team* or staff* or communicat* or relation* or inform* or practice* or evaluat*)).ti,ab.
51.	case management.ti,ab.
52.	(shared care or one-stop clinic* or one stop clinic* or patient management).ti,ab.
53.	((person-cent* or person cent* or patient-cent* or patient cent* or patient) adj2 (care or caring or health*)).ti,ab.
54.	((regular* or proactiv*) adj2 (review* or monitor* or check-up* or checkup* or followup* or follow-up*)).ti,ab.
55.	nurse practitioner/ or advanced practice nurse/ or adult nurse practitioner/
56.	nurse specialist/ or clinical nurse specialist/
57.	exp nurse/
58.	nursing discipline/ or community health nursing/ or neuroscience nursing/ or occupational health nursing/ or rehabilitation nursing/
59.	nurse attitude/
60.	exp nursing staff/
61.	nursing assistant/
62.	((specialist* or multiple sclerosis or MS) adj2 nurs*).ti,ab.
63.	((nurs* or nursing) adj (role or clinic* or practitioner* or care or service* or team)).ti,ab.
64.	exp physiotherapy/
65.	paramedical personnel/ or health care personnel/ or dietitian/ or health practitioner/ or health visitor/ or exp manual therapist/ or nursing assistant/ or nursing staff/ or occupational therapist/ or occupational therapy assistant/ or paramedical profession/ or exp pharmacist/ or physiotherapist/ or physiotherapist assistant/ or respiratory therapist/ or speech language pathologist/
66.	(health adj2 (professional* or aide* or personnel or community* or worker* or assistant*)).ti,ab.
67.	(physical therap* or physiotherap*).ti,ab.
68.	occupational therapy/
69.	exp rehabilitation/
70.	physical rehab*.ti,ab.
71.	occupational therap*.ti,ab.
72.	(key worker* or keyworker*).ti,ab.
73.	(social prescrib* or link worker* or community referral* or community health worker*).ti,ab.
74.	or/39-73
75.	38 and 74
76.	random*.ti,ab.
77.	factorial*.ti,ab.
78.	(crossover* or cross over*).ti,ab.
79.	((doubl* or singl*) adj blind*).ti,ab.
80.	(assign* or allocat* or volunteer* or placebo*).ti,ab.
81.	crossover procedure/

82.	single blind procedure/
83.	randomized controlled trial/
84.	double blind procedure/
85.	or/76-84
86.	systematic review/
87.	meta-analysis/
88.	(meta analy* or metanaly* or metaanaly* or meta regression).ti,ab.
89.	((systematic* or evidence*) adj3 (review* or overview*)).ti,ab.
90.	(reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab.
91.	(search strategy or search criteria or systematic search or study selection or data extraction).ab.
92.	(search* adj4 literature).ab.
93.	(medline or pubmed or cochrane or embase or psychlit or psyclit or psychinfo or psycinfo or cinahl or science citation index or bids or cancerlit).ab.
94.	cochrane.jw.
95.	((multiple treatment* or indirect or mixed) adj2 comparison*).ti,ab.
96.	or/86-95
97.	75 and (85 or 96)
98.	Clinical study/
99.	Observational study/
100.	Family study/
101.	Longitudinal study/
102.	Retrospective study/
103.	Prospective study/
104.	Cohort analysis/
105.	Follow-up/
106.	cohort*.ti,ab.
107.	105 and 106
108.	(cohort adj (study or studies or analys* or data)).ti,ab.
109.	((follow up or observational or uncontrolled or non randomi#ed or epidemiologic*) adj (study or studies or data)).ti,ab.
110.	((longitudinal or retrospective or prospective) and (study or studies or review or analys* or cohort* or data)).ti,ab.
111.	(before adj2 after adj2 (study or studies or data)).ti,ab.
112.	exp case control study/
113.	case control*.ti,ab.
114.	cross-sectional study/
115.	(cross sectional and (study or studies or review or analys* or cohort* or data)).ti,ab.
116.	or/98-104,107-115
117.	75 and 116
118.	97 or 117

Cochrane Library (Wiley) search terms

#1.	MeSH descriptor: [Multiple Sclerosis] explode all trees
#2.	((multiple or disseminated) NEAR/2 scleros*):ti,ab
#3.	(encephalomyelitis disseminata or disseminated encephalomyelitistis or ADEM):ti,ab

#4.	MS:ti
#5.	MeSH descriptor: [Myelitis, Transverse] this term only
#6.	transverse myelitis:ti,ab
#7.	(OR #1-#6)
#8.	MeSH descriptor: [Demyelinating Diseases] this term only
#9.	MeSH descriptor: [Demyelinating Autoimmune Diseases, CNS] this term only
#10.	(Demyelinat* NEAR/2 (syndrome* or disease* or autoimmun*)):ti,ab
#11.	(Chronic Cerebrospinal Venous Insufficiency or CCSVI):ti,ab
#12.	MeSH descriptor: [Venous Insufficiency] this term only and with qualifier(s): [diagnostic imaging - DG, cerebrospinal fluid - CF, complications - CO, diagnosis - DI, etiology - ET]
#13.	(Devic* NEXT (disease or syndrome)):ti,ab
#14.	((clinical* NEXT isolat*) NEXT syndrome*):ti,ab
#15.	((radiological* NEXT isolat*) NEXT syndrome*):ti,ab
#16.	MeSH descriptor: [Optic Neuritis] explode all trees
#17.	((neuromyelitis or neuritis or neuropapillitis) NEXT (retrobulbar or optic*)):ti,ab
#18.	(NMO or NMOSD):ti,ab
#19.	(OR #1-#18)
#20.	MeSH descriptor: [Patient Care Management] explode all trees
#21.	MeSH descriptor: [Delivery of Health Care, Integrated] this term only
#22.	MeSH descriptor: [Continuity of Patient Care] this term only
#23.	MeSH descriptor: [Quality of Health Care] this term only
#24.	MeSH descriptor: [Clinical Competence] this term only
#25.	MeSH descriptor: [Process Assessment, Health Care] this term only
#26.	MeSH descriptor: [Interprofessional Relations] explode all trees
#27.	MeSH descriptor: [Health Services Accessibility] explode all trees
#28.	MeSH descriptor: [Program Evaluation] this term only
#29.	(interdisciplin* or inter-disciplin* or interprofession* or inter-profession* or multidisciplin* or multi-disciplin* or multi-profession* or multiprofession* or transprofession* or trans-profession* or integrat* or network*or MDC or MDT or IDT):ti,ab
#30.	(team* NEAR/2 (approach* or treat* or care* or caring or model* or plan* or strateg*)):ti,ab
#31.	((integrat* or comprehensive or collaborat* or model or approach or strateg* or program* or plan* or pathway or co-ordinat* or coordinat* or continuity or continuum) NEAR/3 (care or caring or service* or health* or treat* or advis* or advice* or intervention* or manag* or team* or staff* or communicat* or relation* or inform* or practice* or evaluat*)):ti,ab
#32.	case management:ti,ab
#33.	("shared care" or (one NEXT stop NEXT clinic*) or "patient management"):ti,ab
#34.	(((person NEXT cent*) or (patient NEXT cent*) or patient) NEAR/2 (care or caring or health*)):ti,ab
#35.	((regular* or proactiv*) NEAR/2 (review* or monitor* or check-up* or checkup* or followup* or follow-up*)):ti,ab
#36.	MeSH descriptor: [Multiple Sclerosis] explode all trees and with qualifier(s): [nursing - NU]
#37.	MeSH descriptor: [Nursing] this term only
#38.	MeSH descriptor: [Specialties, Nursing] this term only
#39.	MeSH descriptor: [Advanced Practice Nursing] this term only

#40.	MeSH descriptor: [Community Health Nursing] this term only
#41.	MeSH descriptor: [Home Health Nursing] this term only
#42.	MeSH descriptor: [Neuroscience Nursing] this term only
#43.	MeSH descriptor: [Public Health Nursing] this term only
#44.	MeSH descriptor: [Rehabilitation Nursing] this term only
#45.	MeSH descriptor: [Nurse's Role] this term only
#46.	MeSH descriptor: [Nurses] explode all trees
#47.	MeSH descriptor: [Nursing Staff] explode all trees
#48.	((specialist* or multiple sclerosis or MS) NEAR/2 nurs*):ti,ab
#49.	((nurs* or nursing) NEAR (role or clinic* or practitioner* or care or service* or team)):ti,ab
#50.	MeSH descriptor: [Physical Therapists] this term only
#51.	MeSH descriptor: [Physical Therapy Department, Hospital] this term only
#52.	MeSH descriptor: [Allied Health Personnel] this term only
#53.	MeSH descriptor: [Community Health Workers] this term only
#54.	MeSH descriptor: [Home Health Aides] this term only
#55.	MeSH descriptor: [Licensed Practical Nurses] this term only
#56.	MeSH descriptor: [Nursing Assistants] this term only
#57.	MeSH descriptor: [Physical Therapist Assistants] this term only
#58.	(health NEAR/2 (professional* or aide* or personnel or community* or worker* or assistant*)):ti,ab
#59.	((physical NEXT therap*) or physiotherap*):ti,ab
#60.	MeSH descriptor: [Occupational Therapy] this term only
#61.	MeSH descriptor: [Rehabilitation] this term only
#62.	MeSH descriptor: [Physical Therapy Modalities] this term only
#63.	(physical NEXT rehab*):ti,ab
#64.	(occupational NEXT therap*):ti,ab
#65.	((key NEXT worker*) or keyworker*):ti,ab
#66.	((social NEXT prescrib*) or (link NEXT worker*) or (community NEXT referral*) or (community NEXT health NEXT worker*)):ti,ab
#67.	("community health worker*"):ti,ab
#68.	("community health worker" or "community health workers"):ti,ab
#69.	(OR #20-#68)
#70.	#19 AND #69
#71.	conference:pt or (clinicaltrials or trialsearch):so
#72.	#70 NOT #71

CINAHL (EBSCO) search terms

S1.	(MH "Multiple Sclerosis+")
S2.	TI ((multiple or disseminated) n2 scleros*) OR AB ((multiple or disseminated) n2 scleros*)
S3.	TI (encephalomyelitis disseminata or disseminated encephalomyelitistis or ADEM) OR AB (encephalomyelitis disseminata or disseminated encephalomyelitistis or ADEM)
S4.	TI MS
S5.	(MH "Myelitis, Transverse")
S6.	TI transverse myelitis OR AB transverse myelitis
S7.	(MM "Demyelinating Diseases")

S8.	(MM "Demyelinating Autoimmune Diseases, CNS")
S9.	TI (Demyelinat* N2 (syndrome* or disease* or autoimmun*)) OR AB (Demyelinat* N2 (syndrome* or disease* or autoimmun*))
S10.	TI (Chronic Cerebrospinal Venous Insufficiency or CCSVI) OR AB (Chronic Cerebrospinal Venous Insufficiency or CCSVI)
S11.	(MM "Venous Insufficiency/CF/CO/DI/ET")
S12.	TI ((clinical* isolat* or radiological* isolat*) N2 syndrome*) OR AB ((clinical* isolat* or radiological* isolat*) N2 syndrome*)
S13.	(MH "Optic Neuritis+")
S14.	TI ((neuromyelitis or neuritis or neuropapillitis) N2 (retrobulbar or optic*)) OR AB ((neuromyelitis or neuritis or neuropapillitis) N2 (retrobulbar or optic*))
S15.	TI (NMO or NMOSD) OR AB (NMO or NMOSD)
S16.	PT abstract or PT anecdote or PT audiovisual or PT bibliography or PT biography or PT book or PT book review or PT brief item or PT cartoon or PT commentary or PT computer program or PT editorial or PT games or PT glossary or PT historical material or PT interview or PT letter or PT listservs or PT masters thesis or PT obituary or PT pamphlet or PT pamphlet chapter or PT pictorial or PT poetry or PT proceedings or PT “questions and answers” or PT response or PT software or PT teaching materials or PT website
S17.	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15
S18.	s17 not s16
S19.	TI ((social prescrib* or link worker* or community referral* or community health worker*)) OR AB ((social prescrib* or link worker* or community referral* or community health worker*))
S20.	TI ((key worker* or keyworker*)) OR AB ((key worker* or keyworker*))
S21.	TI occupational therap* OR AB occupational therap*
S22.	TI physical rehab* OR AB physical rehab*
S23.	(MM "Physical Therapy")
S24.	(MM "Rehabilitation")
S25.	(MM "Occupational Therapy")
S26.	TI ((physical therap* or physiotherap*)) OR AB ((physical therap* or physiotherap*))
S27.	TI ((health N2 (professional* or aide* or personnel or community* or worker* or assistant*))) OR AB ((health N2 (professional* or aide* or personnel or community* or worker* or assistant*)))
S28.	(MM "Physical Therapist Assistants")
S29.	(MM "Nursing Assistants")
S30.	(MM "Practical Nurses")
S31.	(MM "Home Health Aides")
S32.	(MM "Community Health Workers")
S33.	(MM "Allied Health Personnel")
S34.	(MM "Physical Therapists")
S35.	TI (((nurs* or nursing) N2 (role or clinic* or practitioner* or care or service* or team))) OR AB (((nurs* or nursing) N2 (role or clinic* or practitioner* or care or service* or team)))
S36.	TI (((specialist* or multiple sclerosis or MS) N2 nurs*)) OR AB (((specialist* or multiple sclerosis or MS) N2 nurs*))
S37.	(MH "Nursing Staff, Hospital")
S38.	(MH "Nurses+")
S39.	(MM "Nursing Role")

S40.	(MM "Neuroscience Nursing")
S41.	(MM "Community Health Nursing")
S42.	(MM "Advanced Practice Nurses")
S43.	(MM "Specialties, Nursing")
S44.	(MH "Multiple Sclerosis+/NU")
S45.	TI (((regular* or proactiv*) N2 (review* or monitor* or check-up* or checkup* or followup* or follow-up*))) OR AB (((regular* or proactiv*) N2 (review* or monitor* or check-up* or checkup* or followup* or follow-up*)))
S46.	TI (((person-cent* or person cent* or patient-cent* or patient cent* or patient) N2 (care or caring or health*))) OR AB (((person-cent* or person cent* or patient-cent* or patient cent* or patient) N2 (care or caring or health*)))
S47.	TI ((shared care or one-stop clinic* or one stop clinic* or patient management)) OR AB ((shared care or one-stop clinic* or one stop clinic* or patient management))
S48.	TI case management OR AB case management
S49.	TI (((integrat* or comprehensive or collaborat* or model or approach or strateg* or program* or plan* or pathway or co-ordinat* or coordinat* or continuity or continuum) N3 (care or caring or service* or health* or treat* or advis* or advice* or intervention* or manag* or team* or staff* or communicat* or relation* or inform* or practice* or evaluat*))) OR AB (((integrat* or comprehensive or collaborat* or model or approach or strateg* or program* or plan* or pathway or co-ordinat* or coordinat* or continuity or continuum) N3 (care or caring or service* or health* or treat* or advis* or advice* or intervention* or manag* or team* or staff* or communicat* or relation* or inform* or practice* or evaluat*)))
S50.	TI ((team* N2 (approach* or treat* or care* or caring or model* or plan* or strateg*))) OR AB ((team* N2 (approach* or treat* or care* or caring or model* or plan* or strateg*)))
S51.	TI ((interdisciplin* or inter-disciplin* or interprofession* or inter-profession* or multidisciplin* or multi-disciplin* or multi-profession* or multiprofession* or transprofession* or trans-profession* or integrat* or network*or MDC or MDT or IDT)) OR AB ((interdisciplin* or inter-disciplin* or interprofession* or inter-profession* or multidisciplin* or multi-disciplin* or multi-profession* or multiprofession* or transprofession* or trans-profession* or integrat* or network*or MDC or MDT or IDT))
S52.	(MM "Program Evaluation")
S53.	(MH "Health Services Accessibility+")
S54.	(MH "Interprofessional Relations+")
S55.	(MM "Process Assessment (Health Care)")
S56.	(MM "Clinical Competence")
S57.	(MM "Quality of Health Care")
S58.	(MM "Continuity of Patient Care")
S59.	(MH "Multidisciplinary Care Team+")
S60.	(MM "Health Care Delivery, Integrated")
S61.	S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39 OR S40 OR S41 OR S42 OR S43 OR S44 OR S45 OR S46 OR S47 OR S48 OR S49 OR S50 OR S51 OR S52 OR S53 OR S54 OR S55 OR S56 OR S57 OR S58 OR S59 OR S60
S62.	S18 AND S61

AMED (Ovid) search terms

1.	exp Multiple Sclerosis/
2.	((multiple or disseminated) adj2 scleros*).ti,ab.
3.	encephalomyelitis disseminata.ti,ab.

4.	MS.ti.
5.	transverse myelitis.ti,ab.
6.	(Demyelinat* adj2 (syndrome* or disease* or autoimmun*)).ti,ab.
7.	(Devic* adj (disease or syndrome)).ti,ab.
8.	((clinical* isolat* or radiological* isolat*) adj2 syndrome*).ti,ab.
9.	((neuromyelitis or neuritis or neuropapillitis) adj2 (retrobulbar or optic*)).ti,ab.
10.	(NMO or NMOSD).ti,ab.
11.	or/1-10
12.	case report/
13.	(letter or comment*).ti.
14.	or/12-13
15.	randomized controlled trial/ or random*.ti,ab.
16.	14 not 15
17.	animals/ not humans/
18.	(rat or rats or rodent* or mouse or mice).ti.
19.	or/16-18
20.	11 not 19
21.	(exp child/ or exp pediatrics/ or exp infant/) not (exp adolescent/ or exp adult/ or exp Middle Aged/ or exp aged/)
22.	20 not 21
23.	"Delivery of health care"/
24.	exp Patient care management/
25.	"Continuity of patient care"/
26.	"quality of health care"/
27.	clinical competence/
28.	exp Interprofessional relations/
29.	exp Health services accessibility/
30.	Program evaluation/
31.	(interdisciplin* or inter-disciplin* or interprofession* or inter-profession* or multidisciplin* or multi-disciplin* or multi-profession* or multiprofession* or transprofession* or trans-profession* or integrat* or network*or MDC or MDT or IDT).ti,ab.
32.	(team* adj2 (approach* or treat* or care* or caring or model* or plan* or strateg*)).ti,ab.
33.	((integrat* or comprehensive or collaborat* or model or approach or strateg* or program* or plan* or pathway or co-ordinat* or coordinat* or continuity or continuum) adj3 (care or caring or service* or health* or treat* or advis* or advice* or intervention* or manag* or team* or staff* or communicat* or relation* or inform* or practice* or evaluat*)).ti,ab.
34.	case management.ti,ab.
35.	(shared care or one-stop clinic* or one stop clinic* or patient management).ti,ab.
36.	((person-cent* or person cent* or patient-cent* or patient cent* or patient) adj2 (care or caring or health*)).ti,ab.
37.	((regular* or proactiv*) adj2 (review* or monitor* or check-up* or checkup* or followup* or follow-up*)).ti,ab.
38.	nursing/
39.	Rehabilitation nursing/
40.	Nurses role/
41.	exp Nurses/
42.	exp Nursing staff/

43.	((specialist* or multiple sclerosis or MS) adj2 nurs*).ti,ab.
44.	((nurs* or nursing) adj (role or clinic* or practitioner* or care or service* or team)).ti,ab.
45.	physiotherapists/
46.	allied health personnel/
47.	community health nursing/ or home care services/
48.	(health adj2 (professional* or aide* or personnel or community* or worker* or assistant*)).ti,ab.
49.	(physical therap* or physiotherap*).ti,ab.
50.	occupational therapists/
51.	Rehabilitation/
52.	physical rehab*.ti,ab.
53.	occupational therap*.ti,ab.
54.	(key worker* or keyworker*).ti,ab.
55.	(social prescrib* or link worker* or community referral* or community health worker*).ti,ab.
56.	or/23-55
57.	22 and 56

Epistemonikos search terms

1.	(((advanced_title_en:(multiple sclerosis) OR advanced_abstract_en:(multiple sclerosis)) AND ((advanced_title_en:(care OR nurs* OR rehab* OR health professional OR specialist OR multi-disciplinary OR co-ordinate OR physiotherapist OR occupational therap*) OR advanced_abstract_en:(care OR nurs* OR rehab* OR health professional OR specialist OR multi-disciplinary OR co-ordinate OR physiotherapist OR occupational therap*)))

B.2 Health Economics literature search strategy

Health economic evidence was identified by conducting a broad search with the Multiple Sclerosis population. The following databases were searched: NHS Economic Evaluation Database (NHS EED - this ceased to be updated after 31st March 2015), Health Technology Assessment database (HTA - this ceased to be updated from 31st March 2018) and The International Network of Agencies for Health Technology Assessment (INAHTA). Searches for recent evidence were run on Medline and Embase from 2014 onwards for health economics. Searches for quality of life studies were run for general information.

Table 17: Database date parameters and filters used

Database	Dates searched	Search filter used
Medline	01 January 2014 – 07 September 2021	Health economics studies Quality of life studies Exclusions (animal studies, letters, comments, children)
Embase	01 January 2014 – 07 September 2021	Health economics studies Quality of life studies Exclusions (animal studies, letters, comments, conference abstracts, children)
Centre for Research and Dissemination (CRD)	HTA – 01 January 2014 – 31 March 2018	None

Database	Dates searched	Search filter used
	NHSEED – 01 January 2014 – March 2015	
The International Network of Agencies for Health Technology Assessment (INAHTA)	01 January 2018 – 07 September 2021	None

Medline (Ovid) search terms

1.	exp Multiple Sclerosis/
2.	((multiple or disseminated) adj2 scleros*).ti,ab.
3.	encephalomyelitis disseminata.ti,ab.
4.	MS.ti.
5.	Myelitis, Transverse/
6.	transverse myelitis.ti,ab.
7.	or/1-6
8.	*Demyelinating Diseases/
9.	*Demyelinating Autoimmune Diseases, CNS/
10.	(Demyelinat* adj2 (syndrome* or disease* or autoimmun*)).ti,ab.
11.	(Chronic Cerebrospinal Venous Insufficiency or CCSVI).ti,ab.
12.	Venous Insufficiency/cf, co, di, dg, et [Cerebrospinal Fluid, Complications, Diagnosis, Diagnostic Imaging, Etiology]
13.	(Devic* adj (disease or syndrome)).ti,ab.
14.	((clinical* isolat* or radiological* isolat*) adj2 syndrome*).ti,ab.
15.	exp Optic Neuritis/
16.	((neuromyelitis or neuritis or neuropapillitis) adj2 (retrobulbar or optic*)).ti,ab.
17.	(NMO or NMOSD).ti,ab.
18.	or/1-17
19.	letter/
20.	editorial/
21.	news/
22.	exp historical article/
23.	Anecdotes as Topic/
24.	comment/
25.	case report/
26.	(letter or comment*).ti.
27.	or/19-26
28.	randomized controlled trial/ or random*.ti,ab.
29.	27 not 28
30.	animals/ not humans/
31.	exp Animals, Laboratory/
32.	exp Animal Experimentation/
33.	exp Models, Animal/

34.	exp Rodentia/
35.	(rat or rats or rodent* or mouse or mice).ti.
36.	or/29-35
37.	18 not 36
38.	limit 37 to English language
39.	(exp child/ or exp pediatrics/ or exp infant/) not (exp adolescent/ or exp adult/ or exp middle age/ or exp aged/)
40.	38 not 39
41.	Economics/
42.	Value of life/
43.	exp "Costs and Cost Analysis"/
44.	exp Economics, Hospital/
45.	exp Economics, Medical/
46.	Economics, Nursing/
47.	Economics, Pharmaceutical/
48.	exp "Fees and Charges"/
49.	exp Budgets/
50.	budget*.ti,ab.
51.	cost*.ti.
52.	(economic* or pharmaco?economic*).ti.
53.	(price* or pricing*).ti,ab.
54.	(cost* adj2 (effective* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab.
55.	(financ* or fee or fees).ti,ab.
56.	(value adj2 (money or monetary)).ti,ab.
57.	or/41-56
58.	quality-adjusted life years/
59.	sickness impact profile/
60.	(quality adj2 (wellbeing or well being)).ti,ab.
61.	sickness impact profile.ti,ab.
62.	disability adjusted life.ti,ab.
63.	(qal* or qtime* or qwb* or daly*).ti,ab.
64.	(euroqol* or eq5d* or eq 5*).ti,ab.
65.	(qol* or hql* or hqol* or h qol* or hrqol* or hr qol*).ti,ab.
66.	(health utility* or utility score* or disutilit* or utility value*).ti,ab.
67.	(hui or hui1 or hui2 or hui3).ti,ab.
68.	(health* year* equivalent* or hye or hyes).ti,ab.
69.	discrete choice*.ti,ab.
70.	rosser.ti,ab.
71.	(willingness to pay or time tradeoff or time trade off or tto or standard gamble*).ti,ab.
72.	(sf36* or sf 36* or short form 36* or shortform 36* or shortform36*).ti,ab.

73.	(sf20 or sf 20 or short form 20 or shortform 20 or shortform20).ti,ab.
74.	(sf12* or sf 12* or short form 12* or shortform 12* or shortform12*).ti,ab.
75.	(sf8* or sf 8* or short form 8* or shortform 8* or shortform8*).ti,ab.
76.	(sf6* or sf 6* or short form 6* or shortform 6* or shortform6*).ti,ab.
77.	or/58-76
78.	40 and 57
79.	40 and 77
80.	78 or 79

Embase (Ovid) search terms

1.	exp Multiple Sclerosis/
2.	((multiple or disseminated) adj2 scleros*).ti,ab.
3.	encephalomyelitis disseminata.ti,ab.
4.	MS.ti.
5.	myelitis/
6.	transverse myelitis.ti,ab.
7.	or/1-6
8.	demyelinating disease/
9.	(Demyelinat* adj2 (syndrome* or disease* or autoimmun*)).ti,ab.
10.	(Chronic Cerebrospinal Venous Insufficiency or CCSVI).ti,ab.
11.	vein insufficiency/co, di, et [Complication, Diagnosis, Etiology]
12.	(Devic* adj (disease or syndrome)).ti,ab.
13.	((clinical* isolat* or radiological* isolat*) adj2 syndrome*).ti,ab.
14.	exp optic neuritis/
15.	((neuromyelitis or neuritis or neuropapillitis) adj2 (retrobulbar or optic*)).ti,ab.
16.	(NMO or NMOSD).ti,ab.
17.	or/1-16
18.	letter.pt. or letter/
19.	note.pt.
20.	editorial.pt.
21.	(conference abstract or conference paper).pt.
22.	case report/ or case study/
23.	(letter or comment*).ti.
24.	or/18-23
25.	randomized controlled trial/ or random*.ti,ab.
26.	24 not 25
27.	animal/ not human/
28.	nonhuman/
29.	exp Animal Experiment/
30.	exp Experimental Animal/
31.	animal model/
32.	exp Rodent/
33.	(rat or rats or rodent* or mouse or mice).ti.

34.	or/26-33
35.	17 not 34
36.	(exp child/ or exp pediatrics/) not (exp adult/ or exp adolescent/)
37.	35 not 36
38.	limit 37 to English language
39.	health economics/
40.	exp economic evaluation/
41.	exp health care cost/
42.	exp fee/
43.	budget/
44.	funding/
45.	budget*.ti,ab.
46.	cost*.ti.
47.	(economic* or pharmaco?economic*).ti.
48.	(price* or pricing*).ti,ab.
49.	(cost* adj2 (effective* or utilit* or benefit* or minimi* or unit* or estimat* or variable*)).ab.
50.	(financ* or fee or fees).ti,ab.
51.	(value adj2 (money or monetary)).ti,ab.
52.	or/39-51
53.	quality adjusted life year/
54.	"quality of life index"/
55.	short form 12/ or short form 20/ or short form 36/ or short form 8/
56.	sickness impact profile/
57.	(quality adj2 (wellbeing or well being)).ti,ab.
58.	sickness impact profile.ti,ab.
59.	disability adjusted life.ti,ab.
60.	(qal* or qtime* or qwb* or daly*).ti,ab.
61.	(euroqol* or eq5d* or eq 5*).ti,ab.
62.	(qol* or hql* or hqol* or h qol* or hrqol* or hr qol*).ti,ab.
63.	(health utility* or utility score* or disutilit* or utility value*).ti,ab.
64.	(hui or hui1 or hui2 or hui3).ti,ab.
65.	(health* year* equivalent* or hye or hyes).ti,ab.
66.	discrete choice*.ti,ab.
67.	rosser.ti,ab.
68.	(willingness to pay or time tradeoff or time trade off or tto or standard gamble*).ti,ab.
69.	(sf36* or sf 36* or short form 36* or shortform 36* or shortform36*).ti,ab.
70.	(sf20 or sf 20 or short form 20 or shortform 20 or shortform20).ti,ab.
71.	(sf12* or sf 12* or short form 12* or shortform 12* or shortform12*).ti,ab.
72.	(sf8* or sf 8* or short form 8* or shortform 8* or shortform8*).ti,ab.
73.	(sf6* or sf 6* or short form 6* or shortform 6* or shortform6*).ti,ab.
74.	or/53-73
75.	38 and 52
76.	38 and 74
77.	75 or 76

NHS EED and HTA (CRD) search terms

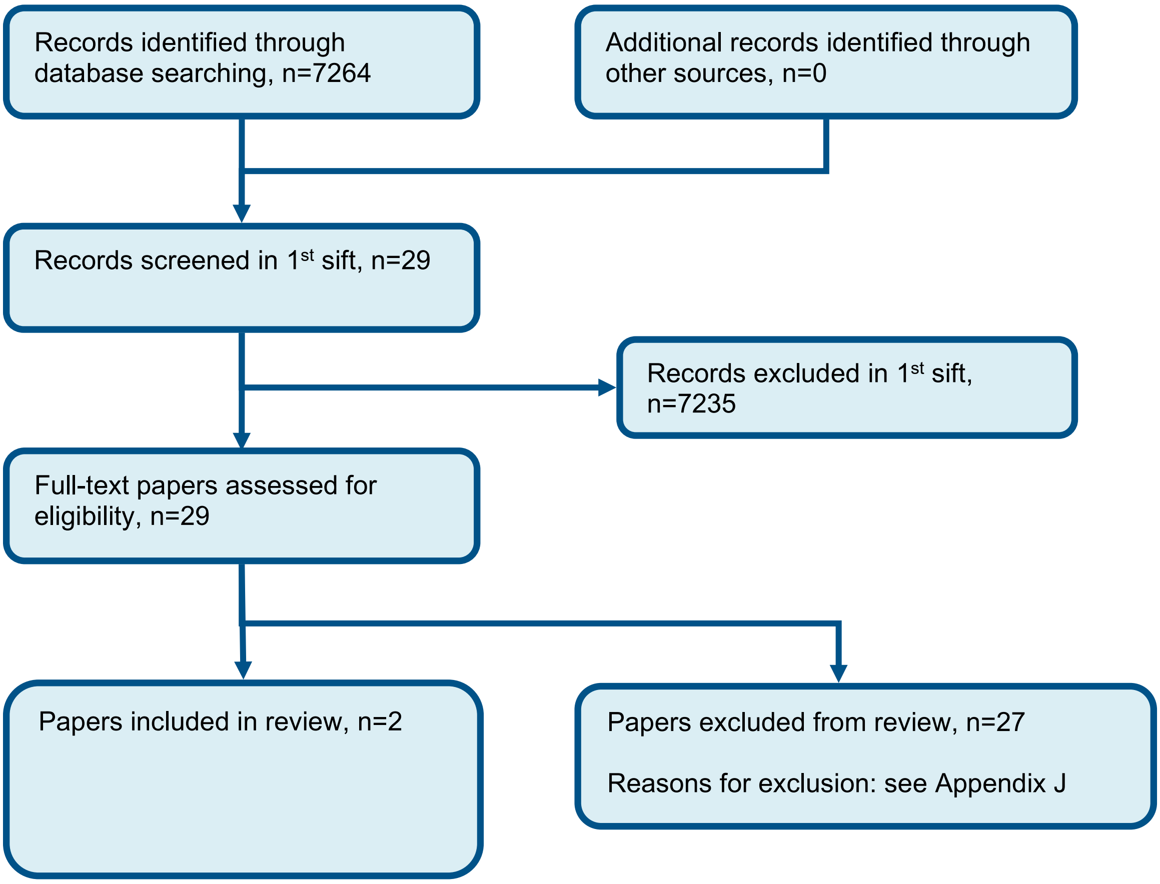
#1.	MeSH DESCRIPTOR Multiple Sclerosis EXPLODE ALL TREES
#2.	(((multiple or disseminated) adj2 scleros*))
#3.	(encephalomyelitis disseminata)
#4.	(MS)
#5.	MeSH DESCRIPTOR Myelitis, Transverse EXPLODE ALL TREES
#6.	(transverse myelitis)
#7.	MeSH DESCRIPTOR Demyelinating Diseases EXPLODE ALL TREES
#8.	((Demyelinat* adj2 (syndrome or disease)))
#9.	(Chronic Cerebrospinal Venous Insufficiency)
#10.	MeSH DESCRIPTOR Venous Insufficiency
#11.	(((Devic or "devic's") adj (disease or syndrome)))
#12.	(((clinically isolated or radiologically isolated) adj syndrome))
#13.	MeSH DESCRIPTOR Optic Neuritis EXPLODE ALL TREES
#14.	(Neuromyelitis Optica)
#15.	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14

INAHTA search terms

1.	(multiple sclerosis)[mh] OR (((multiple or disseminated) adj2 scleros*)) OR (encephalomyelitis disseminata) OR (MS)[Title] OR (Myelitis, Transverse)[mh] OR (transverse myelitis) OR (Demyelinating Diseases)[mh] OR (Demyelinating Autoimmune Diseases, CNS)[mh] OR ((Demyelinat* adj2 (syndrome* or disease* or autoimmun*))) OR ((Chronic Cerebrospinal Venous Insufficiency or CCSVI)) OR (venous insufficiency)[mh] OR ((Devic* adj (disease or syndrome))) OR (((clinical* isolat* or radiological* isolat*) adj2 syndrome*)) OR (optic neuritis)[mh] OR (((neuromyelitis or neuritis or neuropapillitis) adj2 (retrobulbar or optic*))) OR ((NMO or NMOSD))

Appendix C – Effectiveness evidence study selection

Figure 2: Flow chart of clinical study selection for the review of coordination of care



Appendix D – Effectiveness evidence

Forbes 2006

<table>
<tr><th>Reference</th><th>Study type</th><th>No. pts</th><th colspan="3">Patient characteristics</th><th>Intervention</th><th>Comparison</th><th>Length of follow-up</th><th>Outcome measures</th><th>Source of funding</th></tr>
<tr><td rowspan="8">Forbes et al. Evaluation of a MS Specialist Nurse Programme. International Journal of Nursing Studies 2006; 43: 985-1000</td><td rowspan="8">Quasi-experimental study (non-randomised cohort): patients in the 4 study sites versus patients in 2 sites not in the programme.
The no-randomised design led to important and potentially confounding group differences in terms of the level of service development</td><td rowspan="8">1510 patients recruited (made up about 50% of the MS patients in the locality of the centres). 753 took part in baseline assessment. Follow up from baseline was 82% with 616 patients taking part in main outcome analysis at 24 months. The 18% dropping out were those with severer disease (not stated which group they had</td><td colspan="3">All people with MS aged >16 years.
Baseline values. *=sig difference (p<0.05) between groups. These were included as covariates in analysis</td><td rowspan="8">Normal service at 4 MS centres, also involving an MS specialist nurse. 45% of patients had low use of MS nurses (2 contacts or less), 36% had medium use (3-5 contacts) and 19% had higher use (>5 contacts). There were a mean of 2.45 contact episodes per patient. 54% made contact with the MS nurse in hospital, 30%</td><td rowspan="8">Normal service at 2 centres, not involving an MS specialist nurse.</td><td rowspan="8">24 months</td><td rowspan="8">Hospital admissions in past 12 months
Experience and severity of MS related problems
Impact of care process
MSIS-29
SF-36 short form health survey</td><td rowspan="8">MS society for Great Britain</td></tr>
<tr><td></td><td>Ix (n=293)</td><td>Control (n=323)</td></tr>
<tr><td>Female gender</td><td>70%</td><td>71%</td></tr>
<tr><td>Age*</td><td>47.5(10.8) yrs</td><td>50.7(10.3) yrs</td></tr>
<tr><td>Married</td><td>77%</td><td>77%</td></tr>
<tr><td>Living alone</td><td>14%</td><td>16%</td></tr>
<tr><td>Retired</td><td>49%</td><td>48%</td></tr>
<tr><td>Time from diagnosis*</td><td>9.4(8.7) yrs</td><td>12.5(9.1) yrs</td></tr>
</table>

Reference	Study type	No. pts	Patient characteristics			Intervention	Comparison	Length of follow-up	Outcome measures	Source of funding
	and availability of MS specialist resources.	been in!). ITT approach used.	RRMS	32%	30%	at home and 16% in other places.				
			PMS	56%	56%					
			Severe impact MS	26%	28%					
			Relapses anytime*	37%	27%					

Results:

Admission to hospital in past 12 months: no reduction in the admission rate in the past 12 months in the intervention relative to the control group (repeated analysis chi square 2.6, p=0.26). The data suggested a very weak trend – admission ranging between 12.35 to 15.6% in the intervention group compared to 18.9% to 25.2% in the control group (over 3 observation periods).

QoL	**MD (95% CIs) [Intervention – control] at follow up – adjusted for baseline inequality. Negative values indicate a worse outcome for the intervention group.**
SF36 physical function	-2.81 (- 5.45 to 10.1)
SF36 role physical	-2.21(-5.8 to 1.4)
SF36 mental health	1.32 (-1.2 to 3.8)
SF36 social functioning	-1.61(-6.3 to 1.6)
SF36 bodily pain	-4.09(-7.2 to 0.9)

Reference	Study type	No. pts	Patient characteristics	Intervention	Comparison	Length of follow-up	Outcome measures	Source of funding

SF36 general health	-5.35(-8.1 to -2.5)	
SF36 energy vitality	-2.82 (-5.5 to -0.1)	
Function	**MD (95% CIs) [Intervention – control] at follow up – adjusted for baseline inequality. Negative values indicate a worse outcome for the intervention group.**	
MSIS psychological	-2.38(-5.2 to 0.4)	
MSIS physical	-1.83(-4.2 to 0.5)	
Experience of complications	**Group x time interaction (p)**	**Direction of effect if relevant**
Fatigue	0.71	No discernible effect
Urinary problems	0.3	No discernible effect
Bowel problems	0.5	No discernible effect
Employment problems	0.9	No discernible effect
depression	0.8	No discernible effect
Pressure sore	0.001	Lower incidence of pressure sores at follow up in intervention group (baseline adjusted) – 6% compared to 14%, with baseline values being 23% and 17% respectively

Reference	Study type	No. pts	Patient characteristics	Intervention	Comparison	Length of follow-up	Outcome measures	Source of funding
Relationship problems	0.3			No discernible effect				
Impact on care process	**Group x time interaction (p)**			**Direction of effect if relevant**				
Availability of named co-ordinator	0.92			No discernible effect				
Availability of contact person	<0.001			Higher incidence of availability of contact person at follow up in intervention group (baseline adjusted) – 83% compared to 44%, with baseline values being 58% and 46% respectively				
Help in an emergency	0.1			Higher incidence of help in an emergency at follow up in intervention group (baseline adjusted) – 78% compared to 51%, with baseline values being 71% and 59% respectively				
Help with fatigue	0.28			No discernible effect				
Help with urinary problems	0.11			Higher incidence of help with urinary problems at follow up in intervention group (baseline adjusted) – 92% compared to 77%, with baseline values being 76% and 69% respectively				

Reference	Study type	No. pts	Patient characteristics	Intervention	Comparison	Length of follow-up	Outcome measures	Source of funding
Help with bowel problems	0.23			No discernible effect				
Help with employment problems	0.57			No discernible effect				
Help with depression	0.56			No discernible effect				
Help with pressure sores	0.31			No discernible effect				
Help with relationship problems	0.53			No discernible effect				

Jansen 2006

Reference	Study type	No. pts	Patient characteristics	Intervention	Comparison	Length of follow-up	Outcome measures	Source of funding
Jansen et al. 2006. Evaluation of a transmural care model for multiple	Prospective cohort study. Patients were accepted to	220 at baseline. However only 176 are include in the	MS patients from Northern Holland. No specific inclusion or exclusion criteria. Ix C age 51 45	N=80. The transmural care model for multiple sclerosis patients (TCMMS) is a multidisciplinary care protocol intended to facilitate co-operation among healthcare professionals in various settings. The TCMMS consists of a circumscribed care organisation in which nurse specialist acts	N=96. "Traditional care"	10 months	Use of healthcare in past 10 months Healthcare needs –	Netherlands organisation for health research and

Reference	Study type	No. pts	Patient characteristics	Intervention	Comparison	Length of follow-up	Outcome measures	Source of funding
sclerosis patients. Journal of Neuroscience nursing 2006; 38: 384-389	participate in the intervention group if the neurologist or nurse specialist believed they might benefit. The comparison group was recruited in a different province, but unclear if this was in a comparable sample – i.e. people that the health care professio	analysis – those completing final analysis.	Disease duration: 12, 9 Female (%): 65%, 78% Living with partner: 80%, 80%	as a case manager and other core disciplines are actively involved in the care of MS patients. Biannual assessments are made of the MS patients by a neurologist and a rehab team. Together the MS patients and nurse specialist then formulate an integrate care plan that details the interventions planned for the next 6 months. The integrate care plan is based on both the assessment of the neurologist and the nurse specialist. The nurse specialist uses the international classification of impairments, disabilities and handicap (ICIDH).			based on the ICIDH. Co-ordination of care (Dutch questionnaire) HRQoL (RAND 36)	development (ZonMw)

Reference	Study type	No. pts	Patient characteristics			Intervention	Comparison	Length of follow-up	Outcome measures	Source of funding
	nals thought might do well on TCMMS. No blinding reported.									

Results.

Healthcare use

There were differences at baseline between groups for use of rehab specialist, nurse specialist and physical therapist, so possible that 10-month findings were confounded by baseline differences (though see nurse specialist results – baseline bias will have worked against the 10-month effect and so does not confound it). No adjustments were made for baseline differences. However, for other healthcare professional variables the groups were not significantly different at baseline. A higher proportion represents a better outcome.

Healthcare professional	Study group at 10 months	Control group at 10 months	Between group p	Baseline equivalence?		
Neurologist	64/80	47/96	<0.001	Y		
GP	59/80	51/96	0.01	Y		
Rehab specialist	17/80	11/96	NS	N – strongly favouring study group		

Reference	Study type	No. pts	Patient characteristics	Intervention	Comparison	Length of follow-up	Outcome measures	Source of funding

Nurse specialist	40/80	29/96	0.01	N – favouring comparison group [*NB the baseline bias goes against the 10-month effect direction so the direction of effect favouring study group at 10 months can be taken as valid*]
Physical therapist	45/80	37/96	0.02	N – favouring study group
Occupational therapist	15/80	9/96	NS	Y
Social worker	12/80	8/96	NS	Y

Healthcare needs

This analysis was adjusted for baseline differences in unmet healthcare needs. Study group people experienced fewer healthcare needs as to personal care, defecation and vision.

Healthcare need	Study group n	Control group n	Beta (95% CIs)	OR	p
Communication	72	96	-0.881 (not given)	2.413(0.991 to 5.872)	0.052
Motion	77	96	-0.916(not given)	0.400 (0.109 to 1.464)	0.166
Movement	77	96	-0.499(not given)	0.607 (0.219 to 1.688)	0.339
Personal care	76	94	-1.01(not given)	0.364(0.168 to 0.790)	0.011

Reference	Study type	No. pts	Patient characteristics	Intervention	Comparison	Length of follow-up	Outcome measures	Source of funding

Defecation	71	92	-0.446(-0.881 to -0.10)	-	0.045	
Pattern of urination	72	90	0.185(-0.202 to 0.571)	-	0.349	
Fatigue	74	95	-0.007(-0.356 to 0.341)	-	0.967	
Pain	72	93	-0.172(-0.537 to 0.194)	-	0.357	
Sleep	72	88	0.200(-0.237 to 0.636)	-	0.370	
Vision	68	89	-0.522(-1.009 to -0.035)	-	0.035	
Cognition	60	80	0.020(-0.473 to 0.512)	-	0.937	
Psyche	59	78	0.358(-0.124 to 0.840)	-	0.145	
sexuality	60	87	0.223(-0.277 to 0.724)	-	0.382	

Co-ordination of care

Data were not shown but both groups were reported to have similar judgements of co-ordination of care

Health related quality of life

Reference	Study type	No. pts	Patient characteristics	Intervention	Comparison	Length of follow-up	Outcome measures	Source of funding
This analysis was adjusted for baseline differences in HRQoL. Study group people experienced better QoL at 10 months in terms of feeling more energetic and vital, and showing fewer (adverse?) changes in general health.								

Issue	Study group (n)	Comparison group (n)	Standardised regression co-efficient (95% confidence interval)	p		
Physical functioning	79	96	-1.662 (-6.099 to 2.856)	0.476		
Social function	80	96	2.532(-3.836 to 8.901)	0.434		
role limitations (physical)	79	93	6.053(-4.283 to 16.389)	0.249		
role limitations (emotional)	80	93	7.602(-4.426 to 19.632)	0.214		
Mental health	79	95	-0.037(-4.313 to 4.239)	0.986		
Energy and vitality	80	96	4.698(0.423 to 8.973)	0.031		
Bodily pain	80	96	0.497(-5.869 to 6.863)	0.878		
General health	79	95	-0.537(-5.094 to 4.019)	0.816		
Reported health transition	80	95	7.678(1.886 to 13.470)	0.01		

Appendix E – Forest plots

None.

Appendix F – GRADE or GRADE-CERQual tables

Quantitative evidence

The data was not presented in a format suitable for inclusion in GRADE tables

Qualitative evidence

Table 18: Summary of evidence

Study design and sample size			**Quality assessment**		
Number of studies contributing to the finding	**Design**	**Finding**	**Criteria**	**Rating**	**Overall assessment of confidence**
Review finding (theme) 1: Organisation of care and individuals with a central coordination role					
Subtheme – Care delivered by fewer professionals and developing a consistent and personal relationship					
8 studies[1, 2, 7, 8, 18, 26, 33, 38]	Interviews (n=6), focus groups (n=1) or mixture of interviews and focus groups (n=1)	People expressed a preference for their care to be provided by as few healthcare professionals as possible and the value of a consistent and ongoing relationship was highlighted in terms of increased reassurance and the ability to talk more freely.	Limitations	Moderate concerns about methodological limitations[a]	MODERATE
			Coherence	No or very minor concerns about coherence	
			Relevance	Minor concerns about relevance[b]	
			Adequacy	No concerns about adequacy	
Subtheme – Knowing who to contact					
15 studies (from 16 papers)[1, 2, 4, 8,]	Interviews (n=11), focus groups (n=1),	Experiences of those that had access to a single point of contact, most commonly an MS nurse, as well as those that did not, indicated that having a single point of contact	Limitations	Moderate concerns about methodological limitations[a]	MODERATE

Study design and sample size			Quality assessment		
Number of studies contributing to the finding	**Design**	**Finding**	**Criteria**	**Rating**	**Overall assessment of confidence**
[11, 18, 24, 26, 32-34, 38, 39, 41]	mixture of interviews and focus groups (n=2) or free-text responses to a questionnaire (n=1)	was preferable. Reasons for wanting a single point of contact included difficulties in knowing who was responsible for treating which symptoms and the role a point of contact could have in advising and organising appointments, as well as limited time to discuss all concerns with other professionals such as neurologists and the need for support between these appointments.	Coherence	No or very minor concerns about coherence	
			Relevance	Minor concerns about relevance[b]	
			Adequacy	No concerns about adequacy	
Subtheme – Roles of those with a central coordination role – supporting, educating, guiding and accessing services					
21 studies[1, 2, 4, 8, 9, 11, 15, 17, 18, 21-23, 25, 26, 32, 34, 37-39, 41, 42]	Interviews (n=13), focus groups (n=2), mixture of interviews and focus groups (n=3) or free-text responses to a questionnaire (n=3)	People that had access to a neurology or MS nurse indicated the important role they had in providing support and information, not only in relation to management of their condition but also in terms of navigating and accessing the right services and obtaining other information such as financial and putting people in touch with voluntary organisations. GPs were also highlighted by some as playing an important role in providing information and support. Some also saw neurologists as well placed to accompany patients through the progression of their disease and as an important source of information, education and support. Navigating services alone was described by some as exhausting and some people described resorting to services that were easier to access such as emergency departments and walk-in clinics. Less positive experiences of information and support further highlights how someone with a coordination role could improve patient experience in this area as it was unclear whether these individuals had access to a point of contact that was coordinating care and acting as a source of information.	Limitations	Moderate concerns about methodological limitations[a]	MODERATE
			Coherence	No or very minor concerns about coherence	
			Relevance	Minor concerns about relevance[b]	
			Adequacy	No concerns about adequacy	

Study design and sample size			**Quality assessment**		
Number of studies contributing to the finding	**Design**	**Finding**	**Criteria**	**Rating**	**Overall assessment of confidence**
Subtheme – Roles of those with a central coordination role – coordinating and aiding communication across levels of care					
13 (from 14 papers) studies[1, 2, 7, 8, 11, 12, 19, 26, 33, 34, 37, 38, 41, 42]	Interviews (n=7), focus groups (n=3), mixture of interviews and focus groups (n=1) or free-text responses to a questionnaire (n=2)	MS or neurology nurses were highlighted by many people as having a role in the coordination of care and facilitating communication between services and levels of care. However, some with access to MS nurses also reported compartmentalisation in care suggesting coordination of care might not always be one of their roles currently. Those that did not appear to have a point of contact that coordinated care expressed a desire for improved coordination and communication between services as they sometimes had to take this on themselves and found this frustrating and expressed relief when help was provided. Having a point of contact involved in the coordination of care and communication, regardless of which professional does this, may help to improve patient experience.	Limitations	Moderate concerns about methodological limitations[a]	MODERATE
			Coherence	No or very minor concerns about coherence	
			Relevance	Minor concerns about relevance[b]	
			Adequacy	No concerns about adequacy	
Subtheme – Roles of those with a central coordination role – responding to changing needs					
5 studies[1, 12, 18, 26, 34]	Interviews (n=3), focus groups (n=1) or mixture of interviews and focus groups (n=1)	Respondents with access to an MS or neurological nurse described the flexible way in which they were able to access support which was important due to MS being a long-term condition where needs changed over time and was valued. For those where it was unclear whether they had access to a point of contact coordinating care, the need for services to be responsive to their changing needs and the fact that some felt abandoned if left without regular follow-up further	Limitations	Moderate concerns about methodological limitations[a]	LOW
			Coherence	No or very minor concerns about coherence	
			Relevance	Minor concerns about relevance[b]	
			Adequacy	Minor concerns about adequacy[c]	

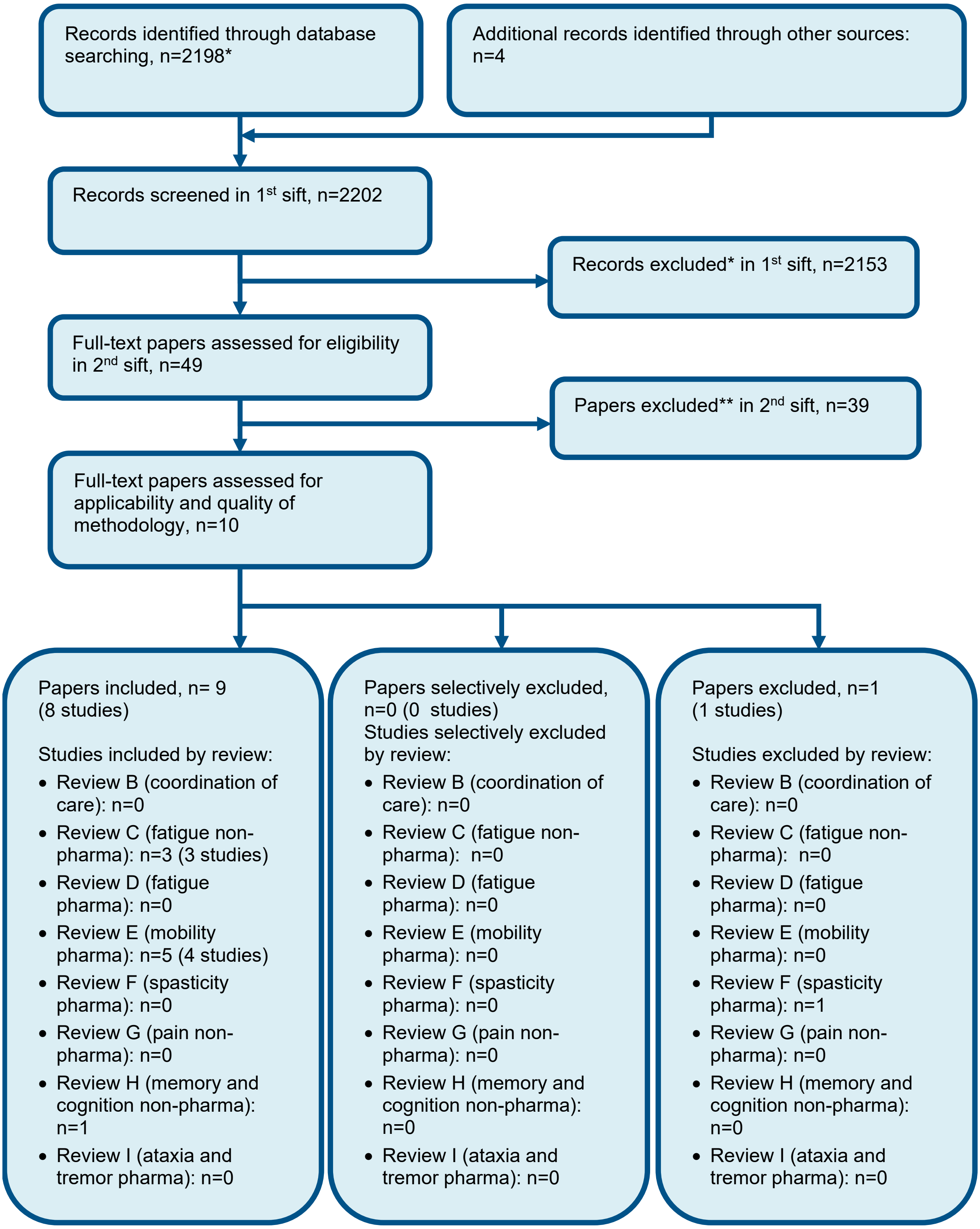
Study design and sample size		Finding	Quality assessment		
Number of studies contributing to the finding	**Design**		**Criteria**	**Rating**	**Overall assessment of confidence**
		highlights the importance of services being flexible and responsive to individual patient needs. The importance of healthcare providers taking a patient-centred approach, taking into account the person's lived experience with MS and allowing shared decision-making was described.			
Subtheme – Roles of those with a central coordination role – <u>promoting self-confidence and the ability to cope</u>					
3 studies[1, 4, 18]	Interviews (n=3)	An additional role of neurological or MS nurses in improving the ability of people to cope with their condition and to self-manage, allowing personal agency and a degree of choice and control over services, was also highlighted by those that had access to one. This was as a result of the regular follow-up and knowledge that if they did need help, they could quickly access it. Others where they did not appear to have access to a point of contact and care coordinator described difficulties in obtaining information about bladder symptoms and also their ability and confidence to self-manage these symptoms. This is something that having a point of contact responsible for coordinating care could help to improve by ensuring people have access to advice about self-management from the most appropriate professionals and improving their ability to cope.	Limitations	Minor concerns about methodological limitations[d]	LOW
			Coherence	No or very minor concerns about coherence	
			Relevance	Minor concerns about relevance[b]	
			Adequacy	Moderate concerns about adequacy[e]	
Subtheme – Roles of those with a central coordination role – <u>helping maintain usual activities and relationships</u>					
1 study[1]	Interviews (n=1)	Respondents with access to a neurological nurse specialist described how the flexible service allowed them to maintain preferred social and personal relationships and allowed them to participate in activities that maintained or enhanced their quality of life.	Limitations	Minor concerns about methodological limitations[d]	LOW
			Coherence	No or very minor concerns about coherence	

Study design and sample size			**Quality assessment**		
Number of studies contributing to the finding	**Design**	**Finding**	**Criteria**	**Rating**	**Overall assessment of confidence**
			Relevance	Minor concerns about relevance[b]	
			Adequacy	Moderate concerns about adequacy[f]	
Review finding (theme) 2: Knowledge of MS for those delivering care was important					
13 (from 14 papers) studies[1, 2, 4, 7, 11, 15, 17, 18, 23, 33, 34, 40-42]	Interviews (n=9), mixture of interviews and focus groups (n=1) or free-text responses to a questionnaire (n=3)	People with MS commonly expressed frustration when having discussions with clinicians, particularly in primary care, that they felt did not have enough of an understanding of their condition and wanted access to support from someone who was more knowledgeable in this area. Those that had access to neurological or MS nurses appreciated the increased expertise they had and some specifically wanted access to or increased access to an MS nurse. Others found other professionals such as occupational therapists were also knowledgeable.	Limitations	Moderate concerns about methodological limitations[a]	MODERATE
			Coherence	No or very minor concerns about coherence	
			Relevance	No concerns about relevance	
			Adequacy	No concerns about adequacy	

(a) majority of studies had at least moderate limitations, with common factors including lack of discussion of researcher role and unclear if results validated
(b) concerns about relevance of the majority, half or almost half of studies as they were either non-UK based, from a mixed population including some with MS or quite an old study
(c) only five studies reported on this area and it is unclear whether additional studies may change the conclusions
(d) majority of studies had only minor limitations, with common factors including no mention of data saturation and lack of discussion of researcher role
(e) only three studies reported on this area and it is unclear whether additional studies may change the conclusions
(f) only a single study reported on this area and it is unclear whether additional studies may change the conclusions

Appendix G – Economic evidence study selection

Figure 3: Flow chart of health economic study selection for the guideline



* Excluding conference abstracts.
**Non-relevant population, intervention, comparison, design or setting; non-English language

Appendix H – Economic evidence tables

None.

Appendix I – Health economic model

No original economic modelling undertaken.

Appendix J – Excluded studies

Clinical studies

Table 19: Studies excluded from the clinical review

Study	Reason for exclusion
Askey-Jones, S., Silber, E., Shaw, P. et al. (2012) A nurse-led mental health service for people with multiple sclerosis. Journal of Psychosomatic Research 72(6): 463-465	- Study design not relevant to this review protocol
Blaney, K (2001) MS specialist nurses: the future of palliative care. Progress in Palliative Care 9(5): 199-201.	- Review article but not a systematic review
Boesen, F., Norgaard, M., Skjerbaek, A. G. et al. (2020) Can inpatient multidisciplinary rehabilitation improve health-related quality of life in MS patients on the long term - The Danish MS Hospitals Rehabilitation Study. Multiple Sclerosis 26(14): 1953-1957	- Study does not contain an intervention relevant to this review protocol
Boesen, F., Norgaard, M., Trenel, P. et al. (2018) Longer term effectiveness of inpatient multidisciplinary rehabilitation on health-related quality of life in MS patients: a pragmatic randomized controlled trial - The Danish MS Hospitals Rehabilitation Study. Multiple Sclerosis 24(3): 340-349	- Study does not contain an intervention relevant to this review protocol
Corry, M.; McKenna, M.; Duggan, M. (2011) The role of the clinical nurse specialist in MS: a literature review. British Journal of Nursing 20(2): 86-93	- Review article but not a systematic review
Cottrell, L., Economos, G., Evans, C. et al. (2020) A realist review of advance care planning for people with multiple sclerosis and their families. PLoS ONE 15(10): e0240815	- Review article but not a systematic review
De Broe, S.; Christopher, F.; Waugh, N. (2001) The role of specialist nurses in multiple sclerosis: a rapid and systematic review. Health Technology Assessment 5(17): 1-47	- Systematic review used as source of primary studies
Forbes, A., While, A., Dyson, L. et al. (2003) Impact of clinical nurse specialists in multiple sclerosis--synthesis of the evidence. Journal of Advanced Nursing 42(5): 442-62	- Systematic review used as source of primary studies
Forbes, A; While, A; Taylor, M (2007) What people with multiple sclerosis perceive to be important to meeting their needs. Journal of Advanced Nursing 58(1): 11-22.	- Study design not relevant to this review protocol
Groppo, E., Signori, A., Sormani, M. P. et al. (2019) Predictors of hospital-based multidisciplinary rehabilitation effects in persons with multiple sclerosis: a large-scale, single-centre study. Multiple Sclerosis Journal Experimental, Translational and Clinical 5(2): 2055217319843673	- Study design not relevant to this review protocol
Jansen, D. E., Krol, B., Groothoff, J. W. et al. (2007) Integrated care for MS patients. Disability & Rehabilitation 29(7): 597-603	- Systematic review used as source of primary studies

Study	Reason for exclusion
Kirker, Sg; Young, E; Warlow, Cp (1995) An evaluation of a multiple sclerosis liaison nurse. Clinical Rehabilitation 9(3): 219-26.	- Study does not contain an intervention relevant to this review protocol
Leary, A.; Quinn, D.; Bowen, A. (2015) Impact of Proactive Case Management by Multiple Sclerosis Specialist Nurses on Use of Unscheduled Care and Emergency Presentation in Multiple Sclerosis: A Case Study. International Journal of Ms Care 17(4): 159-63	- Study does not contain an intervention relevant to this review protocol Doesn't directly address our review question. Looks into the effectiveness of adjusting the role of an MS nurse to proactively managing cases in order to reduce emergency admissions/management
Papeix, C., Gambotti, L., Assouad, R. et al. (2015) Evaluation of an integrated multidisciplinary approach in multiple sclerosis care: A prospective, randomized, controlled study. Multiple Sclerosis Journal Experimental Translational & Clinical 1: 2055217315608864	- Study does not contain an intervention relevant to this review protocol
Papeix, C. and Lubetzki, C. (2016) Integrated multidisciplinary clinics should be the gold standard in managing progressive MS - NO. Multiple Sclerosis 22(9): 1128-30	- Study design not relevant to this review protocol
Reimer, M, Evans, M, Feng, Mq et al. (2009) Occupational therapy intervention in early multiple sclerosis: Evidence to support involvement. Occupational Therapy Now 11(4): 13-5.	- Study design not relevant to this review protocol
Rietberg, M. B., van Wegen, E. E., Eyssen, I. C. et al. (2014) Effects of multidisciplinary rehabilitation on chronic fatigue in multiple sclerosis: a randomized controlled trial. PLoS ONE [Electronic Resource] 9(9): e107710	- Study does not contain an intervention relevant to this review protocol
Robles-Sanchez, M. A., Merchan-Ruiz, M., Guerrero-Clemente, J. et al. (2015) The role of nurses in the improvement of the quality of life of patients with multiple sclerosis. Revista cientifica de la sociedad espanola de enfermeria neurologica 42(1): 10-19	- Study not reported in English
Roche, J.; McCarry, Y.; Mellors, K. (2014) Enhanced patient support services improve patient persistence with multiple sclerosis treatment. Patient Preference and Adherence 8: 805-811	- Study does not contain an intervention relevant to this review protocol
Roman, C. and Menning, K. (2017) Treatment and disease management of multiple sclerosis patients: A review for nurse practitioners. Journal of the American Association of Nurse Practitioners 29(10): 629-638	- Review article but not a systematic review
Rossiter, D. and Thompson, A. J. (1995) Introduction of integrated care pathways for patients with multiple sclerosis in an inpatient neurorehabilitation setting. Disability and rehabilitation 17(8): 443-448	- Study does not contain an intervention relevant to this review protocol
Salhofer-Polanyi, S., Windt, J., Sumper, H. et al. (2013) Benefits of inpatient multidisciplinary rehabilitation in multiple sclerosis. Neurorehabilitation 33(2): 285-92	- Study does not contain an intervention relevant to this review protocol

Study	Reason for exclusion
Sitzia, J.; Haddrell, V.; Rice-Oxley, M. (1998) Evaluation of a nurse-led multidisciplinary neurological rehabilitation programme using the Nottingham Health Profile. Clinical Rehabilitation 12(5): 389-94	- Study design not relevant to this review protocol
Tan, H., Yu, J., Tabby, D. et al. (2010) Clinical and economic impact of a specialty care management program among patients with multiple sclerosis: a cohort study. Multiple Sclerosis 16(8): 956-63	- Study does not contain an intervention relevant to this review protocol Doesn't directly address our review question as it is specific to medicine adherence and only describes the nurse as a link between the patient and pharmacy
Thotam, S. M. and Buhse, M. (2020) Patient Satisfaction with Physicians and Nurse Practitioners in Multiple Sclerosis Centers. International Journal of Ms Care 22(3): 129-135	- Study does not contain an intervention relevant to this review protocol Does not address our review question but addresses perceived differences in seeing a NP compared to an MD. No indication of whether this is within an MDT and if they are single points of contact.
Uygunoglu, U.; Kantarci, O.; Siva, A. (2016) Integrated multidisciplinary clinics should be the gold standard in managing progressive MS - YES. Multiple Sclerosis 22(9): 1126-8	- Review article but not a systematic review
Zuber, P., Tsagkas, C., Papadopoulou, A. et al. (2020) Efficacy of inpatient personalized multidisciplinary rehabilitation in multiple sclerosis: behavioural and functional imaging results. Journal of Neurology 267(6): 1744-1753	- Study does not contain an intervention relevant to this review protocol

Studies excluded from the call for evidence

Table 20: Studies excluded from the call for evidence

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
IFESS (International Functional Electrical Stimulation Society)	Impact on access to relevant services that can improve outcomes, e.g. neuro-physiotherapy. FES is a technique used within neuro-physiotherapy to improve walking.	Please see attached a publication list: The case for updating the guidance on FES for correction of dropped foot in CG186 (2016) Paul Taylor, International Functional Electrical Stimulation Society (IFESS) stake holder representative, Salisbury District Hospital.	Publicly available	Intervention did not match the review protocol. FES for correction of dropped foot- Not relevant to coordination of care (COC) review
IFESS (International Functional Electrical Stimulation Society)	Impact on access to relevant services that can improve outcomes, e.g. neuro-physiotherapy. FES is a technique used within neuro-physiotherapy to improve walking.	The Case for the Odstock Dropped Foot Stimulator(ODFS®) A summary of the published evidence for the Odstock Dropped Foot Stimulator Paul Taylor and Tamsyn Street National Clinical FES Centre November 2019	https://www.odstockmedical.com/knowledgebase/case-fes	Intervention did not match the review protocol. FES for correction of dropped foot- Not relevant to coordination of care (COC) review

Stakeholder Organisation	**Evidence Submission** **(Details of evidence that relates to the questions. Please specify which question you are referring to)**	**Published / Unpublished material**	**How the evidence can be obtained** **(For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)**	**Reason for exclusion**
Novartis	2) Multidisciplinary teams where the single point of contact is shared, not specified or changes.	Published	A virtual multidisciplinary team for patients with multiple sclerosis Specialised Medicine Eli Silber, King's College Hospital NHS Foundation Trust, Sreedharan Harikrishnan, Kent and Canterbury Hospital, Shelley Jones, King's College Hospital NHS Foundation Trust, Deborah Clark, King's College Hospital NHS Foundation Trust out.pdf	Intervention did not match the review protocol. Supplement is on virtual MDTs so not relevant to this review. Johnson 2003 was included in CG186 but marked Johson 2001 in error. It has also been picked up in info for patients search and marked as included
TEVA	Consensus guidelines published by the ABN on managing MS and	Published	Dobson R, Dassan P, Roberts M, Giovannoni G, Nelson-Piercy C, Brex PA.	Intervention did not match the review protocol. On pregnancy

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
	pregnancy. This publication addresses the request for information on processes of care and multidisciplinary teams for MS care		UK consensus on pregnancy in multiple sclerosis: 'Association of British Neurologists' guidelines. Pract Neurol (2019); 19(2): 106-114. doi: 10.1136/practneurol-2018-002060. Epub 2019 Jan 5. PMID: 30612100	
TEVA	This publication details analysis of a pharmacovigilance database containing data on over 7,000 pregnant women with MS exposed to glatiramer acetate (GA). The evidence relates to the information, requested by NICE, on 'Quality and safety of care and reduction in avoidable harms'. The evidence suggests that exposure of	Published	Sandberg-Wollheim M, Neudorfer O, Grinspan A, Weinstock-Guttman B, Haas J, Izquierdo G, Riley C, Ross AP, Baruch P, Drillman T, Coyle PK. Pregnancy Outcomes from the Branded Glatiramer Acetate Pregnancy Database. Int J MS Care (2018); 20(1): 9-14. doi: 10.7224/1537-2073.2016-079. PMID: 29507538; PMCID: PMC5825987	Intervention did not match the review protocol. On pregrnancy

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
	GA during pregnancy does not increase the risk of abnormal pregnancy outcomes, including congenital anomalies, compared with the general population			
TEVA	Copaxone® and the beta interferons (Avonex®, Betaferon® & Rebif®) were assessed by NICE in 2002 the first DMTs for MS to be appraised by NICE. In response to the limitations highlighted during this appraisal regarding the extrapolation of long-term trends from short-term clinical studies, the Risk Sharing Scheme (RSS) was established. The RSS provided cost-effective provision of these	Published	Giovannoni G, Brex PA, Dhiraj D, Fullarton J, Freddi M, Rodgers-Gray B, Schmierer K. Glatiramer acetate as a clinically and cost-effective treatment of relapsing multiple sclerosis over 10 years of use within the National Health Service: Final results from the UK Risk Sharing Scheme. Mult Scler J Exp Transl Clin (2019); 5(4): 2055217319893103. doi: 10.1177/205521731989310	Intervention did not match the review protocol. On disease modifying therapies

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
	DMTs to the NHS (through discounted costs for some products, including Copaxone®) while collecting long-term data on their clinical and cost-effectiveness through a 10-year observational study. This published literature focusses on the 10-year results of Copaxone® collected through the RSS. The publication addresses queries requested by NICE on disability levels and Quality of Life		3. PMID: 31839981; PMCID: PMC6896140	
TEVA	The CONFIDENCE study aimed to assess treatment adherence in RRMS patients treated with once daily or three-times weekly glatiramer acetate. The	Published	Cutter G, Veneziano A, Grinspan A, Al-Banna M, Boyko A, Zakharova M, Maida E, Pasic MB, Gandhi SK, Everts R, Cordioli C, Rossi S. Higher satisfaction	Intervention did not match the review protocol. On disease-modifying therapies

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
	evidence demonstrated that higher levels of satisfaction, perception of convenience, and adherence were reported by patients on three-times weekly glatiramer acetate than those on once daily. This evidence addresses the query from NICE on treatment adherence and patient satisfaction		and adherence with glatiramer acetate 40 mg/mL TIW vs 20 mg/mL QD in RRMS. Mult Scler Relat Disord (2019); 33: 13-21. doi: 10.1016/j.msard.2019.04.036. Epub 2019 May 9. PMID: 31132664	
Lloyd Bradley	Sihra N, Gibson S, Bradley L. Meeting the clinical needs of patients with progressive multiple sclerosis. Clin Med (Lond). 2017 Jun;17(3):286. doi: 10.7861/clinmedicine.17-3-286. PMID: 28572236; PMCID: PMC6297561.			Intervention did not match the review protocol. Short Clinical Evidence article – not relevant as study explored the needs of people with progressive MS (no coordination of care themes)

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
MS Society	We are not aware of any studies of the standard you require on the specific topics you are interested in. We think most available evidence on the specific topics in question will not be 'systematic reviews, randomised controlled trials and prospective or retrospective non-randomised cohort studies'. We hope the Committee will not overlook best practice according to patients and clinical experts in its revision of this guideline, such as that we highlighted in our response to the scoping consultation.	N/A	N/A	We have considered all the MS Trust documents that were sent during scoping consultation

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
BSRM	2	Published	De Souza LH and Frank AO. Problematic clinical features of powered wheelchair users with severely disabling multiple sclerosis. Disability and Rehabilitation 2014; DOI: 10.3109/09638288.2014.949356	Intervention did not match the review protocol. Retrospective review of electronic and case note records of recipients of electric-powered indoor/outdoor powered wheelchairs (EPIOCs) attending a specialist wheelchair service between June 2007 and September 2008.
North Central London Joint Formulary Committee	Question 1: The evidence supports the shared cared approach to support co-ordination of care when prescribing Sativex	Published	https://www.ncl-mon.nhs.uk/wp-content/uploads/Interface_prescribing/SCG_Sativex.pdf North Central London Joint Formulary Committee, 22/12/2020, 'Shared Care Guidance,	Is not suitable for inclusion. These are guidelines shared care when Sativex is prescribed. It doesn't include any evidence that can be used in the COC review.

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Sativex, Treatment of Multiple Sclerosis related spasticity'	
Southeast London Integrated Medicines Optimisation committee	Question 1: The evidence supports the shared cared approach to support co-ordination of care when prescribing Sativex	Published	https://www.lambethccg.nhs.uk/news-and-publications/meeting-papers/south-east-london-area-prescribing-committee/Documents/Shared%20Care%20Protocols/Sativex%20MS%20spasticity%20SCG%20March%202021%20FINAL.pdf Southeast London Integrated Medicines Optimisation Committee, March 2021, 'Shared Care Prescribing Guideline,	Same guidelines as above

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Sativex (cannabidiol 2.5mg and dronabinol 2.7mg per dose) for the treatment of moderate to severe spasticity associated with multiple sclerosis in ADULTS'	
North of Tyne, Gateshead and North Cumbria Area	Question 1: The evidence supports the shared cared approach to support co-ordination of care when prescribing Sativex	Published	http://www.northoftyneapc.nhs.uk/wp-content/uploads/sites/6/2020/10/Sativex-MS-SCG-Sept-2020-v1.0.pdf North of Tyne, Gateshead and North Cumbria Area Prescribing Committee,	Intervention did not match the review protocol. Prescribing and shared care guidelines. No evidence that can be included in the review

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
Prescribing Committee			09/2020, 'Sativex (delta-9-tetrahydrocannabinol / cannabidiol) Oromucosal Spray Shared Care Guidance'	
Royal Cornwall Hospitals NHS Trust	Question 1: The evidence supports the shared cared approach to support co-ordination of care when prescribing Sativex	Published	https://doclibrary-rcht.cornwall.nhs.uk/GET/d10361892 Royal Cornwall Hospitals NHS Trust, January 2021, 'Sativex Shared Care Guideline'	Intervention did not match the review protocol. On Sativex
Dorset Medicine	Question 1: The evidence supports the shared cared approach to	Published	https://www.dorsetccg.nhs.uk/Downloads/aboutus/medicines-management/Other%20Guidelines/Shared	Intervention did not match the review protocol. On Sativex

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
s Advisory Group	support co-ordination of care when prescribing Sativex		%20Care%20Sativex%20November%202020.pdf?UNLID=684609777202138732 20 Dorset Medicines Advisory Group, November 2020, ‘Shared Care Guideline for delta-9-tetrahydrocannibinol combined with cannabidiol (THC:CBD – Sativex)	
South Tyneside and Sunderland Area Prescribing Committee	Question 1: The evidence supports the shared cared approach to support co-ordination of care when prescribing Sativex	Published	https://www.sunderlandccg.nhs.uk/wp-content/uploads/2020/07/Sativex-SCA-July20.pdf South Tyneside and Sunderland Area Prescribing Committee, July 2020, ‘Shared Care Guideline, Sativex for the treatment of spasticity in multiple sclerosis’	Intervention did not match the review protocol. On Sativex

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
Basingstoke, Southampton & Winchester District Prescribing Committee	Question 1: The evidence supports the shared cared approach to support co-ordination of care when prescribing Sativex	Published	https://gp-portal.westhampshireccg.nhs.uk/wp-content/uploads/sites/3/2020/12/Sativex-SCG-DPC-Approved-October-2020.pdf Basingstoke, Southampton & Winchester District Prescribing Committee, October 2020, ‘Shared Care Guideline for Sativex oromucosal spray (GP summary)’	Intervention did not match the review protocol. On Sativex
GW Pharma	Question 2: The evidence supports and compares the multi-disciplinary approach in managing MS spasticity	Published	Akgün, K, et al. "Daily practice managing resistant multiple sclerosis spasticity with delta-9-tetrahydrocannabinol:	Intervention did not match the review protocol. On Sativex

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			cannabidiol oromucosal spray: a systematic review of observational studies." *Journal of central nervous system disease* 11 (2019): 1179573519831997.	
GW Pharma	Question 2: The evidence supports the management approach in managing MS spasticity	Published	Berger T. Multiple sclerosis spasticity daily management: retrospective data from Europe. Expert Rev Neurother. 2013 Feb;13(3 Suppl 1):3-7. doi: 10.1586/ern.13.3. PMID: 23369053.	Intervention did not match the review protocol. On Sativex
GW Pharma	Question 2: Interventions – multi-disciplinary team - comparison	Published	Papeix C, et al. Evaluation of an integrated multidisciplinary approach in multiple sclerosis care: A prospective, randomized, controlled study. *Mult Scler*	Has already been identified and selected for inclusion in the review

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			J Exp Transl Clin 2015; 1: 1–8	
GW Pharma	Question 2: Interventions – multi-disciplinary team	Published	Papeix C, Lubetzki C. Integrated multidisciplinary clinics should be the gold standard in managing progressive MS – NO. *Mult Scler* 2016; 22: 1128–1130.	Abstract presentation of the above study.
GW Pharma	Question 2: Interventions – multi-disciplinary team	Published	Soelberg SP. et al. The Multiple Sclerosis Care Unit. *Mult Scler*. 2019;25(5):627-636. doi:10.1177/1352458518807082	Intervention did not match the review protocol. A descriptive, cross-sectional survey between individual physical therapists who work with MS patients. The article describes aspects of physical therapy content and delivery in MS. No results on MDT, role of PTs or co-ordination of care.

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
Multiple Sclerosis Trust	This list of published and unpublished sources potentially provide evidence for the role of HCPs or groups of HCPs in coordination of care. The MS Trust has very limited access to full text of papers, so it has not been possible to assess each study against the criteria listed in the call for evidence. We hope that this list of published and unpublished sources will provide additional evidence of the role of MS nurses and other HCPs in managing the care of people with multiple sclerosis.	Published	Weilenmann M, Händler-Schuster D, Petry H, Zanolari D, Schmid-Mohler G, Beckmann S. Patient satisfaction with the quality of counseling provided by advanced practice nurses specialized in multiple sclerosis: a quantitative analysis J Neurosci Nurs. 2021 Apr 1;53(2):99-103. Summary	Intervention did not match the review protocol. Patient satisfaction survey on provision of counselling by an MS nurse. No relevant evidence on coordination of care or MDTs.
			May A, Morgan O, Quairoli K.	Intervention did not match the review protocol. Survey on the

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Incorporation and impact of a clinical pharmacist in a hospital-based neurology clinic treating patients with multiple sclerosis Int J MS Care. 2021 Jan-Feb;23(1):16-20. Summary	role of pharmacists in MDT Not comparative- might be considered if wanting to add narrative about roles of different HCP in the MDT
			Punshon G, Sopala J, Hannan G, Roberts M, Vernon K, Pearce A, Leary A. Modelling the multiple sclerosis specialist nurse workforce by determination of optimum caseloads in the United Kingdom Int J MS Care. 2021 Jan-Feb;23(1):1-7. Summary	Study looking at MS nurse caseload by questionnaire on activity and complexity of work both done and left undone. Not relevant to clinical review.

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Roberts M, Hannan G, Govey H, Naik P. Addressing unmet need in multiple sclerosis: the advanced MS champion role. Br J Neurosci Nurs 2020;16(1):12-15 Summary	Intervention did not match the review protocol. Not relevant article about the role of a MS nurse
			Healey K, Zabad R, Young L, Lindner A, Lenz N, Stewart R, Charlton M. Multiple sclerosis at home access (MAHA): an initiative to improve care in the community. Int J MS Care. 2019 May-Jun;21(3):101-112. Summary	Not relevant. Implementation of a house call program

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Falet JR, Deshmukh S, Al-Jassim A, Sigler G, Babinski M, Moore F. The neurologist's role in disabling multiple sclerosis: A qualitative study of patient and care provider perspectives. Mult Scler. 2019 May 10:1352458519845107. Summary	Intervention did not match the review protocol. Community care access at home scheme
			Soelberg Sorensen P, Giovannoni G, Montalban X, et al. The multiple sclerosis care unit. Mult Scler. 2018 Oct 23:1352458518807082. Summary	Intervention did not match the review protocol. Intervention did not match the review protocol. describes an MS care unit, it's benefits and the HCPs who could potentially be involved.
			Rahn AC, Köpke S, Backhus I, Kasper J, Anger	Intervention did not match the review protocol. Evaluates a

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			K, Untiedt B, Alegiani A, Kleiter I, Mühlhauser I, Heesen C. Nurse-led immunotreatment DEcision Coaching In people with Multiple Sclerosis (DECIMS) - Feasibility testing, pilot randomised controlled trial and mixed methods process evaluation. Int J Nurs Stud. 2018 Feb;78:26-36. Summary	decision-making coaching programme for immune treatments.
			Forbes A, While A, Mathes L, Griffiths P. Evaluation of a MS specialist nurse programme. Int J Nurs Stud. 2006 Nov;43(8):985-1000.	Picked up by COC search and has been included

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Summary	
			While A, Forbes A, Ullman R, Mathes L. The role of specialist and general nurses working with people with multiple sclerosis. J Clin Nurs. 2009 Sep;18(18):2635-48. Summary	Picked up by info for patients search and has been included
			Johnson J. On receiving the diagnosis of multiple sclerosis: managing the transition. Mult Scler. 2003 Feb;9(1):82-8. Summary	Picked up by info for patients search and has been included
			Kirker S, Young E, Warlow C. An evaluation of a multiple sclerosis liaison nurse.	Intervention did not match the review protocol. Non comparative study exploring the

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Clin Rehabil 1995;9(3):219-226. Summary	workload and benefits of a new liaison nurse service
			Meehan M, Doody O. The role of the clinical nurse specialist multiple sclerosis, the patients' and families' and carers' perspective: An integrative review. Mult Scler Relat Disord. 2020 Jan 3;39:101918. Summary	Relevant references from review ordered
			Forbes A, While A, Dyson L, Grocott T, Griffiths P. Impact of clinical nurse specialists in multiple sclerosis--synthesis of the evidence. J Adv Nurs. 2003 Jun;42(5):442-62.	Systematic review - Picked up by info for patients search and has been included-

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Summary	
			Corry M, McKenna M, Duggan M. The role of the clinical nurse specialist in MS: a literature review. Br J Nurs. 2011 Jan 27-Feb 9;20(2):86-93. Summary	Systematic review - Picked up by Coordination of care (COC)search and has been included as a potentially relevant systematic review
			Quinn D, Bowen A, Leary A. The value of the multiple sclerosis specialist nurse with respect to prevention of unnecessary emergency admission. Mult Scler. 2014 Oct;20(12):1669-70. Summary	Not relevant - letter to editor
			Leary A, Quinn D, Bowen A.	Picked up by COC search and has been included

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			Impact of Proactive Case Management by Multiple Sclerosis Specialist Nurses on Use of Unscheduled Care and Emergency Presentation in Multiple Sclerosis: A Case Study. Int J MS Care. 2015 Jul-Aug;17(4):159-63. Summary	
			Quinn D A collaborative care pathway to reduce admission to secondary care for multiple sclerosis Br J Neurosci Nurs 2011:7(2):497-499 Summary	Intervention did not match the review protocol. On a a rapid response service to reduce hospital inpatient stays. This is done through partnership with the local acute hospital and GPs to develop a care pathway for people with MS to prevent unnecessary hospital admissions through accident and emergency, acute

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				admissions unit and the out of hours service.
			Leary A, Mynors G, Bowen A. Modelling the complex activity of multiple sclerosis specialist nurses in England. Br J Neurosci Nurs 2015;11:170-176. Summary	Not relevant - the purpose of this study was to understand the complexity of expert nursing in MS.
			Momsen AM, Rasmussen JO, Nielsen CV, Iversen MD, Lund H. Multidisciplinary team care in rehabilitation: an overview of reviews. J Rehabil Med. 2012 Nov;44(11):901-12. Summary	Review of reviews on multidisciplinary rehabilitation for different health problems. Studies on MS checked for relevance.

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Buchanan RJ, Kaufman M, Zhu L, James W. Patient perceptions of multiple sclerosis-related care: comparisons by practice specialty of principal care physician. NeuroRehabilitation. 2008;23(3):267-72. Summary	Not relevant – study looking at whether people with multiple sclerosis who receive the majority of their care from neurologists perceive access to and quality of their care differently than people receiving their care from medical internists, family/general practitioners, and other types of physicians?
			Pétrin J, Donnelly C, McColl MA, Finlayson M. Is it worth it? The experiences of persons with multiple sclerosis as they access health care to manage their condition. Health Expect. 2020 Oct;23(5):1269-1279. Summary	Intervention did not match the review protocol. On health-care access experiences of Ontarians with MS as they manage their condition.

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			Khan F, Turner-Stokes L, Ng L, Kilpatrick T. Multidisciplinary rehabilitation for adults with multiple sclerosis. Cochrane Database Syst Rev. 2007 Apr 18;(2):CD006036. Summary	Cochrane review. Considered in CG 186 and relevant studies have been included.
			Tacchino A, Brichetto G, Zaratin P, Battaglia MA, Ponzio M. Multiple sclerosis and rehabilitation: an overview of the different rehabilitation settings. Neurol Sci. 2017 Dec;38(12):2131-2138. Summary	Intervention did not match the review protocol. This is about different settings: out-patient ambulatory therapy (OUT), hospitalized therapy (HOSP, in-patient and out-patient hospitalized therapy), and home-based therapy (HOME).
			Learmonth YC, Adamson BC, Balto JM, Chiu CY, Molina-Guzman IM,	Intervention did not match the review protocol. Looking at desired and preferred format and source of exercise

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			Finlayson M, Riskin BJ, Motl RW. Identifying preferred format and source of exercise information in persons with multiple sclerosis that can be delivered by health-care providers. Health Expect. 2017 Oct;20(5):1001-1010. Summary	information for persons with MS that can be delivered through health-care providers.
			De Broe S, Christopher F, Waugh N. The role of specialist nurses in multiple sclerosis: a rapid and systematic review. Health Technol Assess. 2001;5(17):1-47. Summary	Picked up in COC search and has been identified as a potentially relevant systematic review with references checked for inclusion.

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			Sitzia J, Haddrell V, Rice-Oxley M. Evaluation of a nurse-led multidisciplinary neurological rehabilitation programme using the Nottingham Health Profile. Clin Rehabil. 1998 Oct;12(5):389-94. Summary	Intervention did not match the review protocol. Study on inpatient multiple disciplinary rehabilitation program
			Makepeace RW, Barnes MP, Semlyen JK, Stevenson J. The establishment of a community multiple sclerosis team. Int J Rehabil Res. 2001 Jun;24(2):137-41. Summary	See excluded studies list from quantitative review
			Hanson RL, Habibi M, Khamo N, Abdou S, Stubbings J.	Intervention did not match the review protocol. Looking at

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			Integrated clinical and specialty pharmacy practice model for management of patients with multiple sclerosis. Am J Health Syst Pharm. 2014 Mar 15;71(6):463-9. Summary	having a pharmacist in the MDT but not single point of contact.
			Methley AM, Chew-Graham C, Campbell S, Cheraghi-Sohi S. Experiences of UK health-care services for people with Multiple Sclerosis: a systematic narrative review. Health Expect. 2015 Dec;18(6):1844-55. Summary	Systematic review checked for any relevant included studies

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			Caon C, Saunders C, Smrtka J, Baxter N, Shoemaker J. Injectable disease-modifying therapy for relapsing-remitting multiple sclerosis: a review of adherence data. J Neurosci Nurs. 2010 Oct;42(5 Suppl): S5-9. Summary	Intervention did not match the review protocol. On disease modifying therapies
			Forbes A, While A. The nursing contribution to chronic disease management: a discussion paper. Int J Nurs Stud. 2009 Jan;46(1):119-30. Summary	Intervention did not match the review protocol. Not specific to MS
			White CP, White M, Russell CS.	Not relevant – not on coordination of care

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			Multiple sclerosis patients talking with healthcare providers about emotions. J Neurosci Nurs. 2007 Apr;39(2):89-101. Summary	
			Zimmer A, Bläuer C, Coslovsky M, Kappos L, Derfuss T. Optimizing treatment initiation: Effects of a patient education program about fingolimod treatment on knowledge, self-efficacy and patient satisfaction. Mult Scler Relat Disord. 2015 Sep;4(5):444-450. Summary	Intervention did not match the review protocol. Not on coordination of care
			Köpke S, Kasper J, Flachenecker P, Meißner H, Brandt A, Hauptmann B,	Intervention did not match the review protocol on immunotherapy

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			Bender G, Backhus I, Rahn AC, Pöttgen J, Vettorazzi E, Heesen C. Patient education programme on immunotherapy in multiple sclerosis (PEPIMS): a controlled rater-blinded study. Clin Rehabil. 2017 Feb;31(2):250-261. Summary	
			Tietjen KM, Breitenstein S. A Nurse-Led Telehealth Program to Improve Emotional Health in Individuals With Multiple Sclerosis. J Psychosoc Nurs Ment Health Serv. 2017 Mar 1;55(3):31-37. Summary	Intervention did not match the review protocol. Feasibility trial implementation of an existing telehealth promotion program within a community neurology clinic with a single MS provider. Although includes a single point of contact, there is no comparison and the focus is the program not the HCP.

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Askey-Jones S, Silber E, Shaw P, Gray R, David AS. A nurse-led mental health service for people with multiple sclerosis. J Psychosom Res. 2012 Jun;72(6):463-5. Summary	Intervention did not match the review protocol. Article evaluates a nurse-led project linking MS and mental health services. Provides data on all referrals and management from 2006 to 2008.
			Moss-Morris R, Dennison L, Landau S, Yardley L, Silber E, Chalder T. A randomized controlled trial of cognitive behavioral therapy (CBT) for adjusting to multiple sclerosis (the saMS trial): does CBT work and for whom does it work? J Consult Clin Psychol. 2013 Apr;81(2):251-62. Summary	Intervention did not match the review protocol. On CBT Hhas been considered for non-pharma fatigue

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Wilkinson C, White S, Fronzo C. Are multiple sclerosis services meeting the NICE quality standard? Br J Neurosci Nurs 2018;14(2):73-76. Summary	Intervention did not match the review protocol. Not on coordination of care
		Reports published on MS Trust website	Multiple Sclerosis Trust. Defining the value of MS specialist nurses. Letchworth: MS Trust; 2012 https://support.mstrust.org.uk/file/defining-the-value-of-ms-specialist-nurses.pdf	Intervention did not match the review protocol. Non comparative study
			Multiple Sclerosis Trust.	See evidence review B Summary of literature reporting on the value of an MS nurse

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Evidence for MS Specialist Services: Findings from the GEMSS MS specialist nurse evaluation project. Letchworth; MS Trust: 2015 https://support.mstrust.org.uk/file/Evidence-for-MS-Specialist-Services.pdf	
			Multiple Sclerosis Trust. Improving the efficiency of disease modifying drug provision Letchworth; MS Trust: 2016	Intervention did not match the review protocol. On disease modifying therapies

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			https://support.mstrust.org.uk/file/MSFV-DMD-report-10-5-17-2.pdf	
			Multiple Sclerosis Trust. Eight steps to improving your relapse service Letchworth; MS Trust: 2016 https://support.mstrust.org.uk/file/8-Steps-Relapse-Guide-interactive-PDF.pdf	Intervention did not match the review protocol. Background information on relapses and how services can be improved. Not much about coordination of care or MS nurses that can be included in this review
			Multiple Sclerosis Trust. Improving services for people with advanced MS	Intervention did not match the review protocol. Report on services for advanced MS followed by recommendations on how to improve the services

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			Letchworth; MS Trust: 2016 https://support.mstrust.org.uk/file/MSFV-AMS-report.pdf	
			Multiple Sclerosis Trust MS Forward View: a consensus for the future of MS services Letchworth; MS Trust: 2016 https://support.mstrust.org.uk/file/Future-of-MS-Services-WEB-FINAL.pdf	Intervention did not match the review protocol. From intro: To answer questions about how to use service capacity more effectively and improve care by using existing resources in new and different ways, it was first necessary to understand what resources are currently available.

Stakeholder Organisation	**Evidence Submission** **(Details of evidence that relates to the questions. Please specify which question you are referring to)**	**Published / Unpublished material**	**How the evidence can be obtained** **(For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)**	**Reason for exclusion**
				MS Forward View set out to map the workforce of MSSNs and MS neurologists around the UK, building on and updating the previous work done for the 'Case for Equitable Provision' report in the summer of 201412. For the first time we have also mapped and presented DMD prescribing and treatment monitoring centres, and presented data at team level as well as by commissioning area.
			Multiple Sclerosis Trust MS Specialist Nursing in the UK 2018: Results from the 2018 MS Trust Nurse	Intervention did not match the review protocol. Non comparative study

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Intervention did not match the review protocol. Mapping Survey Letchworth; MS Trust: 2018 https://support.mstrust.org.uk/file/store-pdfs/ms-trust-nurse-mapping-report-2018.pdf	
Southwest MS Network			No data provided but have sent a link to newsletter (SWMS Newsletter) which included information on a new network being developed. They may have some unpublished data later this year.	No action

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ABN			Review Expert Rev Neurother. 2013 Dec; 13(12 Suppl):39-44. doi: 10.1586/14737175.2013.865873. Can we optimize our teams? Multidisciplinary care for multiple sclerosis Pierre Clavelou https://www.tandfonline.com/doi/abs/10.1586/14737175.2013.865873?journalCode=iern20	Intervention did not match the review protocol. Non comparative study
ABN			Rev Neurol (Paris). 2018 Jun; 174(6):475-479. doi: 10.1016/j.neurol.2018.01.366. Epub 2018 Apr 22.	Intervention did not match the review protocol. Non comparative study

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Organization of care for multiple sclerosis in France N Derache, A Dufay, C Lebarbey https://www.sciencedirect.com/science/article/abs/pii/S0035378717308585	
ABN			Neurosci Nurs. 2006 Oct; 38(5):384-9. doi: 10.1097/01376517-200610000-00011. Evaluation of a transmural care model for multiple sclerosis patients Daniëlle E M C Jansen, Boudien Krol, Johan W Groothoff, Doeke Post	Included in CG186

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			https://pubmed.ncbi.nlm.nih.gov/17069269/	
ABN			Can J Neurol Sci. 2018 May; 45(3):304-312. doi: 10.1017/cjn.2018.7. Toward a Shared-Care Model of Relapsing-Remitting Multiple Sclerosis: Role of the Primary Care Practitioner Jiwon Oh, Marie-Sarah Gagné-Brosseau, Melanie Guenette , Catherine Larochelle, François Lemieux, Suresh Menon , Sarah A Morrow, Laurence Poliquin-Lasnier, Chantal Roy-Hewitson, Carolina Rush, Anne-Marie Trudelle, Paul S Giacomini	Intervention did not match the review protocol. Consensus recommendations on shared care including GPs.

Stakeholder Organisation	**Evidence Submission** **(Details of evidence that relates to the questions. Please specify which question you are referring to)**	**Published / Unpublished material**	**How the evidence can be obtained** **(For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)**	**Reason for exclusion**
ABN			Health Expect. 2020 Oct; 23(5):1269-1279. doi: 10.1111/hex.13109. Epub 2020 Jul 22. Is it worth it? The experiences of persons with multiple sclerosis as they access health care to manage their condition Julie Pétrin, Catherine Donnelly, Mary-Ann McColl, Marcia Finlayson	Intervention did not match the review protocol. Non comparative study
ABN			Mult Scler Relat Disord. 2021 Mar 18; 51:102913. doi:	Intervention did not match the review protocol. On the impact of the pandemic

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			10.1016/j.msard.2021.102913. Online ahead of print. How the COVID-19 Pandemic has changed multiple sclerosis clinical practice: Results of a nationwide provider survey Elizabeth H Morrison, Katelyn Michtich, Carrie M Hersh	
ABN			Int J MS Care. Jan-Feb 2021; 23(1):1-7. doi: 10.7224/1537-2073.2019-058. Epub 2020 Jan 13. Modeling the Multiple Sclerosis Specialist Nurse Workforce by Determination of Optimum	Intervention did not match the review protocol. Non comparative study

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Caseloads in the United Kingdom https://meridian.allenpress.com/ijmsc/article/23/1/1/436108/Modeling-the-Multiple-Sclerosis-Specialist-Nurse	
ABN			Neurourol Urodyn. 2020 Feb; 39(2):762-770. doi: 10.1002/nau.24276. Epub 2020 Jan 15. Consensus document on the multidisciplinary management of neurogenic lower urinary tract dysfunction in patients with multiple sclerosis José Medina-Polo, José María Adot , Marta Allué , Salvador Arlandis, Pedro	Intervention did not match the review protocol. On the management of a specific symptom

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Blasco, Bonaventura Casanova, Jorge Matías-Guiu, Blanca Madurga, Edwin-Roger Meza-Murillo, Carlos Müller-Arteaga , Breogán Rodríguez-Acevedo, Jesús Vara, María Carmen Zubiaur, Luis López-Fando	
ABN			Mult Scler Relat Disord. 2020 Jan 3; 39:101918. doi: 10.1016/j.msard.2019.101918. Online ahead of print. The role of the clinical nurse specialist multiple sclerosis, the patients' and families' and carers' perspective: An integrative review	Intervention did not match the review protocol. Non comparative study

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Michelle Meehan, Owen Doody	
ABN			Mult Scler. 2019 Apr; 25(5):627-636. doi: 10.1177/1352458518807082. Epub 2018 Oct 23. The Multiple Sclerosis Care Unit Per Soelberg Sorensen, Gavin Giovannoni, Xavier Montalban, Christoph Thalheim, Paola Zaratin, Giancarlo Comi	Intervention did not match the review protocol. Non comparative study
ABN			Mult Scler. 2016 Aug; 22(2 Suppl):34-46. doi:	Intervention did not match the review protocol. Descriptive/narrative review

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			10.1177/1352458516650741. The importance of a multi-disciplinary perspective and patient activation programmes in MS management Peter Feys, Gavin Giovannoni, Nathalie Dijsselbloem, Diego Centonze, Piet Eelen, Stine Lykke Andersen	summarising the multidisciplinary perspective of MS
ABN			Health Soc Care Community. 2017 May; 25(3):848-857. doi: 10.1111/hsc.12369. Epub 2016 Jul 11.	Intervention did not match the review protocol. Non comparative study

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			A qualitative study of patient and professional perspectives of healthcare services for multiple sclerosis: implications for service development and policy Abigail M Methley, Carolyn A Chew-Graham, Sudeh Cheraghi-Sohi, Stephen M Campbell	
ABN			Int J MS Care. Jul-Aug 2015; 17(4):159-63. doi: 10.7224/1537-2073.2014-011. Impact of Proactive Case Management by Multiple Sclerosis Specialist Nurses	See excluded studies for the quantitative review

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			on Use of Unscheduled Care and Emergency Presentation in Multiple Sclerosis: A Case Study Alison Leary, Debbie Quinn, Amy Bowen	
ABN			Nurs Stand. 2012 Feb 22-28; 26(25):39-46. doi: 10.7748/ns2012.02.26.25.39.c8951. Management of bladder dysfunction in patients with multiple sclerosis David Williams	Intervention did not match the review protocol. Management of a specific symptom

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
ABN			Mult Scler. 2005 Dec; 11(6):694-9. doi: 10.1191/1352458505ms1237oa. Conservative bladder management in advanced multiple sclerosis D De Ridder, D Ost, F Van der Aa, M Stagnaro, C Beneton, K Gross-Paju, P Eelen, H Limbourg, M Harper, J C Segal, C J Fowler, A Nordenbo Mult Scler. 2014 Oct; 20(12):1669-70. doi: 10.1177/1352458514527865. Epub 2014 Mar 19. The value of the multiple sclerosis specialist nurse	Intervention did not match the review protocol. Management of a specific symptom

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			with respect to prevention of unnecessary emergency admission Debbie Quinn, Amy Bowen, Alison Leary	
ABN			Disabil Rehabil. 2017 Jun; 39(11):1097-1105. doi: 10.1080/09638288.2016.1180547. Epub 2016 Jun 7. Meeting the mental health needs of people with multiple sclerosis: a qualitative study of patients and professionals Abigail Methley, Stephen Campbell, Sudeh Cheraghi-Sohi, Carolyn Chew-Graham	Intervention did not match the review protocol. Non comparative study

Stakeholder Organisation	**Evidence Submission** **(Details of evidence that relates to the questions. Please specify which question you are referring to)**	**Published / Unpublished material**	**How the evidence can be obtained** **(For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)**	**Reason for exclusion**
Barts Health NHS Trust	**Evidence about the staffing levels of the MDT teams in MS services and caseload**	Unpublished 20210411 ABN poster - 110 - MDT . 20210411 ABN poster - 108 - DMT . 20210411 ABN poster - 107 - overvi	Service Audit (questionnaire and semi-structure interviews) of 70 MS centres in the UK	Intervention did not match the review protocol. These are poster summaries of audits of MS centres in the UK mainly looking at variation in composition of the MDT and variation in prescribing across the centres.
Coloplast	In response to question one, relating to the request for studies evaluating processes of care, Coloplast would like to submit an unpublished clinical audit project that NHS Ayrshire & Arran completed in partnership with Coloplast which informed MS specialist nurses on the bowel and	Unpublished material	A copy of the report has been attached to the submitting email Saved here.	Intervention did not match the review protocol. Looks at needs of patients in order to develop a pathway.

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
	bladder management needs of people living with multiple sclerosis to enable the development of robust pathways with a clear focus on prevention and early intervention.			
	Coloplast would also like to submit an additional study to question one, relating to the request for studies evaluating processes of care. The study, an unpublished audit of 21 people living with multiple sclerosis, was designed to explore the barriers to intermittent self-catheterisation management and provide learnings with regards to the need for improved signposting to specialist	Unpublished material	A copy of the report has been attached to the submitting email	Intervention did not match the review protocol. On a specific symptom

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
	services and for all of people living with multiple sclerosis having success to the appropriate specialist services.			
Dept Neurology and Rehabilitation Medicine . University Hospitals, Dorset	1 Process of care of a group of HCA supporting people living with MS in the community	Unpublished material	For further information please contact Michelle.Davies@uhd.nhs.uk who collected the local data for this audit	Intervention did not match the review protocol. Aimed at developing a tool to enable services to provide evidence of how they reduce complications and unscheduled care and data highlighting differences between practitioners to stimulate service improvement.
Sylvia Moss (MSc Neurophysio,	Please can you consider this evidence: Eftekharsadat B et al. Effect of virtual reality-based balance training in			Intervention did not match the review protocol. Out of scope for the guideline (non-pharma management of balance and mobility)

Stakeholder Organisation	**Evidence Submission** **(Details of evidence that relates to the questions. Please specify which question you are referring to)**	**Published / Unpublished material**	**How the evidence can be obtained** **(For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)**	**Reason for exclusion**
BASIC, Salford)	multiple sclerosis. Neurol Res. 2015;37(6) 539-544			
N/A	N/A	N/A	The RCP/BSRM is grateful for the opportunity to respond to the above consultation. We have liaised with our experts and would like to comment as below.	No action
Royal College of Physicians (RCP)	A large national UK cohort study examining the outcomes and cost efficiency of specialist inpatient multidisciplinary rehabilitation for MS – analysed overall and in 3 groups of dependency	Published	Turner-Stokes L, Harding R, Peihan Y, Dzingina M, Wei G Cost-efficiency of specialist inpatient rehabilitation for adults with multiple sclerosis: A multicentre	Intervention did not match the review protocol. On inpatient rehabilitation

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
	Specialist rehabilitation provided good value for money in patients with MS, yielding improved functional outcomes and substantial savings in ongoing care costs, especially in high-dependency patients.		prospective cohort analysis of a national clinical dataset Multiple Sclerosis Journal – Experimental, Translational and Clinical. 2020 Mar 16;6(1):2055217320912789. doi: 10.1177/2055217320912789. https://journals.sagepub.com/doi/full/10.1177/2055217320912789	
BSRM	Guidelines/standards for specialised community rehabilitation (for all disabling conditions including MS) developed by a multi professional	Published	2021 BSRM Standards for specialist rehabilitation for community dwelling adults https://www.bsrm.org.uk/downloads/2021-v9.3-22-3-	Intervention did not match the review protocol. Rehabilitation standards. Not specific to MS. Recommends having a single point of contact but not useful for this review.

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
	working party following evaluation of evidence and best practice. MS patients represent a significant number of those see in community neurorehab teams.		21-speccommunitystandards-summary-fortheweb-clean.pdf	
BSRM	Guidelines/standards developed by a multi professional working party following evaluation of evidence and best practice for management and care of all those living in specialist nursing homes including those with advanced MS.	Published	British Society of Rehabilitation Medicine. Specialist Nursing Home Care for People with Complex Neurological Disability: Guidance to Best Practice. London BSRM, 2013 https://www.bsrm.org.uk/downloads/bsrm-guide-to-best-practice-36pp-final-4-12-13.pdf (update underway)	Intervention did not match the review protocol. These are guidelines on nursing home care for people with complex neurological disease.

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
BSRM	Guidelines/standards developed by a multi professional working party following evaluation of evidence and best practice, with significant evidence for vocational rehab with people with MS.	Published	British Society of Rehabilitation Medicine. Vocational assessment and rehabilitation for people with long-term neurological conditions – recommendations for best practice. London BSRM 2010 (update expected 2021) https://www.bsrm.org.uk/downloads/vr4ltncv45fl-websecure.pdf	Intervention did not match the review protocol. These are best practice guidelines on vocational assessment and rehabilitation for people with complex neurological disorders.
BSRM	Report of the recommendations for employer and clinician approached from people working with MS	Published	Vocational rehabilitation services for people with multiple sclerosis: what patients want from clinicians and employers -	Intervention did not match the review protocol. Report identifying what pwMS require from a vocational rehabilitation service in terms of content and

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			J. Sweetland, A. Riazi, S.J. Cano, E.D. Playford, 2007 https://journals.sagepub.com/doi/10.1177/1352458507078414	service delivery. No mention of MDTs or MS nurse.
BSRM	Project looking at how to support people who develop MS to remain in work	Published	Supporting work for people with multiple sclerosis, Catherine Doogan 1, E Diane Playford 2014 https://journals.sagepub.com/doi/10.1177/1352458514523499	Intervention did not match the review protocol. Study looking to identify what pwMS require from a vocational rehabilitation service in terms of content and service delivery. No mention of MDT or MS nurse.
BSRM	Specific evidence for effectiveness of voc rehab for people with MS	Published	Effectiveness of vocational rehabilitation intervention on the return to work and	Intervention did not match the review protocol. On vocational rehabilitation

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			employment of persons with multiple sclerosis. Fary Khan, Louisa Ng, Lynne Turner-Stokes	
BSRM	Explanation of ways of working to ensure effectiveness of vocational rehab interventions with people living with MS	Published	Beyond standard rehabilitation programmes: Working with people with MS for adequate goal setting and rehabilitation treatment evaluation. Playford ED. Mult Scler. 2019. PMID: 31469357	Intervention did not match the review protocol. On rehabilitation
BSRM	As title	Published	Functioning Profiles of Young People with MS in Inpatient Rehabilitation: Data from the National Rehabilitation Reporting System in Canada.	Intervention did not match the review protocol. Inpatient rehabilitation

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Ow N, et al. Mult Scler Relat Disord. 2020. PMID: 32736215	
BSRM	Effects and interactions of lifestyle and fatigue on function in people with MS	Published	Associations between fatigue impact and lifestyle factors in people with multiple sclerosis - The Danish MS hospitals rehabilitation study. Johansson S, et al. Mult Scler Relat Disord. 2021. PMID: 33582566	Intervention did not match the review protocol. Association between fatigue impact and lifestyle factors
BSRM	Cochrane review of reviews of a range of rehab interventions for people with MS; reporting good evidence for many rehabilitation interventions.	Published	Rehabilitation for people with multiple sclerosis: an overview of Cochrane Reviews	Intervention did not match the review protocol. On rehabilitation

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
			Bhasker Amatya, Fary Khan, Mary Galea Version published: 14 January 2019 https://doi.org/10.1002/14651858.CD012732.pub2	
Defence Medical Rehabilitation Centre Stanford Hall	Review of last ten years of MDT neurological rehabilitation at the Defence Medical Rehabilitation Centre	Unpublished – undergoing peer review	Attached to submission PDF O'Sullivan et al, 2021. MS in UKAF -	Intervention did not match the review protocol. On rehabilitation
British Dietetic	Policy Statement: Alternative Diets in MS	Under review due for republication	From British Dietetic Association Neurosciences Group	Intervention did not match the review protocol. Policy statement

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
Association				
Cochrane Review	Dietary interventions for multiple sclerosis-related outcomes	Published May 2020	Cochrane Reviews - https://doi.org/10.1002/14651858.CD004192.pub4	Intervention did not match the review protocol. On diet
	Trials A Randomized, Controlled Trial of Low-fat Diet for Fatigue in Multiple Sclerosis	Unpublished	https://www.clinicaltrials.gov/ct2/results?term=diet&cond=ms	Intervention did not match the review protocol. On diet
	Utilization of the Ketogenic Diet in Patient With Relapsing Remitting MS	Unpublished	https://www.clinicaltrials.gov/ct2/show/NCT03718247?term=diet&cond=ms&draw=2&rank=5	Intervention did not match the review protocol. On diet
	A Phase I, Randomized, Double-Blind, Placebo-Controlled, Single Ascending Dose, Multiple Dose, and Food Effect	Published	https://pubmed.ncbi.nlm.nih.gov/30374683/ CNS Drugs	Intervention did not match the review protocol. On diet

Stakeholder Organisation	Evidence Submission (Details of evidence that relates to the questions. Please specify which question you are referring to)	Published / Unpublished material	How the evidence can be obtained (For published material, please include full reference details; author, date of publication, full title of paper/report and where can a copy be obtained from)	Reason for exclusion
	Trial of the Safety, Tolerability and Pharmacokinetics of Highly Purified Cannabidiol in Healthy Subjects		. 2018 Nov;32(11):1053-1067. doi: 10.1007/s40263-018-0578-5.	
	Diet and Multiple Sclerosis: Scoping Review of Web-Based Recommendations	Published	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6329429/	Intervention did not match the review protocol. On diet
	MS Society Diet booklet	Unpublished	BDA have been involved in reviewing literature reviews for production of this booklet. Unknown when MS Society are looking to publish this updated booklet. Can request this if required	Intervention did not match the review protocol. On diet

Below is NHS England submission. All on social prescribing not specific to MS.

NHS England – Personalised Care Group	The holistic, non-medical approach of SP is believed to have wide-ranging impacts, including on the person, system and community. For the person, it is hoped that SP would improve wellbeing, reduce isolation, increase physical activity and increase employment and volunteering opportunities by providing opportunities to socialise, engage with the community and interact with peers with similar health conditions. For the system, it is hoped that would include reduced numbers of GP appointments, less A&E attendance and shorter hospital stays as individuals' self-management skills improve as a result of their social prescription and because they no longer present for what were essentially social issues. Finally, for the community, there is hope for improvements in social cohesion, increased numbers of volunteers and more resilient community and voluntary sector organisations. However, the current evidence around social prescribing is small scale qualitative and anecdotal. Studies are limited by newness and heterogeneity of the role and preliminary findings require more extensive approaches to evaluation including longitudinal evaluation. Please note, the information provided below is not specific to multiple sclerosis, but more generally to people with long-term conditions.		
	Impact of social prescribing on patients: There are a few recent studies based on qualitative interviewing/focus groups, showing benefits of the link worker role on improved self-confidence (1), self-reliance (2), and improved general wellbeing (3). There is also some evidence, again from qualitative interviewing/focus groups, to suggest social prescribing can lead to behaviour change and subsequent improved self-management of LTCs (1) and (2). Some research has also shown benefits in reduced anxiety for patients (4).	Published	1. Wildman JM, Moffatt S, Steer M, Laing K, Penn L, O'Brien N., Service-users' perspectives of link worker social prescribing: a qualitative follow-up study., BMC Public Health. 2019 Jan 22;19(1):98. doi: 10.1186/s12889-018-6349-x. 2. Moffatt S, Steer M, Lawson S, Penn L, O'Brien N., Link Worker social prescribing to improve health and well-being for people with long-term conditions: qualitative study of service user perceptions., BMJ Open. 2017 Jul 16;7(7):e015203. doi: 10.1136/bmjopen-2016-015203. 3. Carnes D, Sohanpal R, Frostick C, Hull S, Mathur R, Netuveli G, Tong J, Hutt P, Bertotti M., The impact of a social prescribing service on patients in primary care: a mixed methods evaluation.,

	A recent empirical study (5), based on the evaluation of a social prescribing scheme in Newcastle-upon-Tyne) detailed impacts on experience and workforce from the relationship with coordinators entailing self-efficacy and behaviour change.		BMC Health Serv Res. 2017 Dec 19;17(1):835. doi: 10.1186/s12913-017-2778-y. 4. Woodall J, Trigwell J, Bunyan AM, Raine G, Eaton V, Davis J, Hancock L, Cunningham M, Wilkinson S., Understanding the effectiveness and mechanisms of a social prescribing service: a mixed method analysis., BMC Health Serv Res. 2018 Aug 6;18(1):604. doi: 10.1186/s12913-018-3437-7. 5. Bertotti M, Frostick C, Hutt P, Sohanpal R, Carnes D., A realist evaluation of social prescribing: an exploration into the context and mechanisms underpinning a pathway linking primary care with the voluntary sector., Prim Health Care Res Dev. 2018 May;19(3):232-245. doi: 10.1017/S1463423617000706. Epub 2017 Dec 7.
	Impact of social prescribing link workers as a central point of contact: Studies from qualitative interviewing/focus groups show the impact of link worker role is in providing 'intensive support' rather than signposting (6) around the referral activities. The role of link-worker is key to success of SP as a central point of contact bridging needs (7) but needs to sustain patient's engagement with the intervention.	Published	6. Wildman JM, Moffatt S, Steer M, Laing K, Penn L, O'Brien N., Service-users' perspectives of link worker social prescribing: a qualitative follow-up study., BMC Public Health. 2019 Jan 22;19(1):98. doi: 10.1186/s12889-018-6349-x. 7. Skivington K, Smith M, Chng NR, Mackenzie M, Wyke S, Mercer SW., Delivering a primary care-based social prescribing initiative: a qualitative study of the benefits and challenges., Br J Gen Pract. 2018 Jul;68(672):e487-e494. doi: 10.3399/bjgp18X696617. Epub 2018 May 21.
	Impact of social prescribing on adherence to interventions: Qualitative interviewing/focus group studies that focus on specific issues like adherence to social	Published	8. J, Randhawa G, Pappas Y., Patient uptake and adherence to social prescribing: a qualitative study., BJGP Open. 2018 Aug 8;2(3):bjgpopen18X101598. doi:

	prescribing (8) do not state what impact social prescribing practices have but provide further knowledge for its implementation.		10.3399/bjgpopen18X101598. eCollection 2018 Oct.

Health Economic studies

Published health economic studies that met the inclusion criteria (relevant population, comparators, economic study design, published 2005 or later and not from non-OECD country or USA) but that were excluded following appraisal of applicability and methodological quality are listed below. See the health economic protocol for more details.

Table 21: Studies excluded from the health economic review

Reference	Reason for exclusion
None.	

Appendix K – Research recommendations – full details

K.1 Research recommendation

What is the clinical and cost effectiveness of processes of care, including the role of MS specialist nurses and other healthcare professionals, to improve care coordination and health outcomes in adults with MS?

K.1.1 Why this is important

People with MS face a variety of symptoms and disabilities that arise unpredictably and change over time. Their physical, emotional and social needs may therefore require action from more than one health professional at any time and it's important that these interventions are timely and co-ordinated.

A variety of models have developed to address this need, but it's recognised some people with MS still find it difficult to access treatment, advice and support from the right people when they need it most.

The importance of adequately co-ordinated, appropriate and comprehensive care is widely acknowledged and is a function for many people with MS undertaken by a MS Specialist Nurse or other health care professional, but research is still needed on the processes or roles that would deliver this most effectively.

K.1.2 Rationale for research recommendation

Importance to 'patients' or the population	People affected by MS, their families and carers have identified coordination of care as central to achieving a good quality of life and other health related benefits. If coordination of care is shown to be clinically and cost effective this can support people with MS by improving symptom management and promoting independence and reduce the impact on family and carers.
Relevance to NICE guidance	This research can reduce the existing uncertainty regarding the clinical and cost-effectiveness of processes to coordinate care and support decision making in the development of future recommendations.
Relevance to the NHS	A clear recommendation on processes of care to coordinate care will offer clinicians clearer guidance on best care for people with MS. Increased knowledge of how care should be coordinated would improve and standardise care. It should also reduce unwarranted admissions and primary care appointments
National priorities	In the National Service Framework for long term conditions people with long term neurological conditions have improved health outcomes and a better quality of life when they are able to access prompt and ongoing advice and support from practitioners with dedicated neurological expertise, such as specialist nurses.
Current evidence base	No quantitative evidence was identified that met the review protocol criteria. Qualitative evidence

	identified a number of themes on how care should be coordinated.
Equality considerations	None identified

K.1.3 Modified PICO table

Population	Inclusion: Adults (≥18 years) with MS, including people receiving palliative care. Exclusion: Children and young people (≤18 years).
Intervention	A process of care where an individual healthcare professional (HCP) or group of HCPs are central to coordination of care and the single point of contact such as: • MS nurse specialists • Physiotherapists • Occupational therapists • Key workers • Social prescribers • MDT where the single point of contact is shared, not specified or changes
Comparator	• Compared to each other • Usual care (where there is no single point of contact)
Outcome	• Reduction of hospital admissions for: o UTI o Pressure sores o Falls o Respiratory infections • Reduction/prevention of unplanned hospital admissions • Reduction in consultant or GP appointments • Treatment adherence • Relapse rates • Improvement in mental health • Patient / carer satisfaction • Functional scales that quantify level of disability, such as the Expanded Disability Status Scale (EDSS), the Multiple Sclerosis Functional Composite (MSFC), the Cambridge Multiple Sclerosis Basic Score (CAMBS), the Functional Assessment of Multiple Sclerosis (FAMS)

	• Health-related Quality of Life, for example EQ-5D, SF-36, Leeds MS quality of life scale, MS Impact Scale. • Impact on patients and carers (formal and informal). • Follow up/Timepoints • 3-12 months • >12 months
Study design	RCT
Timeframe	Long term
Additional information	None