



Disponible en ligne sur

ScienceDirect
www.sciencedirect.com

Elsevier Masson France

EM|consulte
www.em-consulte.com



Editorial

Neurochirurgie and the e-(r)evolution

P. Bijlenga

Service de neurochirurgie, département des neurosciences cliniques, Hôpitaux Universitaires de Genève et Faculté de Médecine de Genève, Genève, Switzerland



ARTICLE INFO

Article history:

Received 27 October 2018

Received in revised form 5 November 2018

Accepted 22 November 2018

Available online 13 December 2018

1. Current status

Mastery of an abundant literature, increasing competitiveness, optimization of resources, evolution towards personalized medicine, innovation and management of complex care, demonstration of efficiency and security monitoring are all challenging tasks that we are responsible for as doctors or surgeons. The journal “Neurochirurgie” struggles to raise its “impact factor” despite great and laudable efforts by all. These conditions can be identified as an opportunity to catalyze creativity and transformation.

2. Raw data sharing

The sharing of observations, experience and knowledge plays a fundamental role in nurturing the intelligence of a society and structuring resources in order to develop expertise. The main vectors in these exchanges are currently academic events, colloquia, conferences and congresses and scientific publications. Nowadays, our decisions and actions are made on the basis of our own experience modulated by the analysis of the experiences of others and not the analysis of aggregated raw data. If we compare medicine to geography, our science is at the stage of developing individual maps by a community of explorers. We need to stimulate the development of tools that connect all of us directly to basic observations as satellites measuring the globe and to create digital atlases with associated viewers allowing to experience in real-time the state of our collective knowledge. Raw data is the equivalent of the atom to matter, the knowledge quantum. Raw data has a huge value that

however we discard once the information is extracted. Raw data should be preserved and shared.

3. Digitalize our observations and connect them

The exchange of information and experience in neurosurgery remains very qualitative and the exercise of quantitative measurement is rare, expensive and not widely reproduced. Despite great efforts, comparing observations is compromised mainly because of changes in techniques over a certain period of time rendering comparisons speculative, and because measurements' lack of standards. The way we report our observations and analyzes is not homogeneous. Unfortunately, the most normative effort of coding is debilitating, time-consuming and developed to serve economical purposes rather than modeling of health.

4. Integrate our discipline into the work of neighboring disciplines on a global scale

Imaging tools and biology offer tremendous opportunity to explore structures and their interactions. Modeling of systems, organs and their pathologies progresses extremely rapidly. Developments of projects such as the “Virtual Physiological Human” and the “Human Brain Project” are strong catalysts. Extensive work was undertaken to codify our diagnoses and procedures. The most difficult and almost monastic task is to define the unitary elements of clinical processes (Common Data Elements) which make it possible to universally formalize symptoms, observations, syntheses, analyzes, classifications, interventions, treatments and decisions. Data collection by institutional information systems should be reoriented towards academic purposes and science should guide their development.

E-mail address: philippe.bijlenga@hcuge.ch

<https://doi.org/10.1016/j.neuchi.2018.11.003>

0028-3770/© 2018 Elsevier Masson SAS. All rights reserved.

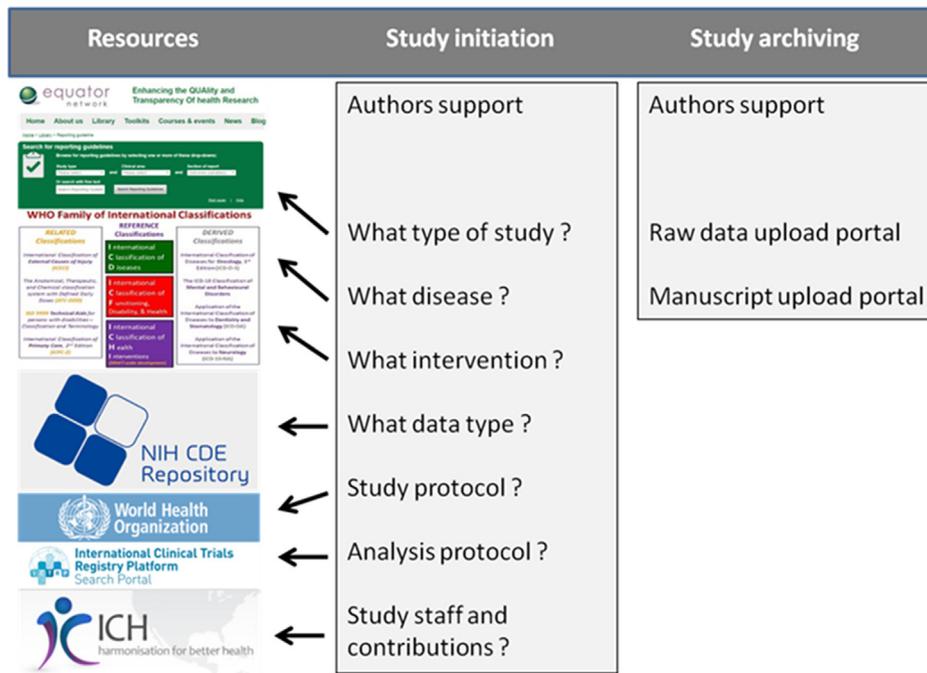


Fig. 1. Authors should be assisted to provide information associated with observations.

5. From Descartes to Villani¹

Let's formalize the process of scientific publication and democratize raw data sharing.

Support the authors in systematically reporting the context of their work by:

- keeping an up-dated set of scientific reporting guidelines and checklists available or link to the adequate source of information (<http://www.equator-network.org>);
- requesting adhesions to reporting guidelines.

The selection of guidelines and checklists should be the responsibility of the journal's editorial board. The enforcement of authors' adherence to the guidelines should be the responsibility of reviewers.

Create an information platform allowing to:

- associate the work with international disease and intervention codes;
- link to assessment standards including the latest definitions of constants (initial conditions), predictors and dependent variables (outcome) as well as analysis tools specific to each topic;
- link to registered studies and trials;
- introduce updating mechanisms to propagate feedbacks of authors and reviewers to standardization entities.

Let's develop a raw data submission portal that allows us to administer the use of data according to the legal framework and good clinical research practices as well as in the respect of the intellectual property and the appreciation of the work of each one.

¹ https://www.aiforhumanity.fr/pdfs/9782111457089_Rapport_Villani_accessible.pdf.

This will potentially allow to improve aggregation of data from different studies over a period of time and to progressively build more knowledge, in particular for rare diseases.

In collaboration with publishers, a tool could be developed that would integrate all stages described above in a single portal (Fig. 1) and assist authors in the initial design of studies, monitoring studies progression and allowing access to validated analysis services. Assisting researchers early in their work and allowing publishing both research protocols when initiating their work and final reports should improve quality and reduce publication bias.

6. Will Medical Journal Editors be the bankers of tomorrow?

It is time for "Neurochirurgie" to innovate and render observations and knowledge more accessible. We must embrace the digital revolution and create an information platform that can serve as an observatory and as a reference to guide future work. This requires from each author to agree to submit raw data and to commit to using standardized methods and assessment tools. I am convinced that this exercise will quickly have a beneficial effect on the quality of the scientific production submitted to the journal. By accumulating structured raw data it should open the opportunity valorizing the reporting of small low budget studies easier to manage for junior colleagues or work addressing key questions in particular in the field of rare conditions using an incremental strategy. It could be another way to support collaborative work. Let us value the work of the miners of science so that each contribution of a brick permits the construction of a building that lasts. Let us offer a sanctuary under the patronage of academic societies that preserves, valorizes and shares the wealth of tomorrow, namely the high-quality digital data, and serves the community so that artificial intelligence will not suffer any myopia tomorrow.

Isn't it the role of the editors to assist us in this task as they did in the past for the publication of our literature? Let's mandate Medical Journal Editors to develop tools and infrastructures. On the other hand, raw data is a common good that should be managed by

academic societies and proper use should be monitored according to the rules of science, ethics and good practice.

Therefore, it is necessary to create four types of services. “Desks” for data submission where researchers can open accounts for each study, “Banks” where data is harmonized and managed, “Stock exchanges” that allow the exploration of accumulated raw data, and finally “Baskets” managing how data is shared.

Are we ready to build trust, break the piggy bank and invest our raw data?

Disclosure of interest

The author declares that he has no competing interest.