Supplementary File 1. Data Sharing Policies and Procedures

Biogen is committed to supporting clinical trial disclosure and responsible data sharing in compliance with global legal and regulatory requirements and in alignment with the biopharmaceutical industry's principles.

The analyses described in this paper have a prespecified Statistical Analysis Plan and a comprehensive Clinical Study Report with all generated tables and listings from the prespecified analyses. Access to the Statistical Analysis Plan and Clinical Study Report may be provided, without participant-level data, upon approval of a research proposal and completion of the Data Use Agreement (Biogen Data Request Portal, https://biogen-dt-external.pharmacm.com//DT/Home/Index/).

Patient-level data will be provided to the researcher pending approval of a research proposal and a Data Use Agreement signed by the lead researcher, a representative of the lead researcher's institution, and Biogen.

Requests for patient-level data are initiated by submission of a request form with the following information:

- Data Request Title
- Primary Researcher Contact Information (Name, Title, Institution, City, State, Country, Phone, Email)
- Primary Research Team Information (Name, Title, Institution)
- Research Information
- Research Objective
- Scientific Rationale
- Research Questions/Hypothesis
- Primary Endpoint (if applicable)
- Secondary Endpoint(s) (if applicable)
- Program(s) Requested
- Studies Requested
- Description of Data Requested
- Description of Variables Requested (optional)
- Publication Plan
- Summary of Analysis Plan
- Funding of Proposed Research
- Potential Conflict(s) of Interest
- Management Plan for Conflicts of Interest

In determining whether to grant a specific request for access to patient-level data and clinical trial information, Biogen shall consider all relevant information, including:

- Data requested
- Hypothesis to be tested and the rationale for the proposed research
- Ethical research plan
- Sound statistical plan
- Publication and posting plan
- Qualifications and experience of requestor or intended researcher(s) and any potential conflicts of interests
- Source of any research funding
- Whether the informed consent agreements prohibit the proposed research
- If the proposal has the potential to produce information that will enable identification of individual research participants

Requests for patient-level data are reviewed for potential conflicts of interest, including a determination of whether the originator of the request is a health care provider, academic researcher, or scientific/medical journal staff member. Before any data request is denied, an independent review board is assembled to review the request and ensure that the decision is transparent. If any portions of the request are unclear, follow-up enquiries will be made.

Scientific merit of the proposal is a consideration. Upon establishment of the researcher's qualifications and intent are established, the research proposal's hypothesis and analysis plan (a detailed description of how the to analyse and interpret the data will be analysed and interpreted for hypothesis testing) are reviewed. If there are ambiguities in the analysis plan provided, the company queries the researcher until the plan is fully developed. This rationale for this portion of the process is to prevent data sharing requests for broad and/or poorly defined purposes, for example, "to explore natalizumab PML case data."

There are two reasons for requiring a detailed hypothesis and analysis plan before data sharing. First, the detailed plan is appended to the Data Use Agreement between the researcher and the company. The Data Use Agreement specifies that the researcher agrees to use the data only for the appended analysis. Second, the detailed plan helps Biogen assess what data can be removed from the data set in order to protect patient privacy without compromising the research aims. Data within the data set that are not necessary for the conduct of the specific analysis request may be omitted and data are de-identification for patient privacy purposes (for example, dates of birth collected may be converted to age in years to support maintaining an unidentifiable patient data set for an analysis that needs to use age as a covariate).

The Data Use Agreements expect the researcher to publish on the results of the appended data analysis fully independently of the company, but prohibit further analyses or dissemination of the data to other parties. If the researcher wishes to conduct additional analyses from the data set, a new request must be submitted and, upon approval, the additional analyses need to be included in a separate Data Use Agreement.

The intention of the above process is to facilitate the goals of medical journals, ie, “to make clinical data accessible and transparent, so that trial results can be reproduced and further analyses performed,” but also is meant to protect patient health privacy as required by law and to prevent unscientific data mining and data use. Under the process, most detailed analysis requests can be supported for data sharing of individualized patient data. For example, a data sharing request in order to independently repeat the analyses described in this paper would almost certainly be granted.

There are exceptions to Biogen's Data Sharing Policy. These are:

- Clinical trials where there is a reasonable likelihood that the study participant could be re-identified, such as with trials of rare diseases and single-centre studies.
- Clinical trials where data sharing is prohibited by terms of the informed consent agreement; or where regulatory, legal, contractual, or other limitations exist.
- Clinical trials where data/documents are not in English.

Examples of requests for the TOUCH data set that would require exceptions might include the following:

- Analyses that require data not included the data set, such as, “To look at efficacy of EID in TOUCH patients.”
- Proposed analysis plans that cannot be executed without identifying individual patients, eg, “To compare PML case incidence and characteristics amongst each of the 50 US states.” Since some states have only one PML patient such an analysis would very likely result in patient identification.

In the latter examples, Biogen will work with researchers where possible to help address their research interests without compromising on its legal requirements to prevent patient identification.

Questions regarding Biogen’s data sharing process can be emailed to the company at datasharing@biogen.com.