



University of Brighton



Burrswood's Standardised Data Collection Tool (BSDCT) for people with Multiple Sclerosis

2014

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Glossary of Terms

A **Standardised Data Collection Tool (SDCT)** can be defined as: “an agreed instrument which enables data concerning patients, therapists, and/or healthcare settings and approaches to be collected unambiguously by a range of practitioners in a number of different clinical settings (Moore, et al., 2012).

Physiotherapy (Physical therapy) uses a wide variety of assessment and treatment approaches and can be described as “providing services to individuals and populations to develop, maintain and restore maximum movement and functional ability throughout the lifespan. This includes providing services in circumstances where movement and function are threatened by ageing, injury, diseases, disorders, conditions or environmental factors. Functional movement is central to what it means to be healthy.” (WCPT, 2011)

The project collected data of two physiotherapy approaches commonly used in neurological rehabilitation; aquatic physiotherapy and land based physiotherapy. **Aquatic physiotherapy** is: “A therapy programme utilising the properties of water, designed by a suitably qualified physiotherapist specifically for an individual to improve function, carried out by appropriately trained personnel, ideally in a purpose built, and suitably heated hydrotherapy pool.” Aquatic Therapy Association of Chartered Physiotherapists (ATACP, (2006). **Land based physiotherapy** in this project is conventional physiotherapy that is not conducted in water.

Although the term ‘aquatic physiotherapy’ is used throughout the main body of this report, prior to 2008 aquatic physiotherapy was called ‘hydrotherapy’ in the UK.

The word **patient** is used here to include any person attending physiotherapy interventions. **Positive responders**, describes the participants who showed an improvement in outcome measure scores. **Negative responders**, describes the participants who demonstrated a decline in outcome measure scores. **Non-responders**, describes the participants who demonstrated the same pre and post intervention score in outcome measures.

Abbreviations

MS	Multiple Sclerosis
PwMS	People with Multiple Sclerosis
SDC	Standardised data collection
BSDCT	Burrswood Standardised data collection tool
Ax	Assessment
Rx	Treatment
MSIS-29	Multiple Sclerosis Impact scale (Riazi et al 2002)
MFIS-21	Modified fatigue impact scale (Hobart et al, 2001)
POMA	Performance orientated mobility assessment (Tinetti, 1986).
HRQoL	Health Related Quality of Life

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1 Executive summary

1.1 Aims:

To develop a standardised data collection tool that could be used across the UK as an evaluation and audit tool of physiotherapy services for people with Multiple Sclerosis.

1.2 Objectives

- To provide comprehensive information on the development of a Standardised Data Collection tool for physiotherapy practice for people with Multiple Sclerosis (PwMS)
- To provide a baseline data for future data collection and potential research projects
- To describe outcomes of a physiotherapy service for people with Multiple Sclerosis.

1.3 Design

The Burrswood Standardised Data Collection Tool (BSDCT) was developed and used to collect anonymised data relating to physiotherapy services for People with Multiple Sclerosis. The data is collated, analysed and presented in this report. The developed Burrswood Standardised Data Collection Tool was based on previous work (HyDAT, 2010 and Moore, et al., 2012) and followed a systematic process involving consultation with all stakeholders including people with Multiple Sclerosis, families, Carers, Specialist Nurses, Physiotherapists, Consultant Neurologists and representatives of the MS society (Figure 1).

1.4 Data collection period

February 2010 – June 2012.

1.5 Data

One hundred completed data sets were gathered that included eight physiotherapy interventions. The eight sessions include an initial assessment, six dedicated treatment sessions and a follow up assessment. Data included anonymised patient demographics, diagnosis, referral information, treatment details, outcome measures and service related information (Appendix 1).

1.6 Data analysis

The data collected using the Burrswood Standardised Data Collection Tool was entered into Excel 2010 (version 14). The descriptive data is presented in this report.

1.7 Main findings

- Progressive (primary and secondary) Multiple Sclerosis was the diagnosis in 67% of patients with 30% diagnosed with relapse remitting and 3% with benign Multiple Sclerosis.
- The majority were females and nearly two thirds of patients were between 40 – 60 years old.
- Seventy seven percent of patients were seen within four weeks of referral and more than half of them were seen within two weeks.
- Over three quarters of participants completed six sessions of aquatic therapy.

- A wide range of treatments were used with the four most common being: balance re-education/exercise, functional exercises, weight bearing exercise and active strengthening.
- Outcome measures showed an overall percentage improvement in fatigue, health related quality of life and balance and gait using MFIS, MSIS-29 and POMA respectively.
- The Balance and gait scale (POMA) showed aquatic physiotherapy had a 19% more positive response than land based physiotherapy.
- Eighty four percent of patients, who completed the course of eight sessions, expressed that they were motivated to continue with independent exercises and 73% intended to continue with exercise at Burrswood Hospital.

1.8 Implications for future practice

The Burrswood Standardised Data Collection Tool was put into practice from February 2010 and is currently being used at Burrswood Christian Hospital. This will enable the long term evaluation of effects of physiotherapy at Burrswood to be continued.

The Burrswood Standardised Data Collection tool is a pilot tool and can be adapted and improved for different practice settings. We would welcome communication with health professionals working with people who have MS and would encourage the use of Burrswood Standardised Data Collection Tool to gain further information. Positive outcomes of this pilot study and further evaluation could help support physiotherapy for people with MS.

2 Introduction

The Burrswood Standardised Data Collection Tool was based on the HyDAT report (2010) which was found to be user-friendly and provides valuable information for clinical and research debate (Cox, et al., 2009). The HyDAT was a modified version of data collection tools used in earlier audits of outcome following physiotherapy intervention for outpatients (Moore, 1996; Moore 1998; Moore 1999 and Moore, et al., 2006).

Historically standardised data collection (SDC) in UK was first reported by musculoskeletal physiotherapists in 1995 (Moore, Bryant and Olivier, 2012). In developing the first pilot SDC tool, Moore, et al (1995) included focus discussions with expert panels based on nominal group techniques. The results of this tool helped local health commissioners to fund more physiotherapy services based on this evidence (Moore, Bryant and Olivier, 2012). Two further musculoskeletal (MSK) related standardised data collections were conducted and reported by Moore, et al in 1998 and 1999. These focussed on low back pain and cervical spine dysfunction. The results of these were helpful in developing local audits and setting local clinical standards (Moore, Bryant and Olivier, 2012). In 2005, Moore et al developed a SDC tool that looked at whiplash associated disorder. This helped researchers in comparing the national guidelines with current practice (Moore, Bryant and Olivier, 2012).

The current health and social care agenda focuses on issues of quality relating to the delivery of innovative, effective and efficient services that meet real health needs. Services are facing increasing demands to prove their value, and collect the evidence to present to commissioners and planners of care. The BSDCT is a way to provide quantifiable statistics in an objective way that respects the confidentiality of the patients (CSP, 2010). Data can demonstrate the service is in line with the Quality, Innovation, Productivity and Prevention strategy (QIPP) (NHS Commissioning board, 2012). There have been several Standardised Data Collection tools completed on physiotherapy services across the UK (HyDAT, 2010; Moore, et al., 2006 Moore, 1999; Moore, 1998; Moore, 1996). They have not been however, reporting on specific neurological conditions such as Multiple Sclerosis (MS).

Burrswood Hospital is an independent Christian Hospital located on the Kent and Sussex Borders. It has been providing physiotherapy, including aquatic therapy services for people with MS (PwMS) and has been receiving referrals from the local NHS neurology service since February 2010.

The BSDCT is a pilot tool intended to be used on a specific patient group within Neurology across the UK. It aims to provide a standardised data collection tool for multiple sclerosis that other organisations or departments can use to:

- Provide evidence on which commissioning decisions could be based.
- Audit clinical services against national standards including NICE guidelines for MS, NSF for long term conditions and the NHS outcomes framework 2011/12.

- Facilitate patient profiling.
- Source evidence to demonstrate improved quality and continuous improvement of services that relate to Quality, Innovation, Productivity and Prevention (Department of Health, 2012) from the NHS.
- Benchmark outcomes against other similar service providers.
- Give insight for clinicians to reflect on their practice.
- Monitor the productivity of the workforce.
- Deliver high quality evidence based services and audit impact.
- Match resource with projected health needs.
- Set the appropriate staffing levels in areas of physiotherapy service delivery.
- Provide data concerning service delivery and outcomes.
- Identify meaningful research questions for the profession.

(The Chartered Society of Physiotherapy, 2012).

2.1 The Aim of the Burrswood Standardised Data Collection Tool

The BSDCT was developed to be replicated across the UK. The intention is the BSDCT data can be anonymously compared and analysed to provide clinical and economic evidence. This will help to determine if physiotherapy is beneficial for people with MS.

This report focuses on the development of the tool, methods used and a description of the first data sets collected. Detailed discussion and implication of the findings will follow in future publications.

2.2 The political context of data collection

The new vision for the NHS is set out in the Coalition Government's White Paper (2010) Equity and excellence: Liberating the NHS, along with the NHS Outcomes Framework (Department of Health, 2012) will have a fundamental influence on how new NHS organisations formulate and implement local strategy and subsequent change. Key to achieving such a transformation will be new business models of service delivery which improve quality and productivity whilst at the same time engage, inspire and empower staff (NHS commissioning Board, 2012).

The purpose of the BSDCT is to collect accurate quantifiable data of physiotherapy services that seeks to explore treatment provision for people with Multiple Sclerosis (MS). The principal objectives are based upon, and reflect, the National Service Framework for long term conditions (Department of Health, 2005) and the governments' strategy to enhance quality of life for people with long term conditions outlined in the NHS Outcomes framework (Department of Health, 2012)

Multiple Sclerosis (MS) is a progressive neurological condition that can lead to a wide range of signs and symptoms. People with MS require support to manage symptoms by a variety of health care professionals to ensure optimum function. When the symptoms are managed as efficiently as possible the individuals' level of disability is reduced (NICE, 2003) and they are therefore more likely to participate in work and social activities.

NHS funding is directly related to the current health and social care agenda which focuses on services that show Quality, Innovation, Productivity and Prevention (QIPP) that meet real health needs. In late 2008 the Department of Health announced in the document 'Framing the contribution of allied health professionals - delivering high quality healthcare' that by 2010 there would be a mandate to collect referral-to-treatment data for Allied Health Profession services in England.

It is therefore critical that physiotherapy services consider what information they need to demonstrate the outcomes, efficacy and efficiency of their services, and set about collecting the relevant data to inform the sponsors of their services. Standardised data collection as an audit approach can produce relevant information of service provision. The Chartered Society of Physiotherapy (2013) states "standardised data collection has become an essential part of modern healthcare".

3 Methods

3.1 Burrswood Standardised Data Collection Tool (BSDCT) – the development of the audit trail

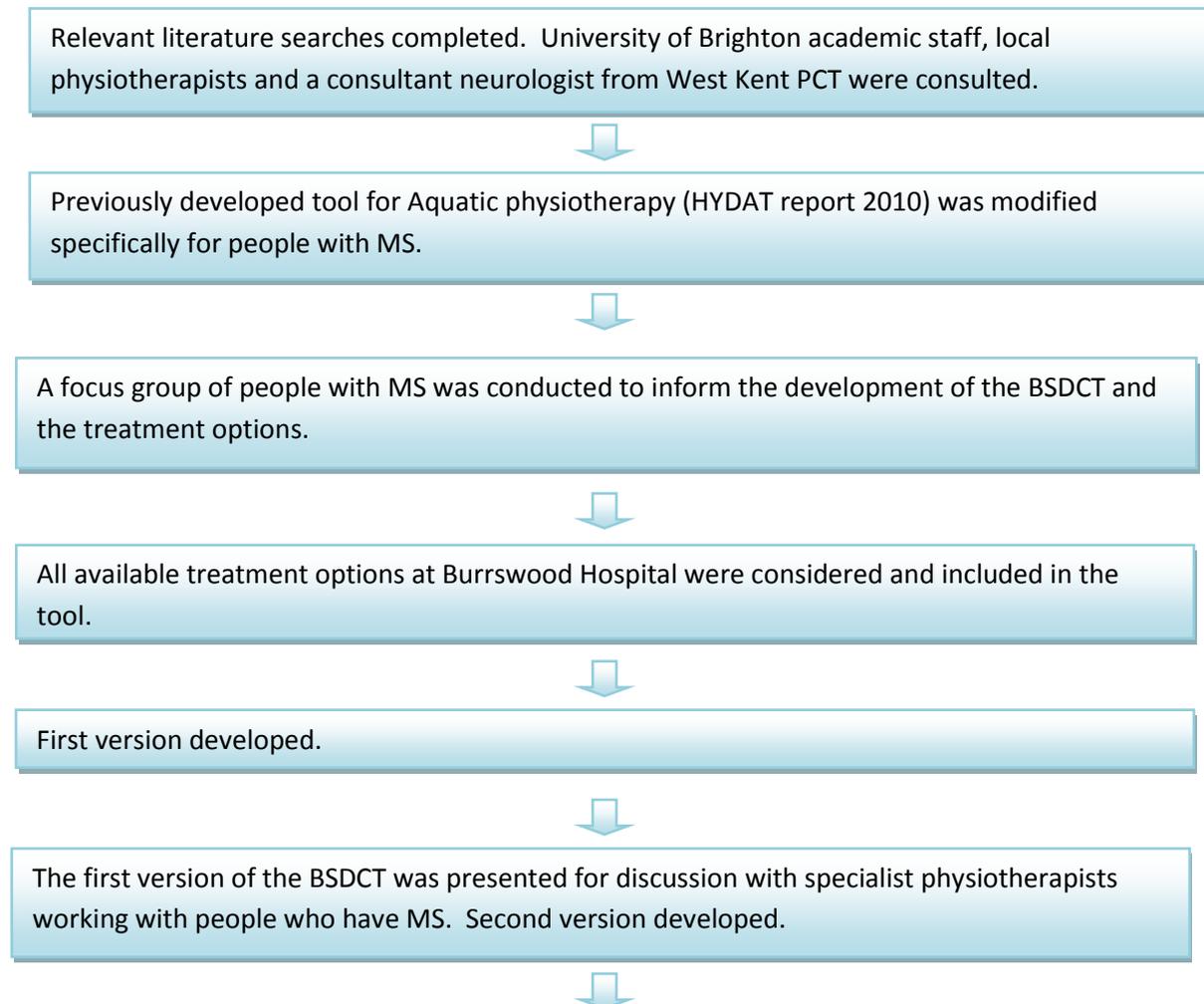
Burrswood Hospital received funding in February 2010 for three years to provide a much needed service for PwMS. To highlight the need for this service which is in line with the NSF and NICE guidelines, an independent and objective evaluation was necessary that would add to the evidence based practice of physiotherapy for PwMS.

It was important to involve all stakeholders in the project development. A stakeholder can be any individual or group of people who have an interest in, or will be affected by, any changes in the services they receive. The benefit of effective stakeholder engagement is it:

- *Can assist in delivering service change*
- *Can be the difference between success and failure of an initiative.*
- *Access to knowledge and expertise you may not have which can be integrated into any planned service change.*
- *Views can be incorporated into developing the case for change and in articulating both clinical and patient benefits.*
- *Can act as “sounding board” for ideas and identifying key risks.*
- *Can help gain support on course of action.*

(The Chartered Society of Physiotherapy, 2012)

3.2 The development of BSDCT (see figure 1)



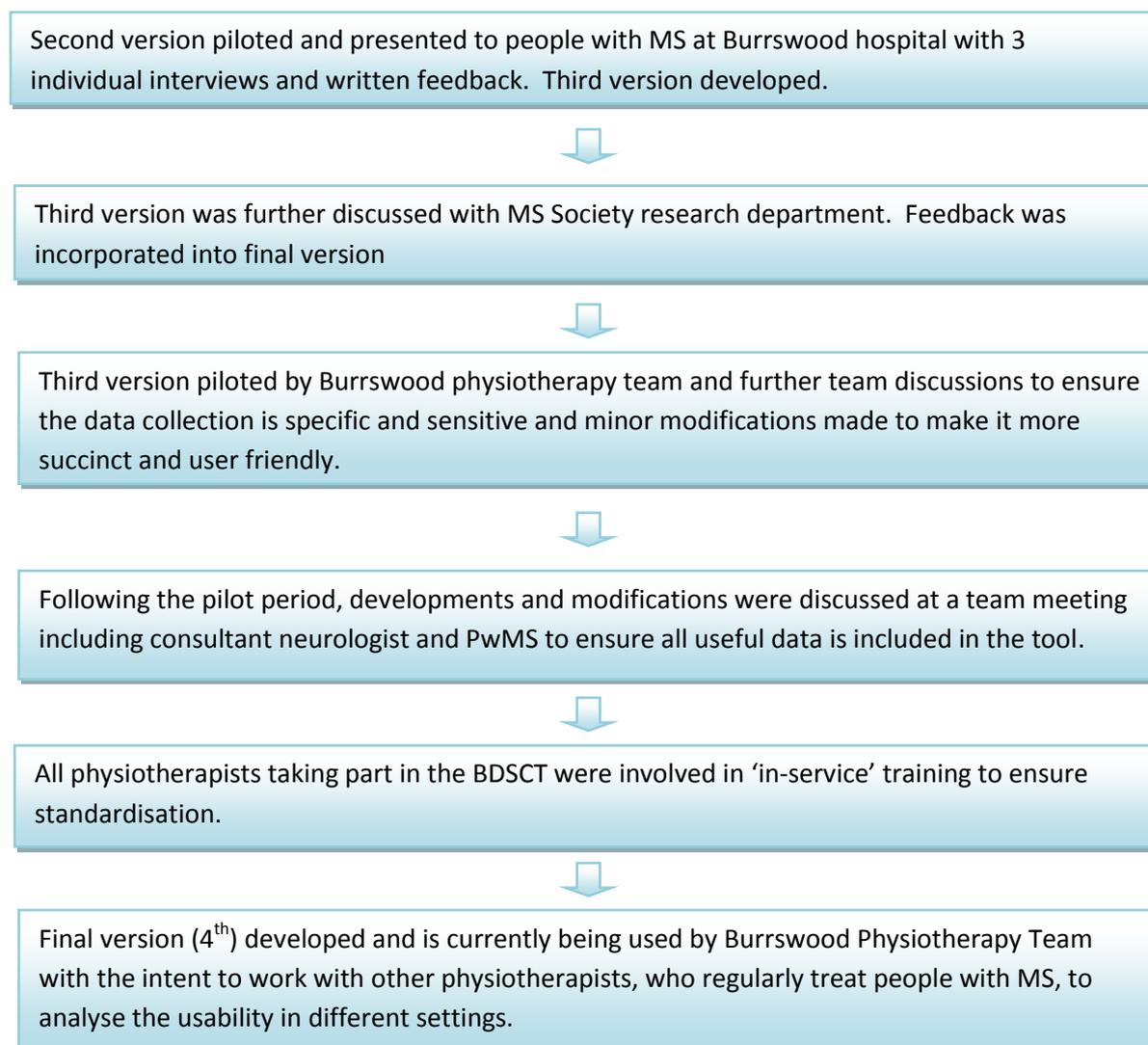


Figure 1: Flow diagram of the development of the BSDCT.

3.3 Ethical Approval:

The service provision for people with multiple sclerosis at Burrswood Hospital started in 2010. The BSDCT is part of a larger study which has been looking at the effectiveness of Physiotherapy for people with Multiple sclerosis. The University of Brighton Faculty of Health and Social Science Research Ethics and Governance Committee approved this larger project in June 2011.

3.4 Outcomes measures

BSDCT included outcome measures commonly used in people with MS. These included Modified fatigue impact scale (Hobart, et al., 2001); Multiple Sclerosis Impact scale (Riazi, et al., 2002); Performance orientated mobility assessment (Tinetti, 1986).

Modified fatigue impact scale (MFIS-21) is a short form of fatigue impact scale (FIS). MFIS instrument has 21 items measuring the impact of fatigue on physical, cognitive and psychosocial aspects of a person. MFIS-21 has been proved to be a valid, reliable and responsive measure to assess the impact of fatigue in PwMS (Kos, et al., 2003). MFIS also reported to be the most discriminative scale in PwMS (Flachenecker, et al., 2002). Tellez, et

al., (2005) reported MFIS as a better measure for looking at the additional cognitive and psychosocial influences in PwMS. MFIS is easy to administer and PwMS considers it easy to understand thus providing additional face validity. Hence MFIS-21 was included as a measure in the BSDCT.

Multiple Sclerosis Impact Scale (MSIS-29) is a disease specific measure developed by Hobart, et al (2001) using the standardised psychometric development procedures. MSIS-29 has 20 items measuring physical and 9 items measuring the psychological impact of MS in PwMS. MSIS-29 is found to be valid, reliable, and responsive to change with small flooring and ceiling effects. MSIS-29 also found to be valid across different health care settings (Riazi, et al., 2002) making it a good tool for inclusion in our BSDCT.

There is not enough evidence supporting any particular 'balance and gait' measurement tool for PwMS. The research around the validity and reliability of the available balance and gait tools in MS is significantly limited. Tinetti's (1986) Performance Oriented Mobility Assessment (POMA) is one of the commonly used balance and gait measurement tool in physiotherapy practice. However POMA was developed for older people and reported to be valid and reliable in older population. POMA is preferred for BSDCT as it considers normal day to day functional activities in wide range of natural environments. POMA also measures wide range of dynamic balance activities including gait hence it has been included in BSDCT over others. POMA reported as a good measure for assessing falls risk across many populations making this appropriate measure in this study.

3.5 Data Collection

BSDCT was based on service provision of eight sessions of one to one physiotherapy provided for each individual with MS. The eight sessions include an initial 'land based' assessment followed by either six 'land based' physiotherapy or six aquatic physiotherapy interventions and on the 8th contact a 'land based' repeat follow up assessment (Figure 2). There was no difference in cost and patient choice as to what option was chosen.

To protect patients' identity but to ensure a methodological audit trail: *(i.e. a pathway to any patient's full notes to follow up potential queries)*

- Each patient included in the project was allocated a participant number on the initial assessment.
- The BSDCT was included with the patient notes in accordance with Burrswood Hospitals data protection policy.
- The participant name was not recorded when inputting the data collection on excel 2010.

The Burrswood Standardised Data Collection Tool was adapted from the HyDAT (2010) tool that focussed primarily on aquatic physiotherapy across a broad spectrum of conditions and diseases. To ensure the BSDCT was appropriate and practical, it was decided to adapt and incorporate relevant outcome measures. These included MFIS: Multiple Sclerosis Fatigue Impact Scale (Mills, et al.,2010), POMA: Performance orientated mobility assessment (Tinetti, 1986) MSIS-29: Multiple Sclerosis Impact Scale (Ramp, et al., 2009).

3.6 Data Collection and Analysis

Recruitment

All patients with multiple sclerosis attending physiotherapy at Burrswood hospital were invited to consent to allow the use of their data to be analysed for this project.

Inclusion Criteria

- A confirmed diagnosis of Multiple Sclerosis by a Consultant Neurologist.
- Informed consent from each participant to be a part of the Burrswood BSDCT
- The individual is able to attend eight sessions of physiotherapy.

Exclusion Criteria

- Individuals who were known to have or diagnosed with cognitive impairments were excluded from the SDCT, however still received treatment at Burrswood Hospital.

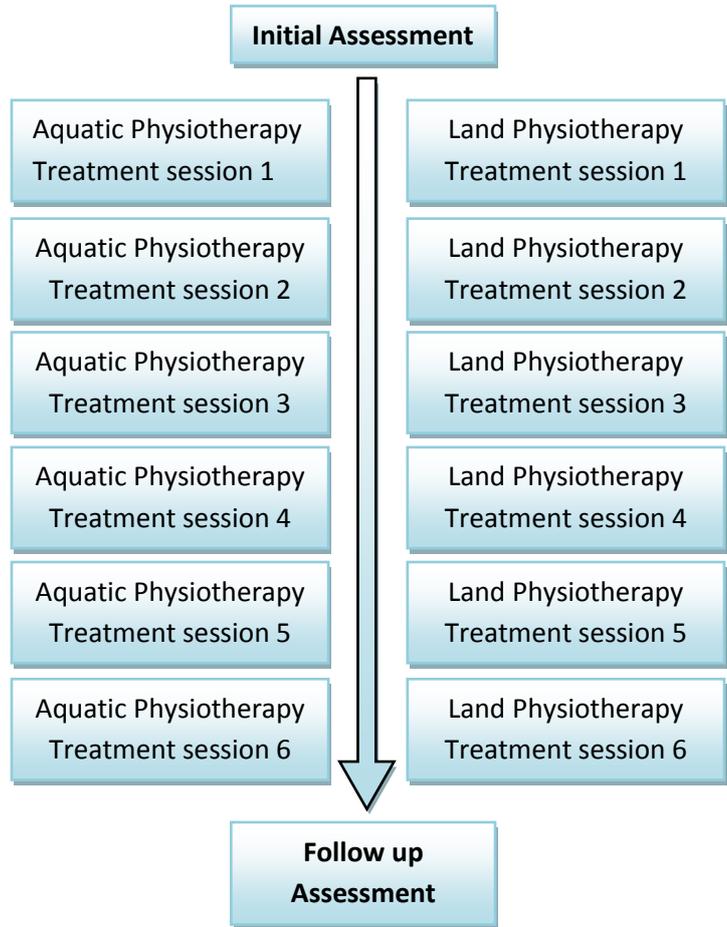


Figure 2: flow diagram of Burrswood’s service provision

A convenience sample was used in the recruitment of the first 100 patients with multiple sclerosis who accessed eight sessions of physiotherapy at Burrswood Hospital. All physiotherapists at Burrswood Hospital participated in the data collection as part of their patient management. All participants consented their data to be used for the purpose of this analysis.

The information from BSDCT was recorded on a single data collection form (Appendix 1) by the treating physiotherapist. It was essential that the standardised data collection tool was easy to use in everyday patient management by all physiotherapists.

The demographic data was recorded once on the initial assessment, treatment data was recorded following each intervention and the follow-up data inputted on the final assessment. Outcome measures as part of the BSDCT were recorded at initial and final assessment. Recording the data on the BSDCT took approximately 5 minutes following the initial assessment and follow up assessment. Recording the treatment interventions took approximately 20 seconds following each session.

Data was then transferred from paper copies to Excel spreadsheet and made anonymous by an administrative volunteer at Burrswood Hospital. Data analysis was carried out when 100 people with multiple sclerosis had completed the eight one to one physiotherapy sessions. The Descriptive statistics were analysed using Excel (2010). Tables and graphs are included below for ease of interpretation.

4 Describing the data

4.1 Diagnosis

There are four commonly accepted subcategories of MS (Multiple Sclerosis Society, 2013). These are used to describe the potential progression of the condition. Symptoms and resultant disability varies greatly amongst people with multiple sclerosis. Figure 3 below shows that Secondary progressive was the most common (51%) diagnosis in this group of patients and relapse remitting the second most common (30%). Primary Progressive and Secondary progressive make up over two thirds of the presented population (67%).

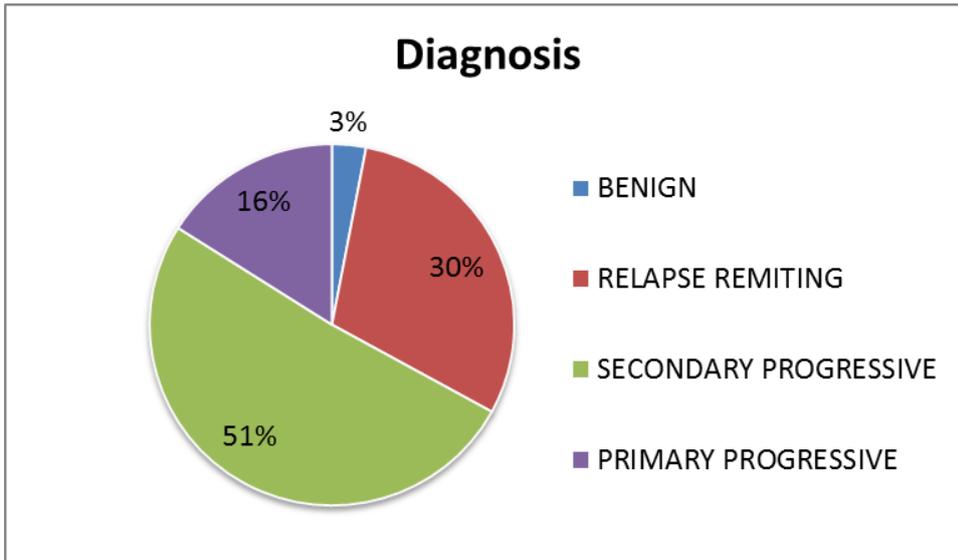


Fig 3: Diagnosis

4.2 Gender

The pie chart (Fig 4) demonstrates that the majority of the first 100 patients with multiple sclerosis that consented for the data to be included were female. It is known that MS has a higher prevalence in women than men (MS Society, 2012).

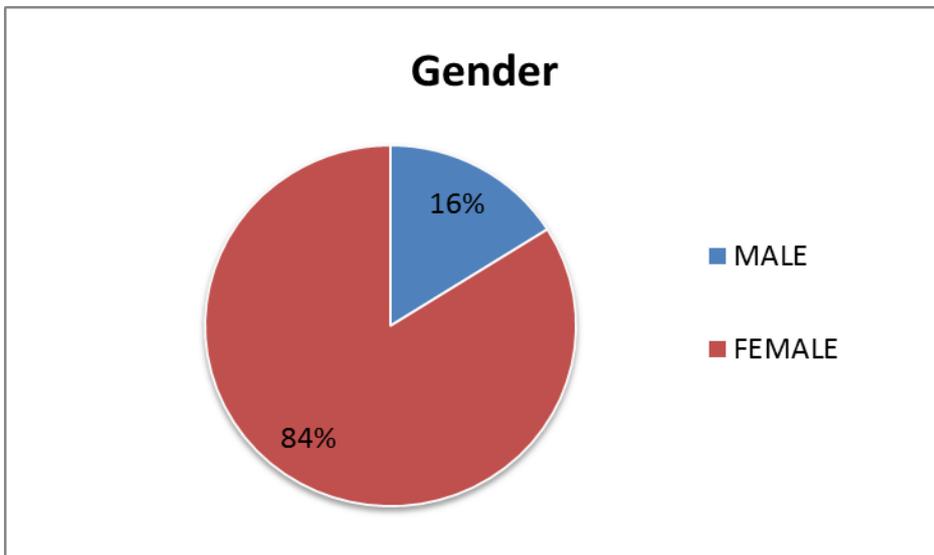


Fig 4: Gender

4.3 Age

Sixty One percent of the patients who participated in the BSDCT were between 41– 60 years old. Figure 5 demonstrates a large proportion of the patients seen at Burrswood were of a working age.

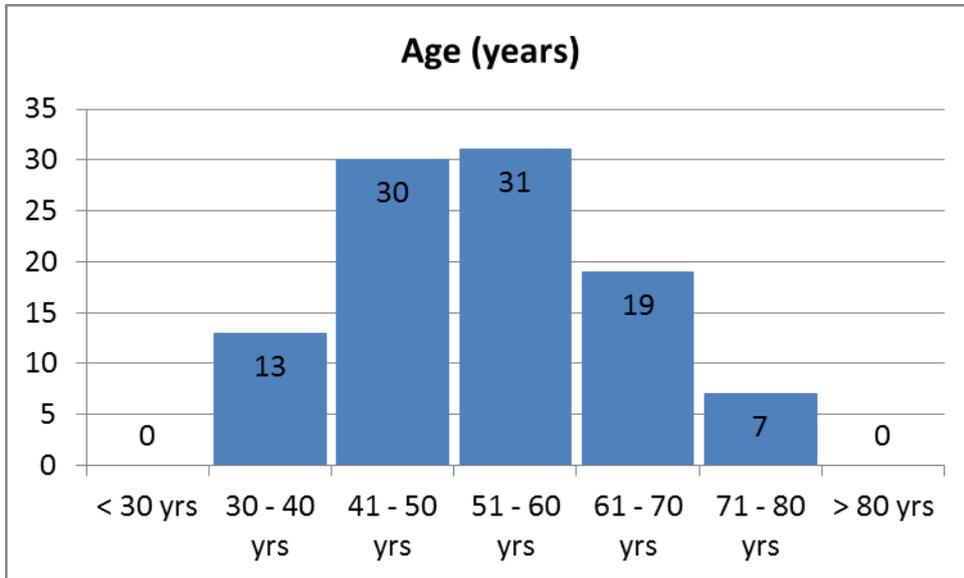


Fig 5: Age

4.4 Years since diagnosis of Multiple Sclerosis

Only individuals with confirmed diagnosis by a Consultant Neurologist were included and the time from the diagnosis to attending Burrswood Hospital was recorded. Table 1 shows that the mean duration of having the MS in the study group was 16 years those with benign form of MS having lived with it almost 30 years on average.

Diagnosis	How long has the patient had MS (Average years)	Most recent diagnosis (years)	Longest diagnosis of MS (years)
Overall average year of diagnosis	17	1	46
Benign	28	19	44
Relapse remitting	12	2	43
Secondary progressive	19	3	46
Primary progressive	16	1	44

Table 1: years since diagnosis of MS

4.5 Age at Diagnosis

Table 2 shows that the earliest diagnosis was at the age of 32 years and the latest at 78 years in this group of patients demonstrating a wide age range of diagnosis.

AGE	Mean Age	Youngest	Oldest
Benign	54	53	54
Relapse remitting	48	32	68
Secondary progressive	52	35	77
Primary progressive	63	39	78

Table 2: Age at Diagnosis

4.6 Occupational Status

The results show that over two thirds of the people seeking physiotherapy interventions were not working. The greatest numbers of people accessing this service were retired. It is important to state that Burrswood Physiotherapy Service working hours is between 9am – 5pm which may be a factor related to the access by the working population. ‘Unemployed’ represents people who were not working for reasons that were not related to health.

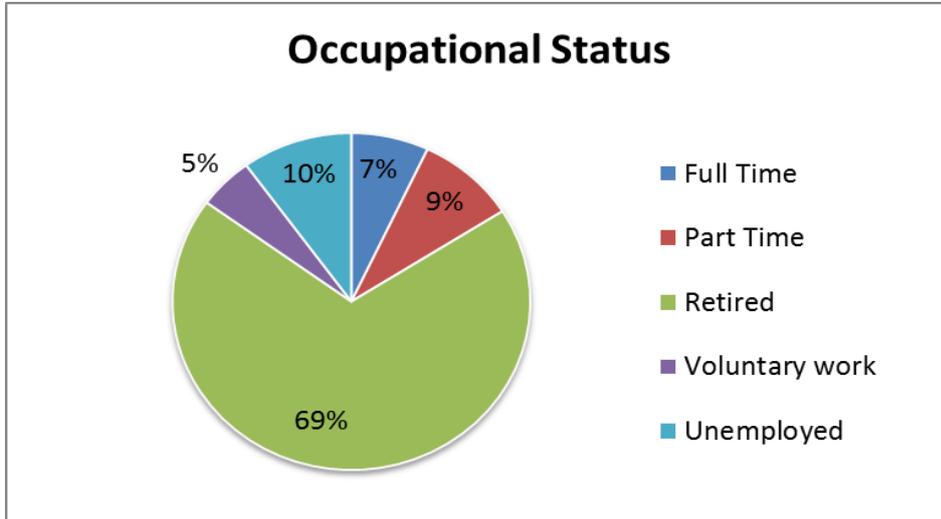


Figure 6: Occupational Status

4.7 Weeks from Referral to Physiotherapy Assessment

Burrswood’s working policy offers an appointment to new patients within 2 weeks of receiving their referral. However patients have the flexibility to choose when they wanted to start their intervention. 77% of patients were seen within 4 weeks of referral and more than half of these were seen within 2 weeks.

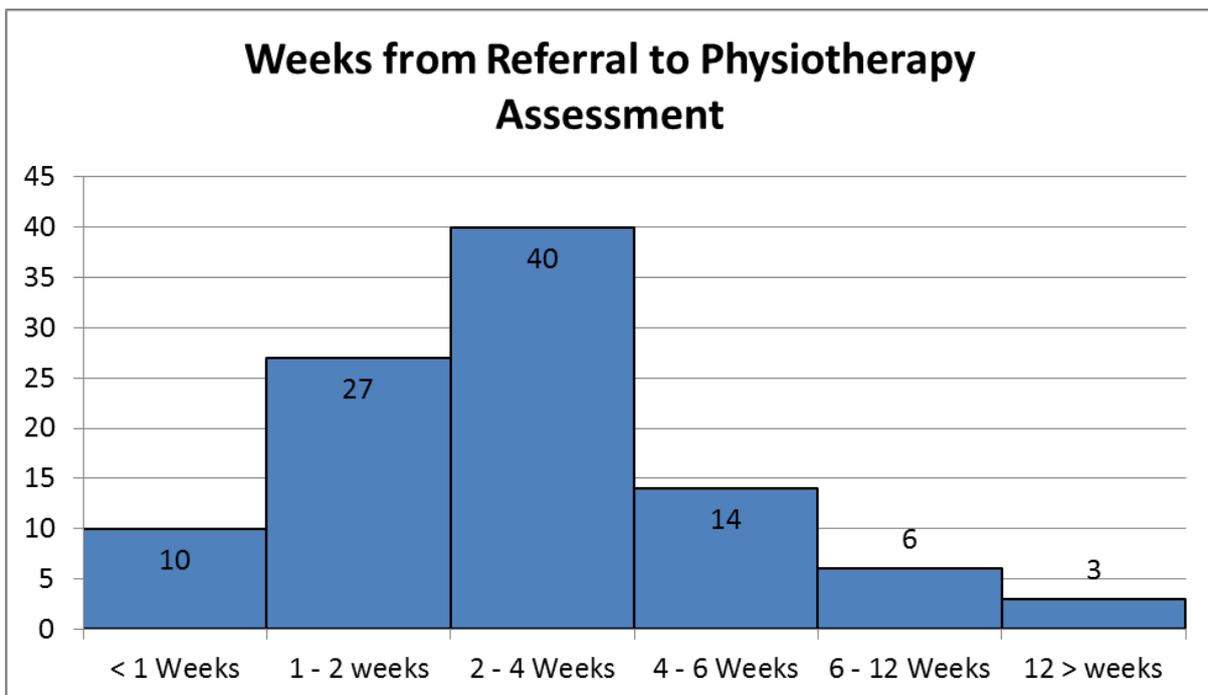


Fig 7: Weeks from referral to Physiotherapy Assessment

5 TREATMENTS

This section describes the mode of treatment, the treatment approaches and outcome measures from the one hundred patients who completed eight sessions of physiotherapy including an initial assessment, 6 treatment sessions and a follow up assessment.

5.1 Average time of an episode of care

An episode of care describes the eight sessions of physiotherapy received as part of the BSDCT. Figure 8 describes the length of time, in months, of each episode of care. The average length of an episode of care was 90 days, however there was one person who became medically ill and completed their episode of care in 448 days (just under 15 months). Eight others were not able to attend regularly due to holidays and transport difficulties. Over two thirds completed their episode of care within 3 months.

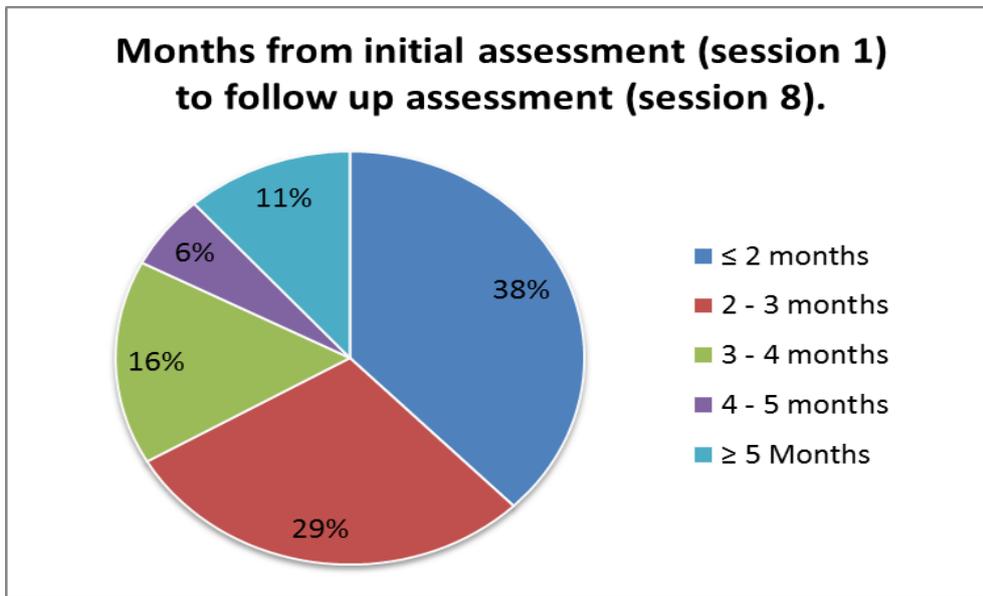


Fig 8: Average time of an episode of care

5.2 Mode of treatment given:

Over three quarters of participants completed six sessions of aquatic physiotherapy. 'Land' describes physiotherapy that was completed in the physiotherapy treatment room at Burrswood Hospital.

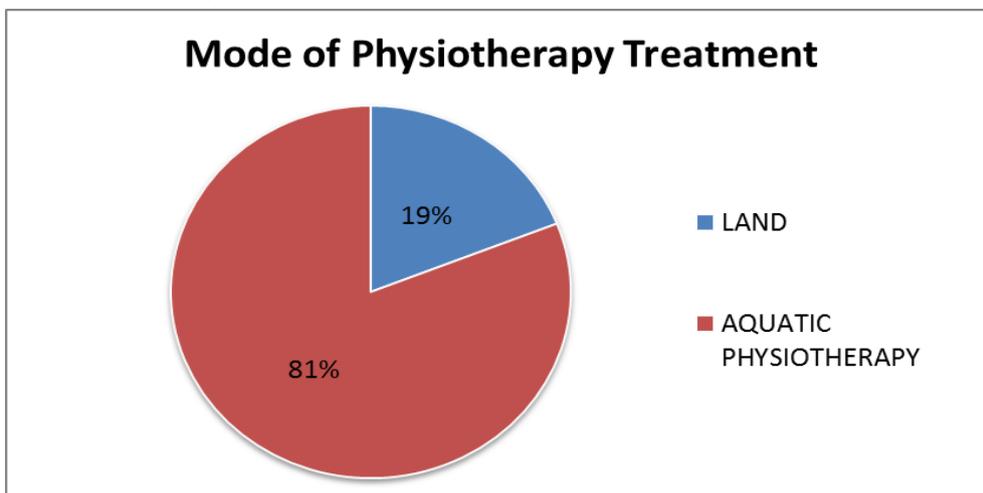


Fig 9: Mode of Physiotherapy treatment

5.3 Treatment Details

The type of treatment was recorded on each treatment session from a list of 24 (Table 3) (See appendix 1). The frequency of use for all interventions is shown in the tables below. Appendix 2 describes the treatment techniques. Three tables have been included; one to show the overall treatments used (table 3) with 2 more tables describing the differences between land and aquatic physiotherapy (tables 4 and 5).

Order of treatment as seen on the BSDCT (Appendix 1)	TYPE OF TREATMENT	Total Patient sessions
1	Education/advice to carer	92
2	Education/advice RE: self Mx	373
3	Active ROM ex	357
4	Active strengthening	445
5	Passive stretches	205
6	Accessory Movements	52
7	Aerobic exercises	107
8	Re-education of movement patterns	397
9	Functional exercises	466
10	Balance re-education/exercise	476
11	Core stability/Trunk control	404
12	Gait re-education	374
13	Social group interaction	30
14	Relaxation pain relief	29
15	Swimming	73
16	Watsu	16
17	Halliwick	50
18	Bad Ragaz	130
19	Postural correction education	319
20	Respiratory treatment	12
21	Weight bearing exercise	445
22	Use of mobility aids	50
23	Other:(specify)	15
24	Other:(specify)	20

Table 3: Total treatment interventions

The percentages in table 4 and 5 were calculated so comparisons could be made between the types of treatment used in aquatic physiotherapy vs land physiotherapy. The percentage values were based on: 81% of patients completed aquatic physiotherapy which equates to 486 maximum value per type of treatment (Table 4), 19% of patients completed land based physiotherapy which equates to 114 maximum value per type of treatment (Table 5).

Table 4 shows in rank order the most common physiotherapy approaches used in the aquatic physiotherapy treatment. Balance re-education and exercise were most common and were provided in 83 percent of sessions. Active strengthening, weight bearing and functional exercise were also used in three quarters of the sessions. Badragaz, Halliwick and

Watsu which are water specific approaches were used in less than a quarter of sessions and respiratory treatment was used only five times.

	TYPE OF AQUATIC TREATMENT	Amount of Aquatic physiotherapy sessions	% of aquatic Treatments
10	Balance re-education/exercise	402	83
4	Active strengthening	369	76
21	Weight bearing exercise	368	76
9	Functional exercises	364	75
11	Core stability/Trunk control	331	68
12	Gait re-education	329	68
8	Re-education of movement patterns	315	65
3	Active ROM ex	300	62
19	Postural correction education	266	55
2	Education/advice RE: self Mx	265	55
5	Passive stretches	174	36
18	Bad Ragaz	127	26
7	Aerobic exercises	91	19
1	Education/advice to carer	69	14
15	Swimming	69	14
6	Accessory Movements	47	10
17	Halliwick	46	9
22	Use of mobility aids	35	7
13	Social group interaction	30	6
14	Relaxation pain relief	29	6
24	Other:(specify)	19	4
16	Watsu	16	3
23	Other:(specify)	8	2
20	Respiratory treatment	5	1

Table 4 aquatic physiotherapy treatment in order of most common to least common.

Physiotherapy conducted on land. In rank order highest number of treatments to the lowest (Table 5)

	TYPE OF TREATMENT	Amount of Land physiotherapy sessions	% of land Rx
2	Education/advice RE: self Mx	108	95
9	Functional exercises	102	89
8	Re-education of movement patterns	82	72
21	Weight bearing exercise	77	68
4	Active strengthening	76	67
10	Balance re-education/exercise	74	65
11	Core stability/Trunk control	73	64
3	Active ROM ex	57	50
19	Postural correction education	53	46
12	Gait re-education	45	39
5	Passive stretches	31	27
1	Education/advice to carer	23	20
7	Aerobic exercises	16	14
22	Use of mobility aids	15	13
20	Respiratory treatment	7	6
23	Other:(specify)	7	6
6	Accessory Movements	5	4
24	Other:(specify)	1	1
13	Social group interaction	0	0
14	Relaxation pain relief	0	0
15	Swimming	0	0
16	Watsu	0	0
17	Halliwick	0	0
18	Bad Ragaz	0	0

Table 5 Land based physiotherapy treatment in order of most common to least common.

‘Other’ represents treatment techniques not included in the form such as referral to other agencies during treatment, orthotic review etc.

5.4 Physiotherapist Banding

Majority of therapists (59%) treating people with MS held a band 6 position and just under a quarter held band 7 positions. All physiotherapists working at Burrswood Hospital are skilled and experienced in the management of people with MS. All had foundation level training in aquatic physiotherapy.

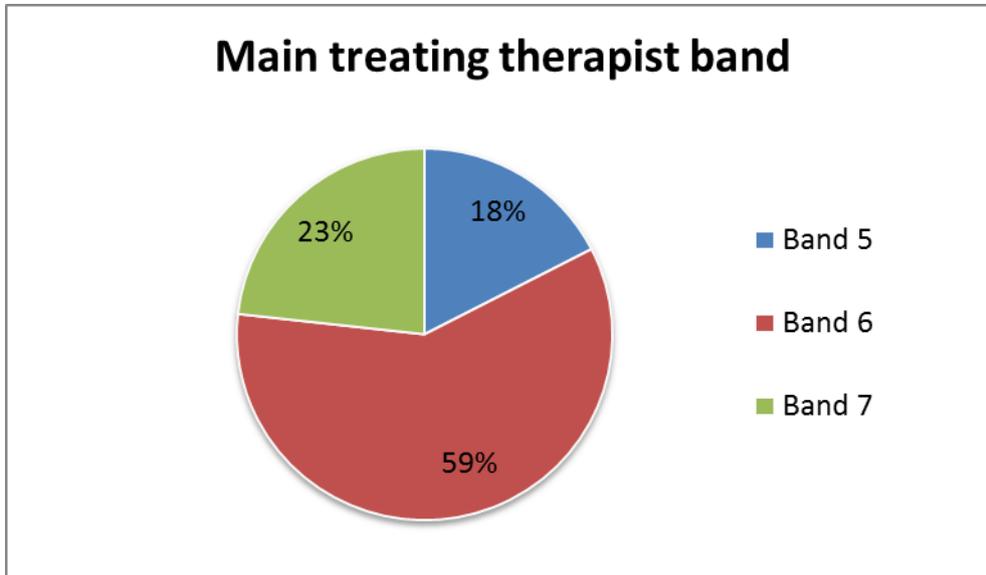


Fig 10: Physiotherapist banding

6 Outcome Measures

This section describes the difference between pre and post outcome measures.

6.1 Pre and post intervention changes.

Outcome measure	Overall % Change
POMA	11.4
MFIS	8.2
MSIS - 29	6.7

Table 6: Pre and post intervention changes

All outcome measures demonstrated an improvement from initial assessment to follow-up assessment. The POMA showed the greatest improvement and represents balance and gait with an 11.4% change.

6.2 Fatigue:

Fatigue is difficult to measure due to its multi-factorial and highly individualised nature (Lee et al, 2008). The MFIS was used to measure fatigue for the BSDCT. Percentages of positive responders, negative responders and non-responders have been displayed in the table 7 below.

Fatigue Outcome measure (MFIS)	Total Number of patients	Number of LAND patients	LAND RX % change	Number of AQUA patients	AQUA RX % change
POSITIVE RESPONDERS	65	12	63	53	65
NEGATIVE RESPONDERS	20	3	16	17	21
NON RESPONDERS	15	4	21	11	14

Table 7: Fatigue

The data shows the high percentage of positive responders in both the land and aquatic groups.

6.3 Health related Quality of Life (HRQoL):

With the frequent changes in the NHS the significance of evidence-based clinical practice and the importance of thorough evaluation of patient-based outcomes is emphasised. HRQoL can be measured using the Multiple Sclerosis Impact Scale (MSIS-29) (Hobart, et al., 2001) which is a specific measuring tool of QoL for PwMS. The MSIS-29 is a disease specific, sensitive outcome measure for HRQoL that has been validated (Costelloe, et al., 2007; Ramp, et al., 2009). Furthermore the questionnaire is diverse enough to be used for any of the main types of MS. Percentages of positive responders, negative responders and non-responders have been displayed in the table 8 below.

Health related quality of Life Outcome measure (MSIS – 29)	Total Number of patients	Number of LAND patients	LAND RX % change	Number of AQUA patients	AQUA RX % change
POSITIVE RESPONDERS	74	13	68	61	75
NEGATIVE RESPONDERS	15	1	5	14	17
NON RESPONDERS	11	5	26	6	7

Table 8: health related quality of life

The data shows the high percentage of positive responders in both the land and aquatic groups.

6.4 Balance and Gait

A wide variety of balance and gait measures were considered when developing the BSDCT. It was decided the POMA represents the most suitable measure for assessment of fall risk and balance in people with MS that was accessible and easily applied in clinical practice. The Performance Orientated Mobility Assessment (POMA), developed by Tinetti (1986), is a widely used tool in assessing balance, gait and falls risk in older adults. The POMA scores an individual's ability to perform numerous functional tasks that are divided into balance and gait subscales. It is commonly used to analyse the effects of interventions on individuals, as it is easily applied in clinical settings with minimal equipment and training required to master its use (Tinetti, 1986). It is preferred as most of the other balance tests fail to adequately reflect the wide range of challenges to balance naturally found in daily life (i.e. changes in individual-environment dynamics) (Whipple, 1997). Since dynamic balance is greatly challenged in people with MS, especially in functional activities (Cattaneo, et al., 2002) it was deemed appropriate to use the POMA in the BSDCT.

Percentages of positive responders, negative responders and non-responders have been displayed in the table 9 below.

Balance and Gait Outcome measure (POMA)	Total Number of patients	Number of LAND patients	LAND RX % change	Number of AQUA patients	AQUA RX % change
POSITIVE RESPONDERS	52	7	37	45	56
NEGATIVE RESPONDERS	14	3	16	11	14
NON RESPONDERS	34	9	47	24	30

Table 9: Balance and Gait

The data shows aquatic therapy was 19% more successful in outcomes for balance and gait. The high 'non responder' group in the land based physiotherapy also supports this result.

6.5 Patient continuation following 8 sessions of physiotherapy

At the final assessment, patients’ future management was discussed and recorded on the BSDCT.

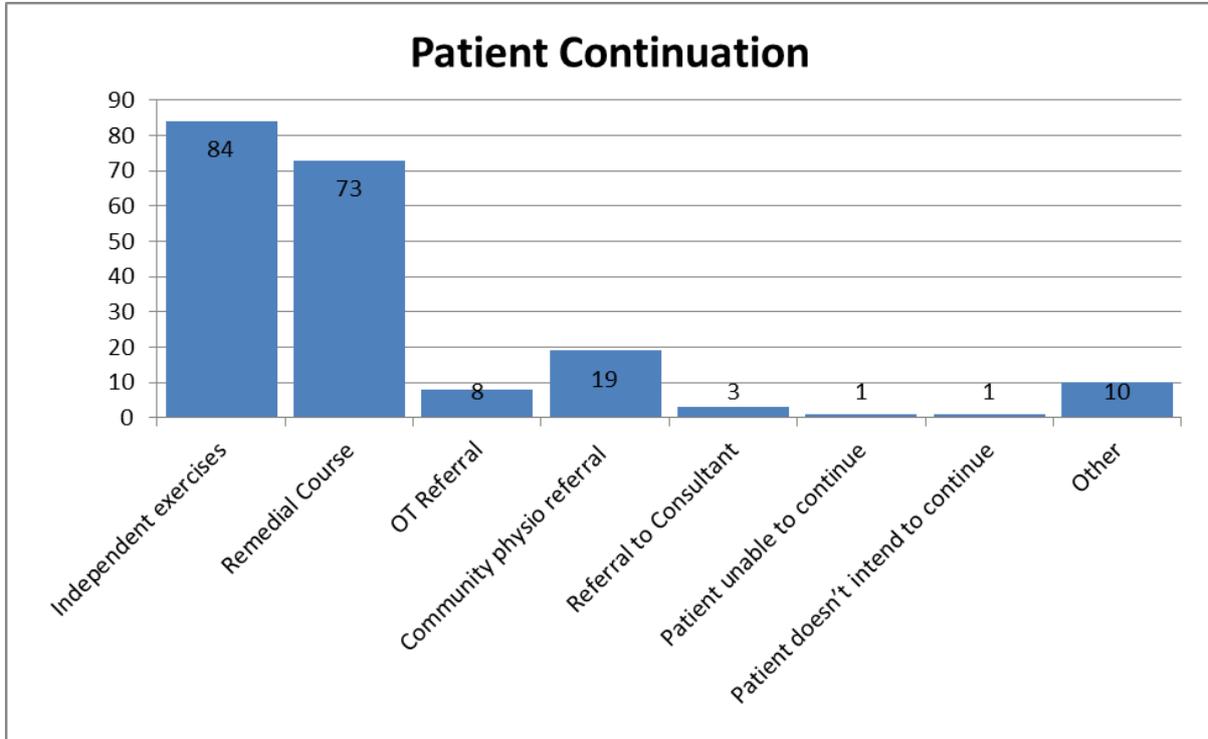


Fig 11: Patient Continuation

Eighty-four percent of patients who completed the course of 8 sessions reported intention to continue with independent exercises. Seventy-three percent intended to continue at Burrswood Hospital with privately funded services.

Nineteen participants required referrals to community physiotherapy and 8 needed Occupational Therapy referrals. Only 3 participants required re-referral to the Consultant Neurologist. Two people did not continue.

Figure 11 shows ten responses were considered as ‘other’. This represents further one to one physiotherapy, referral to MS specialist Nurse, Referral to surgical appliances for splints or wheel chair services.

7 Discussion

The BSDCT was developed as an audit and evaluation tool for MS specific physiotherapy services that can be replicated across the UK. The information presented in this report will serve as baseline data of physiotherapy interventions for this patient group and may help in the future to set standards for management of PwMS.

It is hoped that the BSDCT would facilitate interest in audit activities in relation to clinical effectiveness in physiotherapy for people with MS in the future and also acts as a stimulus for further research into physiotherapy for people with MS.

The current focus on Quality, Innovation, Productivity and Prevention (QIPP) (Department of Health, 2012) requires all health professionals to account for their practice. Standardised data collection is a useful tool to enable physiotherapists to demonstrate quality (e.g. patient outcomes) and productivity (e.g. number of patients treated). A baseline, such as the data presented here, provides evidence to support on-going physiotherapy in the long term management of people with MS.

The Chartered Society of Physiotherapy (CSP) states that *“physiotherapists has never been in a stronger position to make an impact on health in the UK but we can only move forwards if evidence, starting with standardised data is at the heart of what we do”* (CSP, 2010)

To provide evidence for efficacy and efficiency of continued and expanding service it is imperative that relevant data is collected and recorded in the valid, reliable, accurate and objective way. ‘A Standardised Data Collection Tool’ is a way to provide quantifiable statistics in an objective way that respects the confidentiality of the patients (CSP 2010). This project has developed the BSDCT, modelled on the HyDAT report (HyDAT team, 2010), which includes standardised outcome measures that are designed, tested and commonly used for this patient group and this service, i.e. Multiple Sclerosis Impact Scale (MSIS-29), Modified Fatigue Impact Scale (MFIS-21) and Tinetti (1986) Performance Oriented Mobility Assessment (POMA).

The data collected by the clinicians, using the BSDCT, has been used for a range of purposes including evaluation and auditing the clinical effectiveness of treatment at Burrswood Hospital. Furthermore, it has also been used to inform financial management by recording data that was used in a business case for the local Clinical Commissioning Groups.

8 Reflection and limitations

This report contains detailed descriptive statistics but little discussion and consideration of the implications. The reason for this was to publish details of the findings as they have become available with a view to exploring the enormous potential of the data in future publications.

Readers are invited to use the BSDCT and the results of this report to further develop this tool or modify it to their own situation. Readers should take into account that the convenience sample of patients in the project may not have been representative of the

population of PwMS in the UK and that the treatments used at the Burrswood Hospital may not match their own applications. However, in standardised data collection, random sampling is neither practical nor possible and convenience sampling is the accepted methodology (Moore, et al., 2012). The treatments in this project were designed and applied for individual patients' needs and abilities and therefore may not be transferable to all situations and patient groups.

The BSDCT can be improved to be more comprehensive, for example defining the offered treatments in more detail in relation to dosage, e.g. intensity, duration and the actual exercise. These points would be expected to change in an updated version. The reasons why some patients did not respond or responded negatively could also be analysed further by looking deeper into their medical and life course during the intervention and also reassessing the suitability or sensitiveness of the measuring tools for these particular patients.

9 Conclusion

A standardised data collection tool has been developed which is specifically designed for use with people who have Multiple Sclerosis. The Burrswood Physiotherapy team found the data collection tool was easy to use which is demonstrated by the continued use of the BSDCT in their practice. There is potential for the BSDCT to be adapted for other settings. The tool provides a comprehensive record of patient's details, treatment and outcomes.

Burrswood Standardised data collection tool has been used since February 2010. It has not been trialled in other physiotherapy practices and therefore the team welcomes communication with and feedback from health professionals working with people who would like to use the Burrswood Standardised Data Collection Tool (BSDCT).

The findings of this project will be submitted for further publication.

10 References:

- Cattaneo, D., Nuzzo, C.D., Fascia, T. and Macalli, M., 2002. Risks of falls in subjects with multiple sclerosis. *Archives of Physical Medicine and Rehabilitation*, 83 (6), pp864-867.
- Costello, E., Curtis, L., Sandel, B. and Bassile, C., 1996. Exercise Prescription for Individuals With Multiple Sclerosis. *Journal of Neurologic Physical Therapy*, 20, (2), pp24-30.
- Costelloe L., O'Rourke K., Kearney H. and McGuigan C., 2007. The patient knows best: Significant change in the physical component of the Multiple Sclerosis Impact Scale (MSIS-29 physical). *Journal of Neurology, Neurosurgery and Psychiatry*, 78 (8), pp841-844.
- Cox, S., Bryant, L., Carter, A. and Jackson, A., 2009. HyDAT floats! *Aqualines: The Journal of the Hydrotherapy Association of Chartered Physiotherapists*, 21, (1), pp5-7.
- Department of Health, 2005. *The National Service Framework for Long-term Conditions*. London: Department of Health.
- Department of Health, 2012. *The Operating Framework for the NHS in England*. London: Department of Health.
- Fisk J.D., Ritvo P.G., Ross L. and Haase D.A., 1994. Measuring the functional impact of fatigue: Initial validation of the fatigue impact scale. *Clinical Infectious Diseases*, 18, ppS79-S83.
- Fisk, J.D., Pontefract, A., Ritvo, P.G. and Archibald, C.J., 1994. The impact of fatigue on patients with multiple sclerosis. *The Canadian journal of neurological sciences*, 21(1), pp9-14.
- Flachenecker, P., Kümpfel, T., Kallmann, B. and Gottschalk, M., 2002. Fatigue in multiple sclerosis: a comparison of different rating scales and correlation to clinical parameters. *Multiple Sclerosis*, 8, (6), pp523.
- Hobart J., Lamping D., Fitzpatrick R., and Riazi A., 2001. The multiple sclerosis impact scale (MSIS-29) a new patient-based outcome measure. *Brain*, 124, (5), pp962-973.
- Hobart, J., Lamping, D., Fitzpatrick, R. and Riazi, A., 2001. The Multiple Sclerosis Impact Scale (MSIS-29). *Brain*, 124, (5), pp962.
- Jackson, A., Swinkles, A., Bryant, L. and Carter, A., 2009. UK aquatic physiotherapy data collection update: national Hydrotherapy Data Collection Project (HyDAT). *Aqualines: The Journal of the Hydrotherapy Association of Chartered Physiotherapists*, 21,(2), pp4-6.
- Kos, D., Kerckhofs, E., Nagels, G. and D'Hooghe B.D., 2003. Assessing fatigue in multiple sclerosis. Dutch Modified Fatigue Impact Scale : *Acta neurologica belgica*, 103,(4), pp185-191.

Lee, D., Newell, R., Ziegler, L. and Topping, A., 2008. Treatment of fatigue in multiple sclerosis: A systematic review of the literature. *International Journal of Nursing Practice*, 14, (2), pp81-93.

Mercer, C., Jackson, A. and Moore, A., 2007. Developing clinical guidelines for the physiotherapy management of whiplash associated disorder (WAD). *International Journal of Osteopathic Medicine*.10, (2), pp50-54.

Mills, R.J., Young, C.A., Nicholas, R.S. and Pallant, J.F., 2009. Rasch analysis of the Fatigue Severity Scale in multiple sclerosis. *Multiple Sclerosis*, 15, (1), pp81-87.

Mills, R.J., Young, C.A., Pallant, J.F. and Tennant, A., 2010. Rasch analysis of the Modified Fatigue Impact Scale (MFIS) in multiple sclerosis. *Journal of Neurology Neurosurgery And Psychiatry*, 81(9) pp.1049-1051.

Moore A P. 1996. The development of the mid Kent and Brighton outcome measurement tool for physiotherapy outpatient services. University of Brighton: Brighton. Available at: <http://eprints.brighton.ac.uk/7437/1/Development_of_the_Mid_Kent_and_Brighton_outcome_measurement_tool_for_physiotherapy_outpatient_servcies.pdf> [Accessed on May 2010].

Moore A P. 1998. An audit of the outcome of the physiotherapy intervention for outpatients with back pain against set clinical standards. University of Brighton: Brighton.

Moore A P. 1999. An audit of the outcome of physiotherapy intervention for outpatients with cervical spine pain and dysfunction. University of Brighton: Brighton.

Moore, A., Jackson, A., and Jordan, J., 2005. *Clinical guidelines for the physiotherapy management of whiplash associated disorders*. London: Chartered Society of Physiotherapy.

Moore, A., Bryant, E., Barfield, J., Burge, J., Canby G. and Herriot, M., 2006. Whiplash associated disorder: a one year standardised data collection project. *University of Brighton*.

Moore, A.P., Olivier, G. and Bryant, E., 2007. Update on the PPEF project to develop a standardised data collection system for private physiotherapy practitioners. *In Touch*,119,pp28-31.

Moore, A. and Jull, G., 2009. Standardized clinical data collection and agreed outcome measurement. *Manual Therapy*, 14,(3),pp241-242.

Moore, A.P., Bryant, E.C. and Olivier, G.W.J., 2012. Development and use of standardised data collection tools to support and inform musculoskeletal practice. *Manual Therapy*, 17,(6),pp489-496.

Multiple Sclerosis Society, 2013. *Types of MS*. Available at: <<http://www.mssociety.org.uk/what-is-ms/types-of-ms>> [Accessed on 20 May 2013].

National Institute for Clinical Excellence, 2003. *Multiple sclerosis: Management of multiple sclerosis in primary and secondary care*. London: NICE.

NHS commissioning Board, 2012. *Developing commissioning support: Towards service excellence*. [Online] Available at: <<http://www.commissioningboard.nhs.uk/files/2012/01/NHSCBA-02-2012-8-Guidance-Developing-commissioning-support-Towards-service-excellence.pdf>> [Accessed July 2012].

Perell, K.L., Nelson, A., Goldman, R.L. and Luter S.L., 2001. Fall risk assessment measures: An analytic review. *Journals of Gerontology*, 56, (12), ppM761-M766.

Ramp, M., Khan, F., Misajon, R. and Pallant, J.F., 2009. Rasch analysis of the Multiple Sclerosis Impact Scale (MSIS-29). *Health and Quality of Life Outcomes*, 7, 58-67.

Riazi, A., Hobart, J.C., Lamping, D.L. and Fitzpatrick, R., 2002. Multiple Sclerosis Impact Scale (MSIS-29): Reliability and validity in hospital based samples. *Journal of Neurology Neurosurgery and Psychiatry*, 73,(6), pp701-704.

Téllez, N., Río, J., Tintoré, M. and Nos, C., 2005. Does the Modified Fatigue Impact Scale offer a more comprehensive assessment of fatigue in MS? *Multiple Sclerosis*, 11,(2), pp.198-202.

The Chartered Society of Physiotherapy, 2012. *Stakeholder engagement briefing*. [Online] Available at <<http://www.csp.org.uk/documents/stakeholder-engagement-briefing>> [Accessed on 21st November 2012].

The Chartered Society of Physiotherapy. 2013. Standardised data collection. Available at: <<http://www.csp.org.uk/professional-union/practice/information-management/standardised-data-collection>> [Accessed on 02 June 2013].

Tinetti, M.E., 1986. Performance-oriented assessment of mobility problems in elderly patients. *Journal of American Geriatric Society*, 34, (2), pp119-126.

Whipple, R. 1997 *Improving balance in older adults: identifying the significant training stimuli*. In *Gait Disorders of Aging: Falls and Therapeutic Strategies*, by J Masdeu, L Sudarsky and L Wolfson. New York: Lippincott Williams & Wilkins.

World Confederation for Physical Therapy, 2011. *Policy Statement: Regulation of the physical therapy profession*. London, UK: WCPT, [online] Available at <www.wcpt.org/policy/ps-regulation> [Accessed on 21st November 2012].

11 Appendix 1

BURRSWOODS STANDARDISED DATA COLLECTION TOOL:

PARTICIPANT: **Age:** _____ **Gender** M F

Occupation: FULL PART Retired Volunteer Other (specify)

Specific diagnosis: Benign Relapse remitting, Secondary Progressive Primary Progressive

Other major Diagnosis: _____

Date of referral: _____

Date of Physiotherapy Ax: _____

OUTCOME MEASURES:

	DATE	DATE
MSIS – 29 (QOL scale)		
FATIGUE IMPACT SCALE (MFIS)		
POMA (Balance and Gait)		

Patient's continuation:

Independent exercises

Remedial Course

OT Referral

Community physio referral

Referral to Dr Saldanha

Patient unable to continue

Reason: _____

Patient doesn't intend to continue

Reason: _____

Other: (specify)

	LAND / AQUA					
TREATMENT						
1 Education/advice to carer						
2 Education/advice RE: self Mx						
3 Active ROM ex						
4 Active strengthening						
5 Passive stretches						
6 Accessory Movements						
7 Aerobic exercises						
8 Re-education of movement patterns						
9 Functional exercises						
10 Balance re-education/exercise						
11 Core stability/Trunk control						
12 Gait re-education						
13 Social group interaction						
14 Relaxation pain relief						
15 Swimming						
16 Watsu						
17 Halliwick						
18 Bad Ragaz						
19 Postural correction education						
20 Respiratory treatment						
21 Weight bearing exercise						
22 Use of mobility aids						
23 Other: (specify)						
24 Other: (specify)						
PHYSIOTHERAPIST INITIALS						

Circle appropriate treatment modality and cross out the alternative

12 Appendix 2

Description of the treatment techniques.

1	Education/advice to carer	Describes any verbal communication with a carer (family member or professional) about MS pathology, Management strategies, manual handling, progressive home exercises and/or what support is available for the carer.
2	Education/advice RE: self Mx	Describes any verbal communication about self-management strategies for example; including education on MS pathology, effective techniques for activities of daily living (for example transfers, gait, etc), advice on fatigue management, a home exercise programme, etc.
3	Active ROM ex	Active ROM ex describes exercises that aim for the patient to increase their range of joint movement themselves (Actively).
4	Active strengthening	Exercises that aim to improve the individual's strength.
5	Passive stretches	Describes the therapist stretching the individuals limbs (the individual is passive)
6	Accessory Movements	Is a 'hands on' technique used by physiotherapists to treat Musculoskeletal conditions (ie low back pain).
7	Aerobic exercises	Describes exercises tailored to address the aerobic energy system.
8	Re-education of movement patterns	Exercises with verbal and physical prompts aiming to improve and/or facilitate inefficient movement patterns.
9	Functional exercises	Describes any exercise that is directly transferable to activities of daily living on to an individual's lifestyle. For example transfers or picking up a cup.
10	Balance re-education/exercise	Any exercise that challenges someone's balance in sitting, standing or walking.
11	Core stability/Trunk control	Describes exercise focused on the body. This can include strengthening, co-ordination and promoting mobility of the body.
12	Gait re-education	Techniques' aiming to improve an individual's walking. This can include the therapist providing walking sticks or exercises focused on walking and/or providing feedback both extrinsic and intrinsic with the aim to improve gait.
13	Social group interaction	Therapy that is with other people and involves social interactions not just from interacting with the therapist.
14	Relaxation pain relief	Therapists at Burrswood are trained in several relaxation techniques that can reduce pain including massage, visualisation and water techniques.
15	Swimming	Using the hydrotherapy pool individuals with a wide range of presenting abilities can either swim or be taught how to swim by modifying techniques and using the principles of immersion.
16	Watsu	Is a specific water based relaxation technique
17	Halliwick	Is a specific water based method to improve a person's

		function in a water based environment. It is often used to help people learn to swim.
18	Bad Ragaz	Is a specific water based treatment using the principles of PNF (Proprioceptive neuromuscular stimulation) and can be aimed towards mobility, strength or endurance.
19	Postural correction education	Aims to improve an individual's posture by educating the individual on mal-alignments, it can also relate to a referral to wheel chair services if there are seating issues and providing seating aids.
20	Respiratory treatment	Physiotherapists are trained in the management of respiratory conditions and can provide manual techniques to aid secretion clearance and suggest breathing exercises.
21	Weight bearing exercise	Any exercise that involves standing up or putting weight through a limb. This can involve standing in the pool as there is still gravity involved.
22	Use of mobility aids	Advice, education and practising using a mobility aid (ie walking stick, Zimmer frame, etc)
23	Other:(specify)	represents treatment techniques not included in the form such as referral to other agencies during treatment, orthotic review etc.
24	Other:(specify)	As above