

Doug Altman Scholarships

1 IF YOU CAN'T BEAT 'EM, JOIN 'EM: COMBATING POOR SCIENTIFIC PRACTICE WITH A QUANTITATIVE, OPEN-ACCESS RESEARCH METRIC

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Objectives Curiosity and altruism are characteristics that we endeavour to nurture within the scientific community. Unfortunately, competition for funding and employment stifle such qualities and incentivize poor scientific practice. In efforts to make decisions about funding and employment more evidence-based, several quantitative metrics intended to reflect the proficiency of a scientist have emerged. Although such metrics were intended to be 'objective,' it is common to manipulate such metrics to one's own advantage. Studies can be published in a piece-meal fashion to increase the number of publications, and scientists can cite their own work even though citing other literature would be a suitable alternative. This is a corrupt cycle that rewards those who use poor scientific practices to inflate these metrics and subsequently acquire more funding in favour of the honest scientist.

Method Given the widespread use of quantitative metrics as a means of assessing performance and funding allocation, one possible solution to combat poor scientific practice may be the introduction of a quantitative metric that measures a scientist's commitment to transparency and open-access (the author suggests this is named the 'Altman index,' in remembrance of Professor Doug Altman and his commitment to scientific integrity). The amount of information available to financial and socio-political stakeholders about a scientist is overwhelming, and decision-making processes regarding funding are undoubtedly influenced by cognitive biases. In addition to open-access journals, there now exists a plethora of open-access tools such as Plaudit,¹ Protocols.io,² and the recently announced Reproducible Document Stack.³

Results To alleviate pressures on human resources dedicated to assessing a scientist's proficiency, the Altman index would centralise and integrate data produced by end-users of open-access tools into a comprehensive and interpretable metric. This would make open-access more tangible for all stakeholders and allow them to redirect their focus on the humanistic aspects of research. Additionally, making the Altman index publicly accessible would empower those members of the community who want to hold scientists and academic institutions socially accountable.

Moreover, the lack of incentive to publish negative results means that the extant scientific literature is not an accurate representation of reality, and authors may even fabricate or manipulate their results to make publication more likely. The Altman index could also be used to address this bias by rewarding the publication of negative results and making dataset and methodology publicly available.

Conclusions As algorithmic approaches to big data are the current zeitgeist in scientific research, it is important to note that the Altman index is only a starting point in addressing the redistribution of funds to those who have shown commitment to scientific integrity and transparency. Additionally, there is scepticism amongst many scientists and the public about such approaches, so transparency and open-mindedness are crucial in developing the Altman index. As has happened with other

metrics, there may be unanticipated adverse consequences with the introduction of the Altman index, and it is important to invest time designing the Altman index in a way that minimises the risk of perverse incentivisation.

REFERENCES

1. <https://plaudit.pub/>
2. <https://www.protocols.io/>
3. <https://elifesciences.org/labs/7ddeb390/reproducible-document-stack-supporting-the-next-generation-research-article>

2 TIME FOR A REAL MANIFESTO

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Objectives The scandal of poor medical research is rooted in failings of individuals and institutions. Improving the situation requires us to formulate political solutions and lobby hard for their implementation.

The EBM manifesto is a worthy statement of principles, but it is nebulous and lacks specific objectives. The dire scale of the crisis it eloquently describes threatens to overwhelm the impetus to action with a counsel of despair. The problems are well understood, now we must identify and ruthlessly promote a limited number of achievable and high impact solutions.

Method Five Demands

1. Fix the Research Evaluation Framework

REF rewards academics who demonstrate 'impact', commonly interpreted as trials with positive outcomes that alter practice. REF should be re-engineered to incentivize rigorous and transparent research that matters to patients. Institutional returns should include metrics of patient participation and research integrity, including research registration, data sharing and reporting. Returns for papers with unwarranted deviation from protocols will be prohibited.

2. Overhaul Research Funding

Contractual compliance measures are required for government health funding, with payments made contingent on fulfilment of agreed methodologies and reporting of outcomes. In cases of breaches of such terms, provision must be made for funding 'clawback'.

Results

3. Establish a National Health Research Data Repository

All research data should be submitted on a national repository, including 'lab books' documenting experimental data. Depositing additional documentary evidence such as videos of lab procedures will become an expectation of good practice. Submission of publically viewable, blank research databases and examples of pseudonymised patient data that will be made available for peer (and/or) public review will be a mandatory condition of grant applications. Data which will not be publically accessible must be identified and justified along with the terms under which the data will be made available for peer scrutiny.

4. Standardise & Integrate Journal Submissions

Journals should adopt a uniform format in which papers will be accepted for peer review, whilst the submission platforms should be integrated to eliminate duplication. Achieving this will engage grassroots researchers and could offset additional workload resulting from enhanced reporting and transparency in research.