

Package ‘MSoutcomes’

September 13, 2023

Title CORE Multiple Sclerosis Outcomes Toolkit

Version 0.1.0

Description Enable operationalized evaluation of disease outcomes in multiple sclerosis. ‘MSoutcomes’ requires longitudinally recorded clinical data structured in long format. The package is based on the research developed at Clinical Outcomes Research unit (CORE), University of Melbourne. Lorscheider et al. (2016) [<doi:10.1093/brain/aww173>](https://doi.org/10.1093/brain/aww173). Kalincik et al. (2015) [<doi:10.1093/brain/awv258>](https://doi.org/10.1093/brain/awv258).

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Depends dplyr, R (>= 3.5)

Imports stats, utils

Encoding UTF-8

LazyData true

RoxygenNote 7.2.3

NeedsCompilation no

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SampleData	<i>Expanded disability status scale (EDSS) score and functional system score (FSS) recorded at each visit</i>
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Description

A long data frame containing 12 variables 'ID', 'dateEDSS', 'EDSS', 'FSpyr', 'FSscrbl', 'FSbstem', 'FSsens', 'FSsph', 'FSvis', 'FScreb', 'FSamb', 'daysPostRelapse'.

Usage

SampleData

Format

A long data frame with 315 rows and 12 variables:

ID (character) patient ID

dateEDSS (date YYYY-mm-dd) date of disability score

EDSS (numeric) disability score (Expanded Disability Status Scale; EDSS)

FSpyr (numeric) pyramidal functional system score

FSscrbl (numeric) cerebellar functional system score

FSbstem (numeric) brainstem functional system score

FSsens (numeric) sensory functional system score

FSsph (numeric) bowel & bladder functional system score

FSvis (numeric) visual functional system score

FScreb (numeric) cerebral functional system score

FSamb (numeric) ambulation functional system score

daysPostRelapse (numeric) days since most recent relapse

spmsDx	<i>Diagnosis of secondary progressive multiple sclerosis</i>
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Description

Diagnosis of conversion from relapsing-remitting multiple sclerosis (RRMS) to secondary progressive multiple sclerosis (SPMS), using the CORE definition, including Functional System Scores (FSS) of Expanded Disability Status Scale (EDSS). Diagnosis is based on clinical visit records, each record including entries for patient code, visit date, EDSS score, FSS, ambulation score, and days since most recent relapse.

Usage

```
spmsDx(  
  visits,  
  minEDSS = 4,  
  minFSpyr = 2,  
  tRelapse = 30,  
  tProgression = 3 * 30.25,  
  tRegression = 9 * 30.25,  
  tRelProg = 6 * 30.25  
)
```

Arguments

visits	A data frame consisting of 12 columns: ID, dateEDSS, EDSS, FSpyr (pyramidal FSS), FScrbl (Cerebellar FSS), FSbstem (Brainstem FSS), FSpens (Sensory FSS), FSpsh (Bowel Bladder FSS), FSvis (Visual FSS), FScereb (Cerebral FSS), FSamb (Ambulation score), daysPostRelapse (days since most recent relapse).
minEDSS	Minimum EDSS score to reach SPMS conversion.
minFSpyr	Minimum pyramidal FSS to reach SPMS conversion.
tRelapse	Minimum time in days from prior relapse to confirmation of EDSS progression.
tProgression	SPMS confirmation period in days.
tRegression	Confirmation period for EDSS improvement in days.
tRelProg	Confirmation period (days) for rebaselining EDSS (after a relapse led to non-confirmed increase in EDSS).

Value

A data frame.

References

Lorscheider J, et al. Brain 2016; 139 (9): 2395-2405.

Examples

```
data(SampleData)  
output<-spmsDx(SampleData)
```

 spmsDx_no_fss

Diagnosis of secondary progressive multiple sclerosis without functional system scores and ambulation score

Description

Diagnosis of conversion from relapsing-remitting multiple sclerosis (RRMS) to secondary progressive multiple sclerosis (SPMS), using the CORE definition without Functional System Scores (FSS) of Expanded Disability Status Scale (EDSS). Diagnosis is based on clinical visit records, each record including entries for patient code, visit date, EDSS score, and days since most recent relapse.

Usage

```
spmsDx_no_fss(
  visits,
  minEDSS = 4,
  tRelapse = 30,
  tProgression = 3 * 30.25,
  tRegression = 9 * 30.25,
  tRelProg = 6 * 30.25
)
```

Arguments

visits	A dataframe consisting of 4 columns: ID, dateEDSS, EDSS, daysPostRelapse (days since most recent relapse).
minEDSS	Minimum EDSS score to reach SPMS conversion.
tRelapse	Minimum time in days from prior relapse to confirmation of EDSS progression.
tProgression	SPMS confirmation period in days.
tRegression	Confirmation period for EDSS improvement in days.
tRelProg	Confirmation period (days) for rebaselining EDSS (after a relapse led to non-confirmed increase in EDSS).

Value

A data frame.

References

Lorscheider J, et al. Brain 2016; 139 (9): 2395-2405.
 Brown JW, et al. JAMA 2019; 321 (2): 175-87.
 Lizak N, et al. JAMA neurology 2020; 77 (11): 1398-407.

Examples

```
data(SampleData)  
output<-spmsDx_no_fss(SampleData)
```

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