

CHARIOT  
MS

The logo for CHARIOT MS. The word "CHARIOT" is in a bold, magenta, sans-serif font. The letter "O" is replaced by a stylized magenta icon of a person in a wheelchair. Below "CHARIOT", the letters "MS" are written in a grey, sans-serif font.

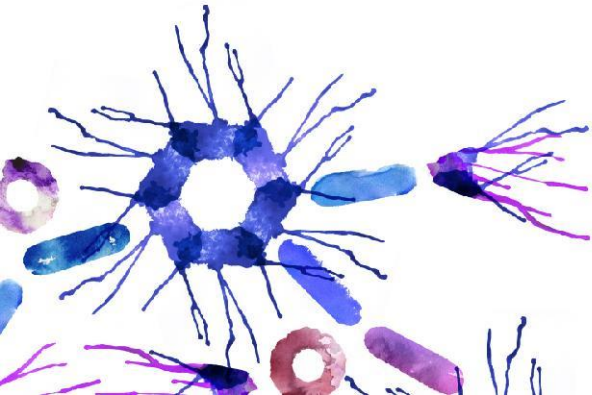
Cladribine to halt deterioration in people with advanced MS

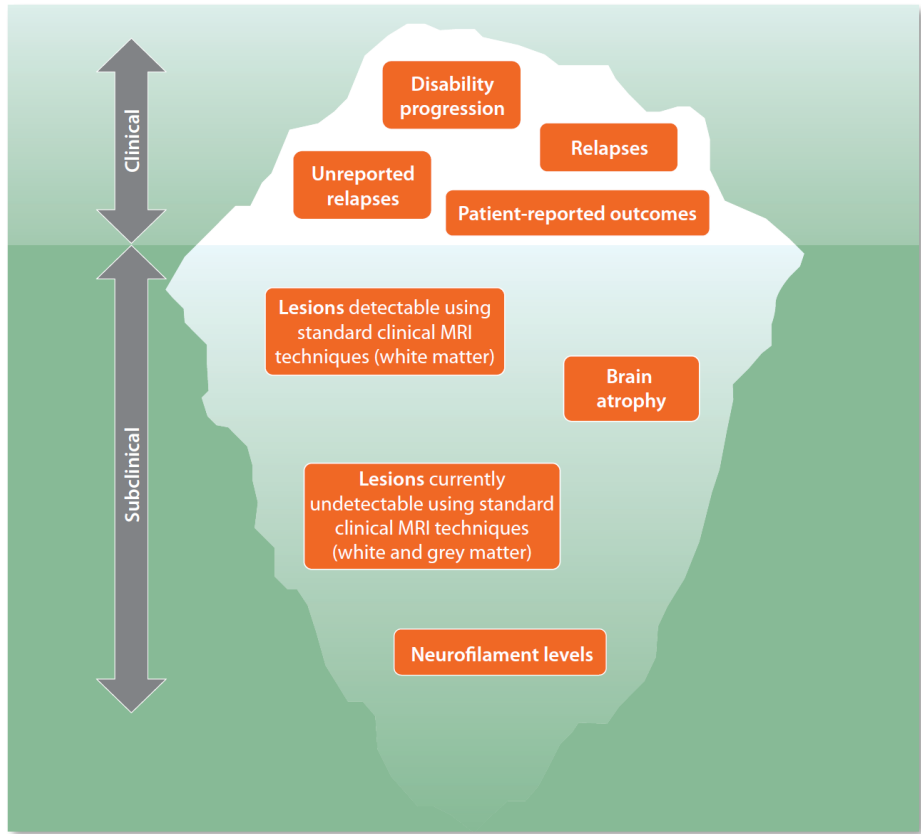
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[www.chariotms.com](http://www.chariotms.com)

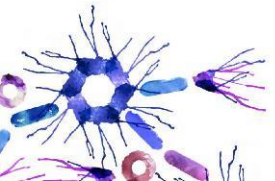
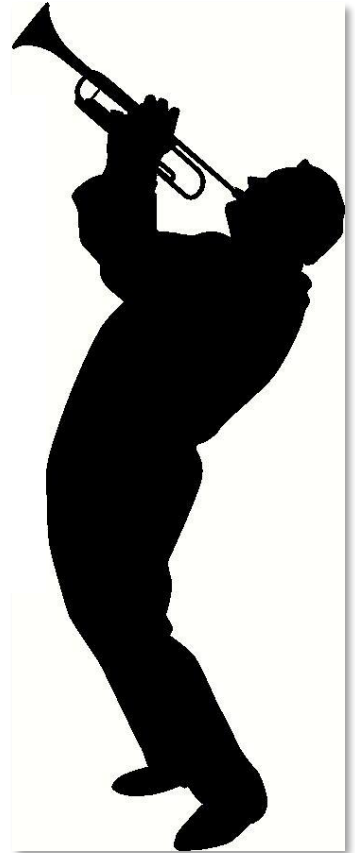
NCT 04695080

IRAS # 258909





# Treat early!

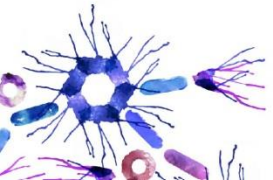


Brain Health: Time matters in multiple sclerosis.  
<http://msbrainhealth.org/perch/resources/time-matters-in-ms-report-may16.pdf>

# What is early?



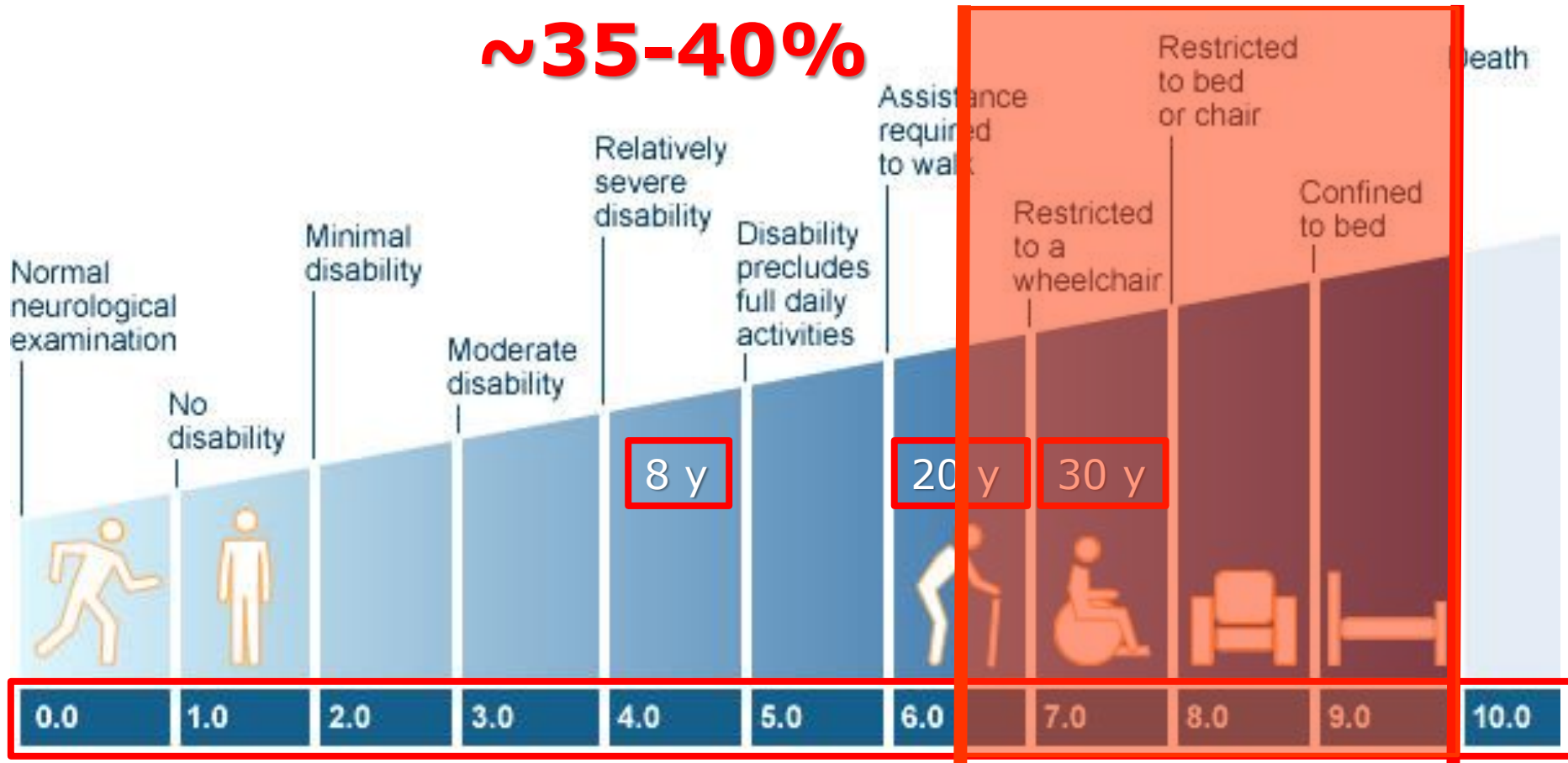
<https://www.chariotms.com/>



# Advanced MS

Used to be excluded from DMT trials

~35-40%



# MS lesions can hit long tracts in more places than short ones, legs/bladder/bowel functions are therefore at higher risk than arms!

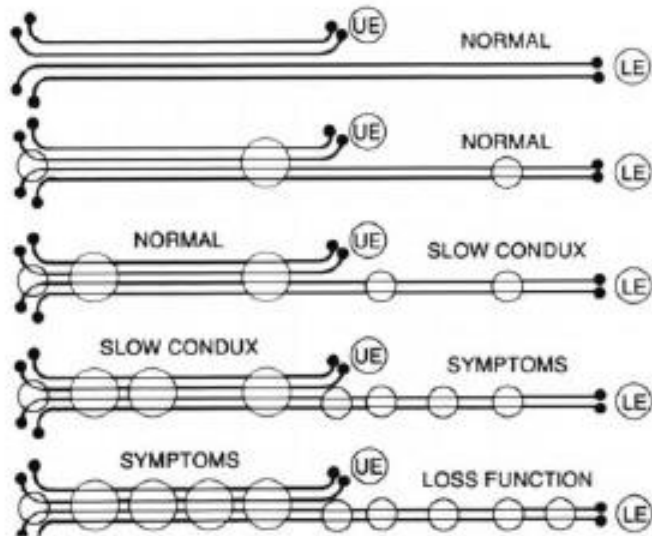
COMMENTARY

## On the origin of EDSS

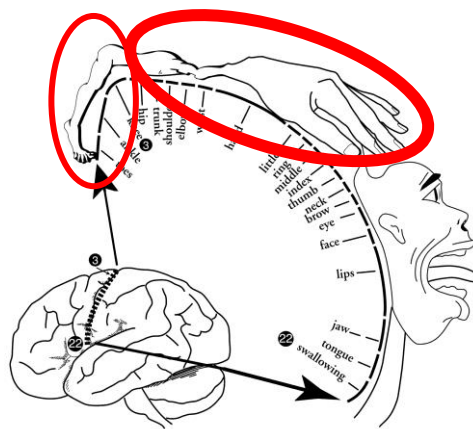
John F. Kurtzke

Georgetown University School of Medicine, Washington, DC, USA

Received 7 November 2014; received in revised form 9 February 2015; accepted 12 February 2015



Mult Scler Relat Disord 2015;4:95-103.



55% of cortico-spinal tract axons terminate at the cervical level.

Schieber MH. J Neurophysiol 2001;86:2125-43.

Multiple Sclerosis and Related Disorders 12 (2017) 70-78



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journal homepage: [www.elsevier.com/locate/msard](http://www.elsevier.com/locate/msard)



Review article







Is multiple sclerosis a length-dependent central axonopathy? The case for therapeutic lag and the asynchronous progressive MS hypotheses



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Mult Scler Relat Disord 2017;12:70-78.

# Multiple Sclerosis Top 10

- 
1. Which treatments are effective to slow, stop or reverse the accumulation of disability associated with MS?
  2. How can MS be prevented?
  3. Which treatments are effective for fatigue in people with MS?
  4. How can people with MS be best supported to self-manage their condition?
  5. Does early treatment with aggressive disease modifying drugs improve the prognosis for people with MS?
  6. Is Vitamin D supplementation an effective disease modifying treatment for MS?
  7. Which treatments are effective to improve mobility for people with MS?
  8. Which treatments are effective to improve cognition in people with MS?
  9. Which treatments are effective for pain in people with MS?
  10. Is physiotherapy effective in reducing disability in people with MS?

# Cladribine to halt deterioration in people with advanced multiple sclerosis



National Institute for Health Research

Seed corn funders



Efficacy and Mechanism Evaluation Programme



Morris-Saady Charitable Trust

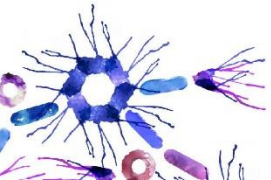


Barts Health NHS Trust



# Why Cladribine?

- **Effective** in pwRMS (phase III evidence)<sup>1,2</sup>
- **Effective** in pwPMS (phase II evidence)<sup>3-5</sup>
- **Convenient:** immune reconstitution therapy, rapid elimination, no drug-drug interactions, drug free pregnancy<sup>6,7</sup>
- **CNS penetrant:** kills non-/dividing lymphocytes<sup>8,9</sup>
- **Safe:** risk of infections mitigated by personalized dosing<sup>6,7</sup>; cancer risk not exceeding other DMTs<sup>10</sup>; no secondary autoimmunity<sup>11</sup>; licensed for relapsing MS<sup>1,12</sup>; favourable COVID-19 safety profile<sup>13</sup>



<sup>1</sup>Giovannoni, et al. NEJM 2010; <sup>2</sup>Leist, et al. Lancet Neurol 2014; <sup>3</sup>Sipe, et al. Lancet 1994; <sup>4</sup>Beutler, et al. Proc Nat Acad Sci USA 1996; <sup>5</sup>Rice, et al. Neurology 2000; <sup>6</sup>Mao, et al. MSARD 2019; <sup>7</sup>Allen-Philbey, et al. Ther Adv Neurol Disord 2021; <sup>8</sup>Santana, et al. Blood 1994; <sup>9</sup>Kearns Cancer Res 1994; <sup>10</sup>Pakpoor, et al. Neurol Neuroimmunol Neuroinflamm 2015; <sup>11</sup>Baker, et al. JAMA Neurol 2017; <sup>12</sup>[http://www.ema.europa.eu/docs/en\\_GB/document\\_library/Summary\\_of\\_opinion\\_-\\_Initial\\_authorisation/human/004230/WC500229786.pdf](http://www.ema.europa.eu/docs/en_GB/document_library/Summary_of_opinion_-_Initial_authorisation/human/004230/WC500229786.pdf) <sup>13</sup>Tallantyre, et al. Ann Neurol 2022.



# Subcutaneous cladribine to treat multiple sclerosis: experience in 208 patients

Kimberley Allen-Philbey\*<sup>id</sup>, Stefania De Trane\*, Zhifeng Mao, Cesar Álvarez-González, Joela Mathews, Amy MacDougall, Andrea Stennett, Xia Zhou, Ozlem Yildiz, Ashok Adams, Lucia Bianchi, Camilla Blain, Christine Chapman, Karen Chung, Cris S Constantinescu, Catherine Dalton, Rachel A Farrell, Leonora Fisniku, Helen Ford, Bruno Gran, Jeremy Hobart, Zhaleh Khaleeli, Miriam Mattoscio, Sue Pavitt, Owen Pearson, Luca Peruzzotti-Jametti, Antonio Scalfari, Basil Sharrack, Eli Silber, Emma C Tallantyre, Stewart Webb, Benjamin P Turner, Monica Marta, Sharmilee Gnanapavan, Gunnar Juliusson, Gavin Giovannoni<sup>id</sup>, David Baker and Klaus Schmierer<sup>id</sup>

*Ther Adv Neurol Disord*

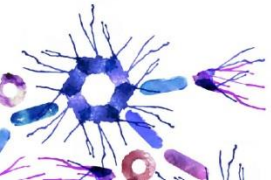
2021, Vol. 14: 1–16

DOI: 10.1177/  
17562864211057661

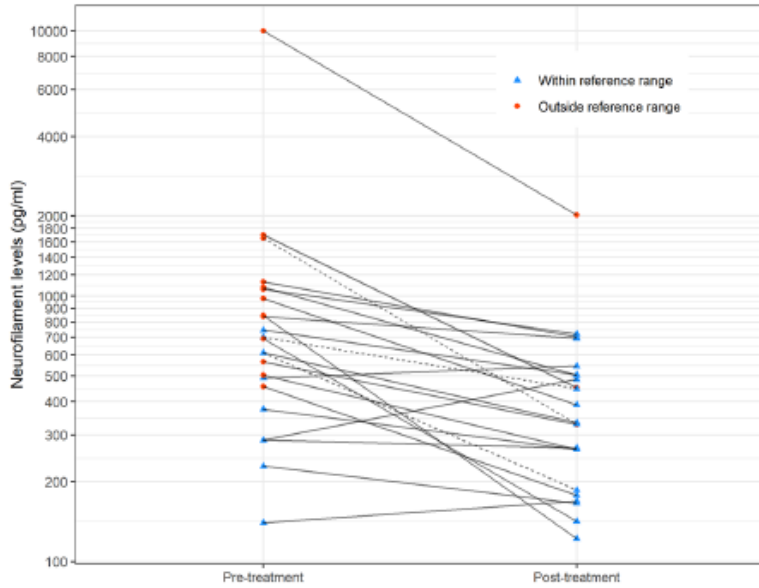
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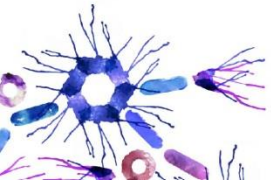
Not licensed for use in MS



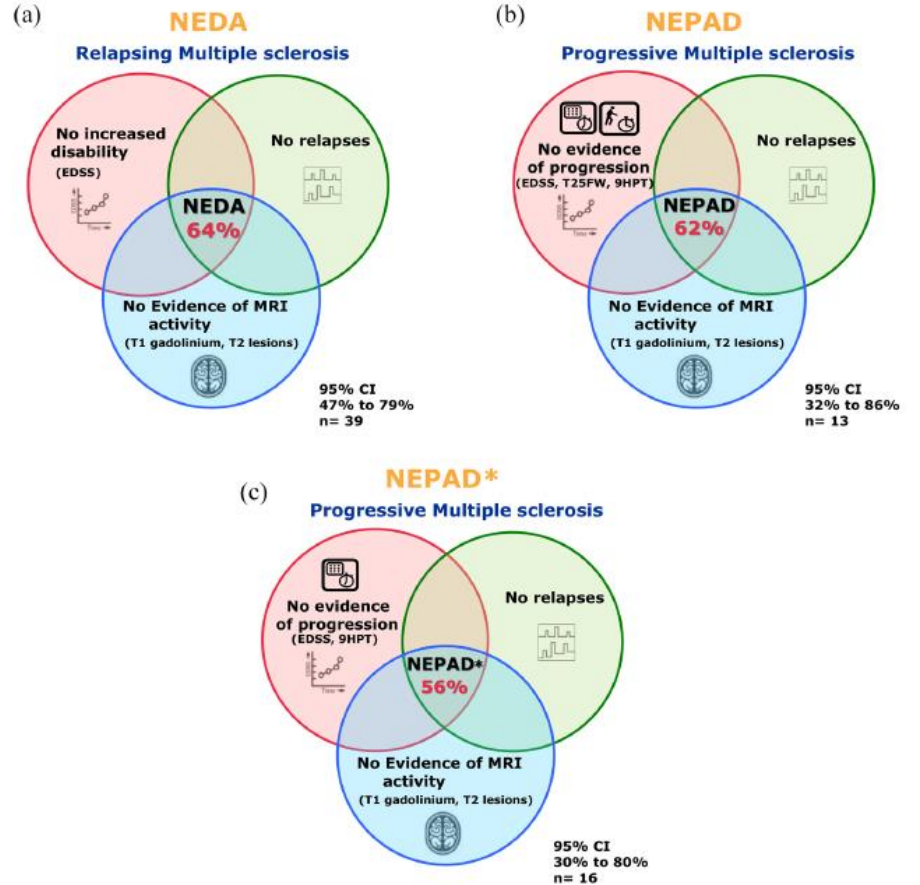
# CSF Neurofilament light chain levels



**Figure 6.** Cerebro-spinal fluid neurofilament light chain (CSF-NfL) levels in 23 patients with MS before and after treatment with Litak®.



**Not licensed for use in MS**

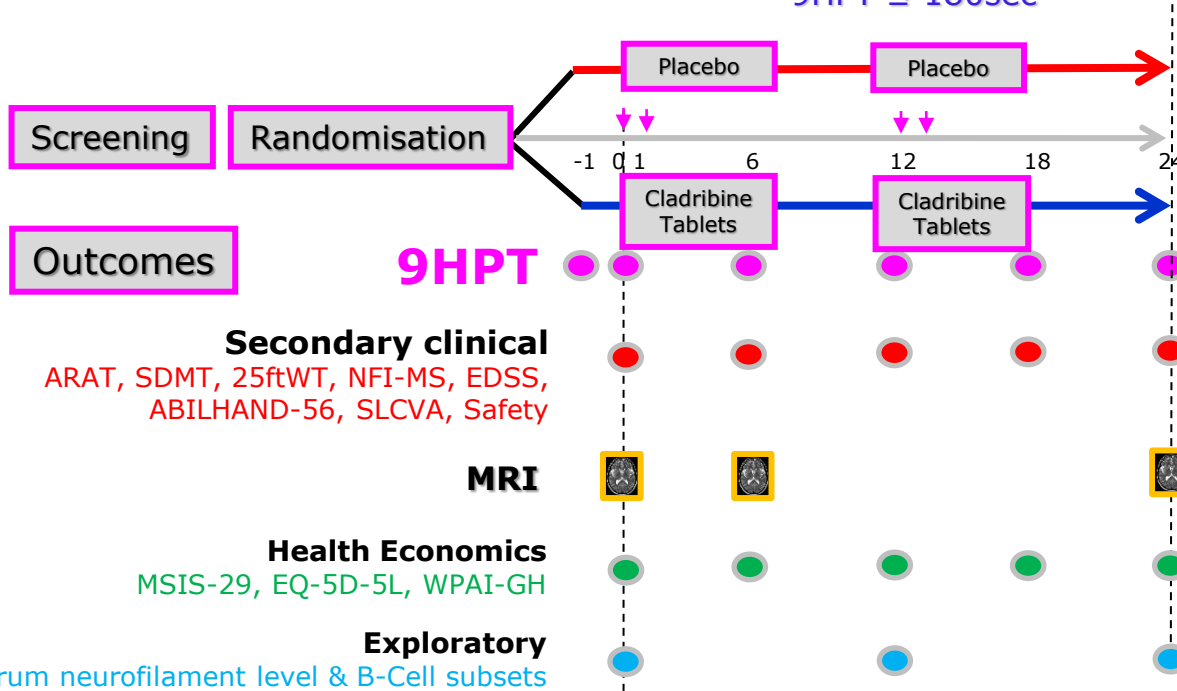


# Study overview

n=200 participants

**Key inclusion criteria**  
EDSS 6.5-8.5  
Upper limb deterioration  
9HPT ≤ 180sec

**No upper age limit !**



**Primary outcome: 9HPT speed**



## MRI outcomes

- Whole brain volume
- C<sub>2</sub> Cross sectional area
- T<sub>2</sub> Lesion burden
- T<sub>1</sub> Hypo-intense lesions
- Grey matter volumes
- Slowly expanding lesions (SELs)

PROM patient related outcome measures; 9HPT 9 hole peg test; SDMT symbol digit modality test; T25WT timed 25 foot walking test; NFI-MS Neurological fatigue index MS; EDSS Expanded disability status scale; ARAT Action research arm test; SLCVA Sloan low contrast visual acuity; MSIS-29 Multiple Sclerosis Impact Scale, WPAI-GH: Work Productivity and Activity Impairment-General Health



# Cladribine to halt deterioration in people with advanced multiple sclerosis *NCT04695080*

## 20 trial sites open now!

More information:

[www.chariotms.com](http://www.chariotms.com)

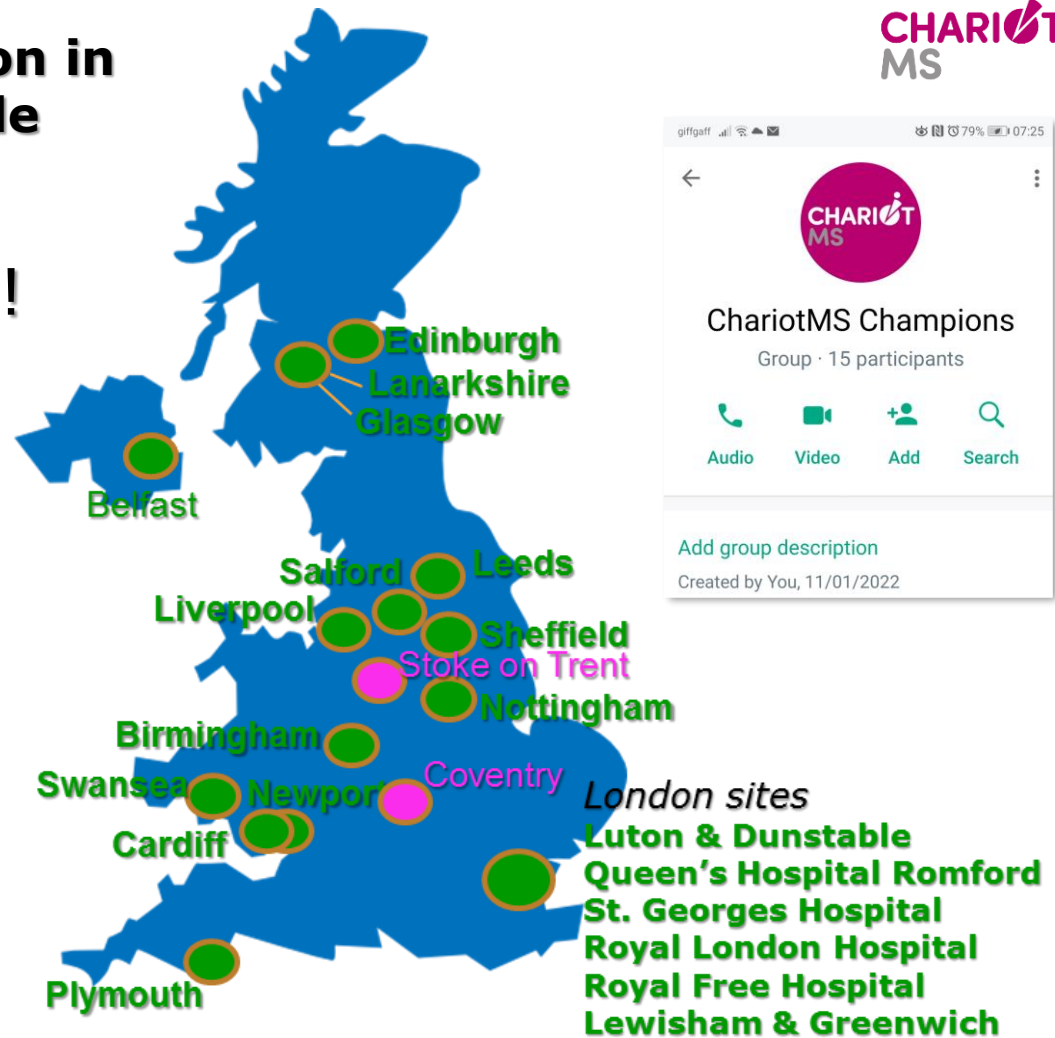
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[bartshealth.chariotms@nhs.net](mailto:bartshealth.chariotms@nhs.net)

Green = Actively recruiting

Pink = To be activated soon





My page

About MS

Care and support

Research

Get involved

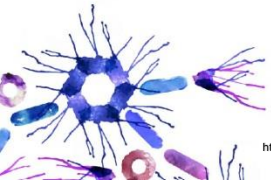
What we do



## Painter with MS becomes first person to join groundbreaking new trial for advanced MS

Friday 6 August 2021

Katie Haylor



## Woodridge man joins world-first multiple sclerosis clinical trial

Abygail Fossett



Published: 7:00 PM April 23, 2022

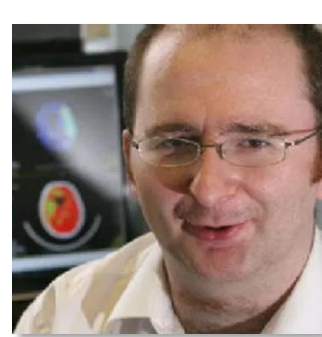
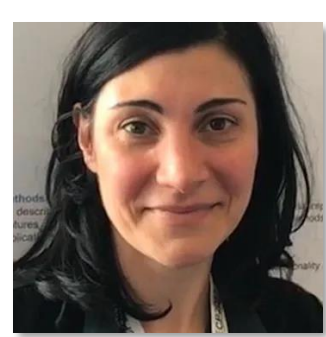


Tim Joseph has been living with MS since 2000. He is taking part in a clinical trial, which he hopes will allow him to continue his passion for 'chariot' driving for as long as he can. - Credit: Event to Event

A Woodridge man with multiple sclerosis has joined a clinical trial which is the first of its kind ever conducted.

Tim Joseph, 60, has been taking part in the trial since December last year. He is hopeful that the treatment will allow him to continue his passion of carriage – or 'chariot' – driving for as long as possible.





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