Data sharing

In today's climate of high healthcare costs and limited research resources, much attention has been given to inefficiency in research. Open access to research data has been proposed as a way to pool resources and make the most of research funding while also promoting transparency and scientific rigor.

The clinical neurosciences stand to benefit greatly from the potential opportunities afforded by open data, and we sought to evaluate the current state of publicly available research findings and data sharing policies within the clinical neurosciences.

The Clarivate Analytics Web of Science journal citation reports for 2017 were used to sort journals in the category 'Clinical Neurosciences' by impact factor. The top 50 journals were selected and reviewed, but data was only collected from journals focused on original research (42/50). For each journal we reviewed the 10 most recent original research articles for 2016, 2017, and 2018 as designated by Scopus. Results: A data sharing policy existed for 60% (25/42) of the journals reviewed. Of the articles studied 41% (517/1255) contained source data, and the amount of articles with available source data increased from 2016 to 2018. Of all the articles reviewed, 49.4% (620/1255) were open access. Overall, 6.9% (87/1255) of articles had their source data accessible outside of the manuscript (e.g. registries, databases, etc.) and 8.9% (112/1255) addressed the availability of their source data within the publication itself. The availability of source data outside the manuscript and inarticle discussion of source data availability both increased from 2016 to 2018. Only 3.9% (49/1255) of articles reviewed reported negative results for their primary outcome, and 7.6% (95/1255) of the articles could not be defined as primarily reporting positive or negative findings (characterization studies, census reporting, etc.). The distribution of negative versus positive results reported showed no significant trend over the years studied. Conclusion and Relevance: Our results demonstrate an opportunity for increased data sharing in neuroscience original research. These findings also suggest a trend towards increased adoption of open data sharing policies among journals and increased availability of unprocessed data in publications. This can increase the quality and speed at which new research is developed in the clinical neurosciences $^{1)}$.

In 2018 from studies published in the top 40 neurology and neurosurgery clinical research journals by impact factor. The top journals were carefully reviewed for data sharing policies. Of the journals with data sharing policies, the 10 most current original research papers from December 2015 - February 2016 were reviewed for data sharing statements and data availability. A data sharing policy existed for 48% (19/40) of the 40 journals investigated. Of the 19 journals with an existing data sharing policy, 58% (11/19) of the policies stated that data should be made available to interested parties upon request and 21% (4/19) of these journals encouraged authors to provide a data sharing statement in the article of what data would be available upon request. Of the 190 articles reviewed for data availability, 21% (40/190) of these articles included some source data in the results, figures, or supplementary sections. This evaluation highlights opportunities for neurology and neurosurgery investigators and journals to improve access to study data and even publish the data prospectively for the betterment of clinical outcome analysis and patient care ²⁾

Duncan et al. described the infrastructure and functionality for a centralized preclinical and clinical

data repository and analytic platform to support importing heterogeneous multi-modal data, automatically and manually linking data across modalities and sites, and searching content. We have developed and applied innovative image and electrophysiology processing methods to identify candidate biomarkers from MRI, EEG, and multi-modal data. Based on heterogeneous biomarkers, we present novel analytic tools designed to study epileptogenesis in animal model and human with the goal of tracking the probability of developing epilepsy over time ³⁾.

Article Retractions of neurosurgical publications are increasing significantly, mostly due to issues of academic integrity, including duplicate publishing and plagiarism. Implementation of more transparent data sharing repositories, a thorough screening of data prior to manuscript submission, as well as additional educational programs for new researchers, may help mitigate these issues moving forward ⁴⁾.

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2)

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