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"Big Data" Has Not Come to Pediatric Anesthesia

To the Editor:

Litman's editorial "Complications of Laryngeal Masks in Children"[1] is subtitled as "Big Data Comes to Pediatric Anesthesia." Unfortunately, Litman repeatedly misuses the term "big data," potentially misleading readers of the Journal.

Wikipedia defines big data as "the term for a collection of data sets so large and complex that it becomes difficult to process using on-hand database management tools or traditional data processing applications. As of 2012, limits on the size of data sets that are feasible to process in a reasonable amount of time were on the order of exabytes of data."*

Surely, a retrospective study of 11,910 patients does not involve exabytes (billions of gigabytes) of data. Although Mathis *et al.*[2] deserve credit for undertaking a study involving a relatively large dataset, Litman should have considered using the term "Large Simple Safety Study," a term used by the U.S. Food and Drug Administration to describe simple clinical trials involving at least 10,000 subjects (although the term usually implies a prospective analysis—a better term might be a Large Simple Retrospective Review).

Litman's use of the term minimizes the challenges to those whose work involves big data, for example, meteorologists. Although words evolve, they must be clearly defined if scientists wish to communicate without ambiguity.

Competing Interests

The author declares no competing interests.

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* Available at: http://en.wikipedia.org/wiki/Big_data. Accessed March 26, 2014.

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In Reply:

I would like to thank Dr. Fisher for pointing out one possible definition of the term "big data." However, the sentence he used from the Wikipedia page to support this definition refers to an article titled "Future telescope array drives development of exabyte processing," which appeared in a Conde Nast magazine called "Ars Technica."* A search of this article did not reveal anywhere the term "big data."

In this evolving world of use of very large datasets, one can find many variations on the term "big data." For example, in their authoritative treatise, Mayer-Schonberger and Cukier[1] write: "*There is no rigorous definition of big data…big data refers to things one can do at a large scale that cannot be done at a smaller one, to extract new insights or create new forms of value….*" This is precisely what Mathis *et al.*[2] did in their study of novel factors that influence laryngeal mask failure in children.

Jonathan Stuart Ward and Adam Barker, from the University of St. Andrews in Scotland, recently tackled this conundrum of the ambiguous definition of "big data."† They stated that "*…there is no single unified definition, and various stakeholders provide diverse and often contradictory definitions….*" They point out that the definition is likely some combination of size, complexity, and technology and refer to the Method for an Integrated Knowledge Environment (MIKE2.0) project, which states that *"Big Data can be very small and not all large datasets are big."*‡ The MIKE project prefers a definition that includes a high degree of permutations and interactions within a dataset.

Finally, according to the National Institutes of Health, "*The term 'Big Data' is meant to capture the opportunities and challenges facing all biomedical researchers in accessing, managing, analyzing, and integrating datasets of diverse data types [*e.g., *imaging, phenotypic, molecular (including various '–omics'),*

* Francis M: Future telescope array drives development of exabyte processing. Ars Technica, April 2, 2012. Available at: http://arstechnica.com/science/2012/04/future-telescope-array-drives-development-of-exabyte-processing/. Accessed March 27, 2014.

† Ward JS, Barker A: Undefined by Data: A Survey of Big Data Definitions. Available at: http://arxiv.org/abs/1309.5821. Accessed March 27, 2014.

‡ Big Data Definition–MIKE2.0, the open source methodology for Information Development. Available at: http://mike2.openmethodology.org/blogs/information-development/2012/03/18/its-time-for-a-new-definition-of-big-data/. Accessed March 27, 2014.