

Improving the Performance of Research Journals: Lessons Learned From the Visual Abstract

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Scientific journals are under significant pressures to attract high-quality articles, curate them, and ensure their dissemination. As journals experiment with new strategies to optimize their performance—expedited processing, online-only publication, open access, video summaries, transparent reviews, prepublications prints, concurrent releases, social media investments—the visual abstract provides several lessons learned for journals and editors to make their upcoming efforts more effective.

Journals have a long history of using images to bring attention to their articles. For example, the central illustration¹ was created as a visual entryway to an article, with a summarizing key image. Similarly, graphical abstracts also brought a visual summary of research articles. The visual abstract was a subsequent development I created in 2016 that brought distinct features to the visual summary of research articles (Figure 1):

- Reproducible templated layout tailored to study design and outcomes
- Silhouetted, solid icons
- Use of monochromatic colors with black text

The templates were made open source and since 2016, more than 100 journals and institutions have adopted them in their dissemination strategy.²⁻¹⁵ Several journals and institutions now showcase their visual abstracts in dedicated libraries,

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including those from the Centers for Disease Control and Prevention,¹⁶ the *New England Journal of Medicine*,¹⁷ and *The Journal of the American Medical Association*.¹⁸ While each has added their own branding and style (e.g., addition of more colors, proprietary images), they generally follow the same templated layouts.

The appeal of adopting the visual abstract was not just aesthetic. To date, multiple prospective randomized trials have demonstrated the visual abstract to be a superior dissemination strategy compared to text or other images.^{3,15,19,20} In the original trial, the visual abstract led to articles being read nearly 3 times as often.³

While the visual abstract has been written about extensively (including broader applications beyond research dissemination to direct clinical care²¹), it also provides a number of illustrative lessons learned for journal editors that I summarize below.

Great Ideas Should Be Shared

As soon as it became clear that the visual abstract represented a novel and compelling strategy to disseminate research, an important decision needed to be made: would this be a proprietary tool limited to 1 journal or would it be an open source for iterative improvement and collaboration? As the developer of the visual abstract, I am thankful I chose the latter because it allowed for important growth and expertise to develop. For example, the first visual abstract primer was written by a single author and totaled 9 pages, while the most recent version²² has 12 authors bringing their unique expertise to more than 50 pages of guidance. Without question, I would not have identified several of the innovations described by others (e.g., the “methods bar” by Dr Chelsea Harris,²³ see example at ResearchGate²⁴) on my own.

Design (Usually) Cannot Be Delegated

Once the visual abstract gained popularity, the obvious question arose: how do you create one? While I led several workshops around the world, recorded YouTube videos²⁵ and updated the visual abstract primer, many journals struggled.^{10,11,27,28} Namely, many journals assumed that

Table. Resources to create and improve visual abstracts.

Resource	Source	Description	URL
Visual Abstract Primer (4th edition)	Andrew M Ibrahim	Full PDF guide to creating a visual abstract, written by multiple journal editors	https://www.SurgeryRedesign.com/resources
What is a Visual Abstract? And How to Create One?	Andrew M Ibrahim	Video summarizing the history of the visual abstract, its broad applications, and an introduction to creating one	https://youtu.be/bOXSNcjXAKg
Visual Abstracts	The Centers for Disease Control and Prevention (CDC)	Best practice advice and examples from the CDC	https://www.cdc.gov/pcd/for_authors/visual_abstracts.htm
Visual Abstract for Beginners	American Association of Hip & Knee Surgeons	Beginner walk-thru of creating a visual abstract	https://www.youtube.com/watch?v=e4Ani6SKakg
Visual Abstract Design Resources	Elsevier	Index of design and guideline resources for creating a visual abstract	https://researcheracademy.elsevier.com/uploads/2022-11/Resources%20for%20visual%20abstract%20by%20RA_Nov2022.pdf
Visual Abstract Scoring Rubric	<i>Annals of Surgery</i>	Design and accuracy rubric to evaluate visual abstract quality	https://pubmed.ncbi.nlm.nih.gov/35801709/

authors of scientific articles were also equipped with design sensibilities. As such, many journals began *requiring* authors to submit visual abstracts. The results of that requirement came through in a recent systematic evaluation of 25 academic journals that adopted the visual abstract and ranked them based on their design quality.²⁸ There was notable variability, with many journals consistently lacking the needed design quality to make the visual abstract effective. In the accompanying editorial,²⁶ a call was made to reconsider the requirements unless journals can provide design support for authors.

Rapid Adoption Needs Investment in Quality Control

As many journals began adopting the visual abstract, a few started to recognize the need for quality control. Notably, journals made investments in the visual abstract, including designated visual abstract editor roles and in-house designers. The benefits of these types of investments were three-fold. First, this often led to added diversity among editorial boards, as the visual abstract editor in most journals was someone early in their career who otherwise would not have a role on the board. Second, these standardized roles were often created in parallel to templated guidance that helped ensure a minimum level of quality and accuracy for each visual abstract. Third, support from journals to execute a visual abstract helped counter resentment from authors

who felt they were being asked to take on a task they were not equipped to perform. Although many authors have taught themselves or taken formal courses to create visual abstracts, journals still need to place safeguards and curate visual abstracts, just as they would article content, with guidelines and processes.^{5,14,26,27,29} Some best practices and guidelines are summarized in the Table.

No Substitute for Excellent Content

Over my career, I have been asked to create visual abstracts for articles and refused. While the visual abstract can enhance and elevate a manuscript, it is no substitute for excellent writing. Articles that are poorly written, do not have clear outcomes, lack consistency throughout the section, or simply lack rigor will not do well as visual abstracts. In other words, the easiest way to successfully disseminate a research article is to first have an excellent, rigorous, well-written article. More and more, I find myself editing the text of visual abstracts rather than images to facilitate article dissemination. For all the important tools we explore for article dissemination, great science and writing remains foundational.

Clarify the Need You Are Trying to Address

Why has the visual abstract been successful? It fills multiple needs. First, modern audiences are far more visual, with shorter attention spans. In our early pilot work, we found that visual abstracts could be comprehended in less than 10 seconds

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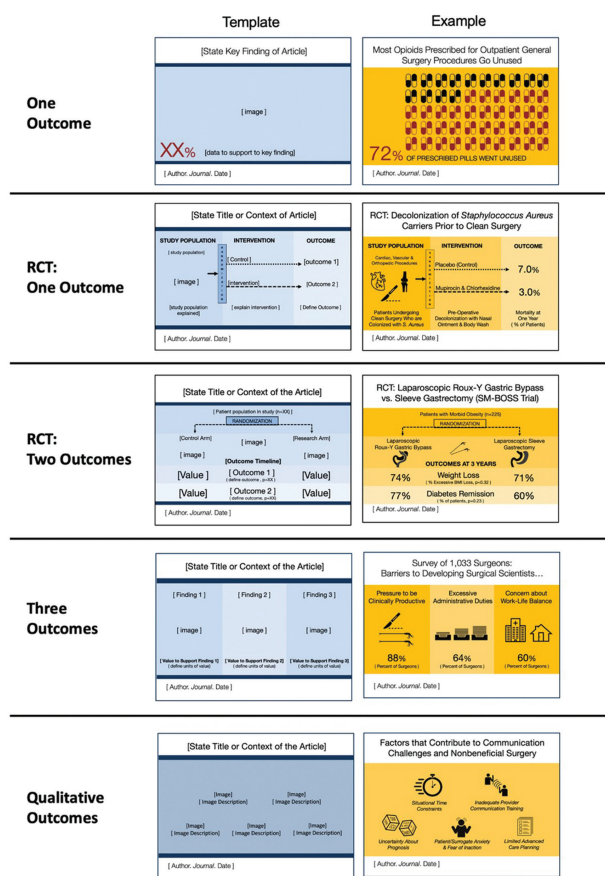


Figure 1. Visual abstract templates and examples. Examples provided by Andrew M Ibrahim MD, MSc; templates from initial visual abstract prototyping and subsequent application.

compared with about 75 seconds for text abstracts. In doing so, the abstracts resonated with busy readers who just needed concise previews of articles before deciding what to read. Second, modern audiences are flooded with unprecedented waves of information screaming for their attention. The visual abstract contrasts those signals with a clear and accessible message, which paradoxically made it stand out. In fact, as seen in Figure 1, part of the monochromatic color schemes was to stand out with simplicity. Third, readers of research articles often also present work themselves. The visual abstract is an easy “ready-made slide” for a presenter to use in a talk (Figure 2). In other words, the visual abstract fulfills a day-to-day need of many readers.

Your Audience May Be Broader Than Anticipated

One of the earliest surprises about the visual abstract was its popularity outside our traditional audiences. Early on, many visual abstracts were translated to other languages

by readers who felt they needed to be spread to non-English audiences. In general, few journals readily translate their articles, and the visual abstract became a gateway to engaging a different audience. The visual abstract was also warmly welcomed by those in the media. It provided a much more concise and accessible summary of the research work to help a reporter identify an author or journal they wanted to contact for an interview on a specific content area. Several times, we noticed the uptake of a research article in the lay press after we released the visual abstract.

The visual abstract will likely continue to evolve and serve journals as an effective strategy to disseminate research. More importantly, its history always provides us with important frameworks, guidance, and safeguards for how future innovations in scientific journals can be harnessed.

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Figure 2. Examples of visual abstract being used by speakers to reference studies.

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