User Guide for sparc\_scores() Function

Crohn’s and Colitis Foundation

10/1/2020

Contents

[Overview 2](#_Toc52380725)

[Requirements 2](#_Toc52380726)

[Output Table 3](#_Toc52380727)

## Overview

Sparc\_scores() is a function that reads in SPARC data from IBD Plexus, and calculates diagnosis, phenotype, disease, and endoscopy scores at a specific (“index”) date.

## Requirements

* R Version 4.0.0 or above
* The following R packages are required and can be installed using install.packages(“package name”)
  + reshape2
  + plyr
  + tidyverse
  + lubridate
  + DT
  + readxl
  + openxlsx
* datadir = the directory where the unzipped SPARC data from IBD Plexus is saved
  + .csv and .txt format are acceptable
  + If multiple extracts are saved in the same folder, the most recent files will be selected
* Index\_info = a data frame with DEIDENTIFIED\_MASTER\_PATIENT\_ID and a variable named index\_date.
  + The default index\_date is the DATE\_OF\_CONSENT
* Filename = the name of the output file.
  + Must be in .xlsx format
  + The default is SPARC\_SCORES.xlsx
* Index\_range = the number of days to look out from index date.
  + The default is 14 days
  + For example, to see scores within +/- 30 days of enrollment, the index\_range = “30”.

## Output Table

The output file “SPARC\_SCORES.xlsx” included the following columns. If more than the DEIDENTIFIED\_MASTER\_PATIENT\_ID and index\_date is in the index\_info data.frame, those columns will be included as well. Unless otherwise specified, the closest value to the index date is used if there are multiple reported values within the index range. All values in the Smartform (SF\_SPARC) can be pulled forward if there is no update reported. Clinicians only record data in the SF if there are changes.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Column Header | Derived Variable (Y/N) | DDM Table | DDM Data Source | Other DDM Filters | DDM Variable | Notes |
| DEIDENTIFIED\_MASTER\_PATIENT\_ID | N | Demographics | ECRF\_SPARC |  | DEIDENTIFIED\_MASTER\_PATIENT\_ID |  |
| INDEX\_DATE | Y |  |  |  |  | A date of interest specified by the user. |
| DATE\_OF\_CONSENT | N | Demographics | ECRF\_SPARC |  | DATE\_OF\_CONSENT |  |
| DATE\_OF\_CONSENT\_WITHDRAWN | N | Demographics | ECRF\_SPARC |  | DATE\_OF\_CONSENT\_WITHDRAWN |  |
| BIRTH\_YEAR | N | Demographics | ECRF\_SPARC |  | BIRTH\_YEAR |  |
| GENDER | N | Demographics | ECRF\_SPARC |  | GENDER |  |
| DIAGNOSIS | N | Diagnosis | SF\_SPARC > ECRF\_SPARC | DIAG\_CONCEPT\_NAME equals Crohn’s Disease, Ulcerative Colitis or IBD Unclassified. For SF only,  DIAG\_STATUS\_CONCEPT\_CODE equals Yes. | DIAG\_CONCEPT\_NAME | Chose diagnosis reported closest to index date from SF first, then ECRF. Use ECRF\_QORUS if consented to both studies. The closest diagnosis was selected. |
| CROHN'S DISEASE PHENOTYPE | N | Observations | SF\_SPARC | For Crohn’s Disease patients only. OBS\_TEST\_CONCEPT\_NAME equals “Crohn’s Disease Phenotype”. | DESCRIPTIVE\_SYMP\_TEST\_RESULTS | Inflammatory, non-penetrating, non-stricturing phenotype can be pulled backward. All phenotypes can be pulled forward to the next reported phenotype. The closest phenotype to index date was selected. |
| EXTENT OF MACROSCOPIC ULCERATIVE COLITIS | N | Observations | SF\_SPARC | For Ulcerative Colitis patients only. OBS\_TEST\_CONCEPT\_NAME equals “Extent of Macroscopic Ulcerative Colitis” | DESCRIPTIVE\_SYMP\_TEST\_RESULTS | Ulcerative proctitis (rectum only) can be pulled backward. All phenotypes can be pulled forward to the next reported phenotype. The closest phenotype to index date was selected. |
| EXTENT OF MACROSCOPIC IBD UNCLASSIFIED | N | Observations | SF\_SPARC | For IBD unclassified patients only. OBS\_TEST\_CONCEPT\_NAME equals “Extent of Macroscopic IBD Unclassified” | DESCRIPTIVE\_SYMP\_TEST\_RESULTS | Ulcerative proctitis (rectum only) can be pulled backward. All phenotypes can be pulled forward to the next reported phenotype. The closest phenotype to index date was selected. |
| ADALIMUMAB | N | Prescriptions | SF\_SPARC | MEDICATION\_NAME | MEDICATION\_ADMINISTRATED\_CODE | Reports of “Never” used medication after index\_date can be pulled backward. Otherwise only data up until the index date was used. |
| CERTOLIZUMAB PEGOL | N | Prescriptions | SF\_SPARC | MEDICATION\_NAME | MEDICATION\_ADMINISTRATED\_CODE | Reports of “Never” used medication after index\_date can be pulled backward. Otherwise only data up until the index date was used. |
| CORTICOSTEROIDS | N | Prescriptions | SF\_SPARC | MEDICATION\_NAME | MEDICATION\_ADMINISTRATED\_CODE | Reports of “Never” used medication after index\_date can be pulled backward. Otherwise only data up until the index date was used. |
| GOLIMUMAB | N | Prescriptions | SF\_SPARC | MEDICATION\_NAME | MEDICATION\_ADMINISTRATED\_CODE | Reports of “Never” used medication after index\_date can be pulled backward. Otherwise only data up until the index date was used. |
| INFLIXIMAB | N | Prescriptions | SF\_SPARC | MEDICATION\_NAME | MEDICATION\_ADMINISTRATED\_CODE | Reports of “Never” used medication after index\_date can be pulled backward. Otherwise only data up until the index date was used. |
| MESALAMINE | N | Prescriptions | SF\_SPARC | MEDICATION\_NAME | MEDICATION\_ADMINISTRATED\_CODE | Reports of “Never” used medication after index\_date can be pulled backward. Otherwise only data up until the index date was used. |
| METHOTREXATE | N | Prescriptions | SF\_SPARC | MEDICATION\_NAME | MEDICATION\_ADMINISTRATED\_CODE | Reports of “Never” used medication after index\_date can be pulled backward. Otherwise only data up until the index date was used. |
| NATALIZUMAB | N | Prescriptions | SF\_SPARC | MEDICATION\_NAME | MEDICATION\_ADMINISTRATED\_CODE | Reports of “Never” used medication after index\_date can be pulled backward. Otherwise only data up until the index date was used. |
| OTHER BIOLOGIC | N | Prescriptions | SF\_SPARC | MEDICATION\_NAME | MEDICATION\_ADMINISTRATED\_CODE | Reports of “Never” used medication after index\_date can be pulled backward. Otherwise only data up until the index date was used. |
| SULFASALAZINE | N | Prescriptions | SF\_SPARC | MEDICATION\_NAME | MEDICATION\_ADMINISTRATED\_CODE | Reports of “Never” used medication after index\_date can be pulled backward. Otherwise only data up until the index date was used. |
| THIOPURINE | N | Prescriptions | SF\_SPARC | MEDICATION\_NAME | MEDICATION\_ADMINISTRATED\_CODE | Reports of “Never” used medication after index\_date can be pulled backward. Otherwise only data up until the index date was used. |
| TOFACITINIB | N | Prescriptions | SF\_SPARC | MEDICATION\_NAME | MEDICATION\_ADMINISTRATED\_CODE | Reports of “Never” used medication after index\_date can be pulled backward. Otherwise only data up until the index date was used. |
| USTEKINUMAB | N | Prescriptions | SF\_SPARC | MEDICATION\_NAME | MEDICATION\_ADMINISTRATED\_CODE | Reports of “Never” used medication after index\_date can be pulled backward. Otherwise only data up until the index date was used. |
| VEDOLIZUMAB | N | Prescriptions | SF\_SPARC | MEDICATION\_NAME | MEDICATION\_ADMINISTRATED\_CODE | Reports of “Never” used medication after index\_date can be pulled backward. Otherwise only data up until the index date was used. |
| ABDOMINAL.PAIN.SCORE | N | Observations | SF\_SPARC; ECRF\_SPARC | FOR SF, OBS\_TEST\_CONCEPT\_NAME equals Abdominal Pain-Pain Scale; For ECRF, OBS\_TEST\_CONCEPT\_NAME equals Abdominal Pain | DESCRIPTIVE\_SYMP\_TEST\_RESULTS | Use to calculate *A* for sCDAI equation.   |  |  | | --- | --- | | DESCRIPTIVE\_SYMP\_TEST\_RESULTS | A | | None | 0 | | Mild | 1 | | Moderate | 2 | | Severe | 3 | |
| DAILY.BM | N | Observations | SF\_SPARC; ECRF\_SPARC | FOR SF, OBS\_TEST\_CONCEPT\_NAME equals Current Average Number of Daily Bowel Movements or Current Maximum Number of Daily Bowel Movements. For ECRF, OBS\_TEST\_CONCEPT\_NAME equals Current Average Number of Daily Bowel Movements or Current Average Number of Daily Liquid Bowel Movements. For ECRF, if OBS\_TEST\_RESULT\_DATE before August 1, 2018 use Current Average Number of Daily Bowel Movements. | TEST\_RESULT\_NUMERIC; DESCRIPTIVE\_SYMP\_TEST\_RESULTS | This is *B* for the sCDAI equation. This is N/A for anyone with an ostomy. 20+ was treated as 20 in the sCDAI equation. |
| DAILY.BM.VERSION | Y |  |  |  |  | Refers to the question used to determine the daily.bm variable in the sCDAI equation.   |  |  | | --- | --- | | 1 | Current Average Number of Daily Bowel Movements | | 2 | Current Average Number of Daily Liquid Bowel Movements | | 3 | Current Maximum Number of Daily Bowel Movements | |
| GENERAL.WELL.BEING.SCORE | N | Observations | SF\_SPARC; ECRF\_SPARC | FOR SF, OBS\_TEST\_CONCEPT\_NAME equals Constitutional - General Well-Being; For ECRF, OBS\_TEST\_CONCEPT\_NAME equals General Well-Being | DESCRIPTIVE\_SYMP\_TEST\_RESULTS | Use to calculate *G* for sCDAI equation.   |  |  | | --- | --- | | DESCRIPTIVE\_SYMP\_TEST\_RESULTS | G | | Generally well | 0 | | Slightly under par | 1 | | Poor | 2 | | Very poor | 3 | | Terrible | 4 | |
| SCDAI.DATE | N | Observations | SF\_SPARC; ECRF\_SPARC |  | OBS\_TEST\_RESULT\_DATE |  |
| SCDAI.SCORE[[1]](#footnote-1) | Y | [Calculated] | SF\_SPARC; ECRF\_SPARC |  |  | Crohn’s Disease Only.  Only use SF or ECRF to calculate; Do not combine from multiple sources to calculate. If one variable is missing from equation, leave blank for that source. |
| SCDAI.SOURCE | Y |  | SF\_SPARC; ECRF\_SPARC |  |  | If SF variables used, then put SF, if ECRF variables used then put ECRF. |
| GLOBAL.ASSESSMENT.SCORE | N | Observations | SF\_SPARC | OBS\_TEST\_CONCEPT\_NAME equals Physician's Global Assessment of Current Disease Status | DESCRIPTIVE\_SYMP\_TEST\_RESULTS | This is *T* for the UCDAI.9.SCORE.   |  |  | | --- | --- | | DESCRIPTIVE\_SYMP\_TEST\_RESULTS | T | | Quiescent | 0 | | Mild | 1 | | Moderate | 2 | | Severe | 3 | |
| RECTAL.BLEEDING.SCORE | Y | Observations | SF\_SPARC; ECRF\_SPARC; | FOR SF, OBS\_TEST\_CONCEPT\_NAME Blood in Stool - Recent Change in Rectal Bleeding Amount  . For ECRF, OBS\_TEST\_CONCEPT\_NAME equals Blood in Stool and/or Blood Passed Alone | DESCRIPTIVE\_SYMP\_TEST\_RESULTS | If from both sources at baseline separate by semicolon. This is *R* for the UCDAI.6 & UCDAI.9 SCORE.   |  |  | | --- | --- | | DESCRIPTIVE\_SYMP\_TEST\_RESULTS | R | | None; No blood seen | 0 | | Visible blood in stool less than half the time; Blood less than 50% of the time | 1 | | Visible blood in stool half the time or more; Blood 50% or more of the time | 2 | | Passing blood alone; ECRF: Blood Passed Alone = Yes | 3 | |
| STOOL.FREQ.SCORE | N | Observations | SF\_SPARC; ECRF\_SPARC; | FOR SF, OBS\_TEST\_CONCEPT\_NAME equals Recent Change in Daily Stool Frequency. For ECRF, OBS\_TEST\_CONCEPT\_NAME equals Recent Change in Daily Stool Frequency | DESCRIPTIVE\_SYMP\_TEST\_RESULTS | If from both sources at baseline separate by semicolon. This is *S* for the UCDAI.6 & UCDAI.9 SCORE.   |  |  | | --- | --- | | DESCRIPTIVE\_SYMP\_TEST\_RESULTS | S | | Normal | 0 | | 1-2 stools/day more than normal | 1 | | 3-4 stools/day more than normal | 2 | | >4 stools/day more than normal; 5 or more stools per day more than normal | 3 | |
| UCDAI.6.SCORE | Y | [Calculated] |  |  |  | Ulcerative Colitis Only.  Only use SF or ECRF to calculate; Do not combine from multiple sources to calculate. If one variable is missing from equation, leave blank for that source. |
| UCDAI.9.SCORE | Y | [Calculated] |  |  |  | Ulcerative Colitis Only.  Only use SF or ECRF to calculate; Do not combine from multiple sources to calculate. If one variable is missing from equation, leave blank for that source. |
| UCDAI.DATE | N | Observations | SF\_SPARC; ECRF\_SPARC |  | OBS\_TEST\_RESULT\_DATE |  |
| UCDAI.SOURCE | Y |  | SF\_SPARC; ECRF\_SPARC |  |  | If SF variables used, then put SF, if ECRF variables used then put ECRF. |
| ILEUM | N | Procedures | ECRF\_SPARC | PROC\_CONCEPT\_NAME equals Colonoscopy/Sigmoidoscopy | LOCATION |  |
| DESCENDING COLON | N | Procedures | ECRF\_SPARC | PROC\_CONCEPT\_NAME equals Colonoscopy/Sigmoidoscopy | LOCATION |  |
| LEFT COLON | N | Procedures | ECRF\_SPARC | PROC\_CONCEPT\_NAME equals Colonoscopy/Sigmoidoscopy | LOCATION |  |
| RECTUM | N | Procedures | ECRF\_SPARC | PROC\_CONCEPT\_NAME equals Colonoscopy/Sigmoidoscopy | LOCATION |  |
| RIGHT COLON | N | Procedures | ECRF\_SPARC | PROC\_CONCEPT\_NAME equals Colonoscopy/Sigmoidoscopy | LOCATION |  |
| SIGMOID COLON | N | Procedures | ECRF\_SPARC | PROC\_CONCEPT\_NAME equals Colonoscopy/Sigmoidoscopy | LOCATION |  |
| TRANSVERSE COLON | N | Procedures | ECRF\_SPARC | PROC\_CONCEPT\_NAME equals Colonoscopy/Sigmoidoscopy | LOCATION |  |
| SES\_SCORE | Y | Procedures | ECRF\_SPARC | PROC\_CONCEPT\_NAME equals Colonoscopy/Sigmoidoscopy | SES.CD\_Subscore | Sum of SES.CD\_Subscore from each location from same colonoscopy. If segment is “Not reached” then treated as 0. For Crohn’s Disease patients only. |
| SES.DATE | N | Procedures | ECRF\_SPARC | PROC\_CONCEPT\_NAME equals Colonoscopy/Sigmoidoscopy | PROC\_START\_DATE | Date of colonoscopy with SES scoring. |
| MAX\_EXTENT\_ACTIVE\_DISEASE | N | Procedures | ECRF\_SPARC | PROC\_CONCEPT\_NAME equals Colonoscopy/Sigmoidoscopy | MAX\_EXTENT\_ACTIVE\_DISEASE | Units = cm |
| MAYO\_ENDOSCOPY\_SCORE[[2]](#footnote-2) | Y | Procedures | ECRF\_SPARC | PROC\_CONCEPT\_NAME equals Colonoscopy/Sigmoidoscopy | MAYO\_ENDOSCOPIC\_SUBSCORE | Maximum MAYO\_ENDOSCOPIC\_SUBSCORE from each location from same colonoscopy. For Ulcerative Colitis patients only. |
| MODIFIED\_MAYO\_SCORE2 | Y | Procedures | ECRF\_SPARC | PROC\_CONCEPT\_NAME equals Colonoscopy/Sigmoidoscopy | MAYO\_ENDOSCOPIC\_SUBSCORE | Sum of MAYO\_ENDOSCOPIC\_SUBSCORE from each location from same colonoscopy. For Ulcerative Colitis patients only. |
| EXTENDED\_MODIFIED\_MAYO\_SCORE2 | Y | [Calculated] |  |  |  |  |
| MODIFIED\_MAYO\_ENDOSCOPIC\_SCORE2 | Y | [Calculated] |  |  |  |  |
| MES.DATE | N | Procedures | ECRF\_SPARC | PROC\_CONCEPT\_NAME equals Colonoscopy/Sigmoidoscopy | PROC\_START\_DATE | Date of colonoscopy with Mayo Scoring. |
| OSTOMY | N | Procedures & Observations | SF\_SPARC, ECRF\_SPARC | For SF, PROC\_CONCEPT\_NAME equals Ileostomy/colostomy ; For ECRF, OBS\_TEST\_CONCEPT\_NAME equals Baseline Number of Daily Bowel Movements or Current Average Number of Daily Bowel Movements or Recent Change in Daily Stool Frequency or Current Average Number of Daily Liquid Bowel Movements equals Not applicable, I have an ostomy | DESCRIPTIVE\_SYMP\_TEST\_RESULTS | Only populated for those missing sCDAI or UCDAI scores. |

1. Henao MP, Bewtra M, Osterman MT, Aberra FN, Scott FI, Lichtenstein GR, Kraschnewski J, Lewis JD. Measurement of Inflammatory Bowel Disease Symptoms: Reliability of an Abbreviated Approach to Data Collection. Inflamm Bowel Dis. 2015 Oct;21(10):2262-71. doi: 10.1097/MIB.0000000000000496. PMID: 26193348; PMCID: PMC4567473. [↑](#footnote-ref-1)
2. Triana Lobatón, Talat Bessissow, Gert De Hertogh, Bart Lemmens, Chelsea Maedler, Gert Van Assche, Séverine Vermeire, Raf Bisschops, Paul Rutgeerts, Alain Bitton, Waqqas Afif, Victoria Marcus, Marc Ferrante, The Modified Mayo Endoscopic Score (MMES): A New Index for the Assessment of Extension and Severity of Endoscopic Activity in Ulcerative Colitis Patients, Journal of Crohn's and Colitis, Volume 9, Issue 10, October 2015, Pages 846–852, <https://doi.org/10.1093/ecco-jcc/jjv111> [↑](#footnote-ref-2)