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Editorial

PDF-embedded multimedia content in medical publishing and JPNIM's next goals

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"*... journals are still an important vehicle for disseminating peer-reviewed research results, but many individual articles have electronic lives of their own.*"
Donald A.B. Lindberg and Betsy L. Humphreys

Keywords

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Introduction

Almost 10 years ago, Lindberg and Humphreys tried to imagine the medical libraries of 2015: they envisioned a scenario in which digital literature would be easily accessible online and would have integrated multimedia content [1]:

1. they foresaw that by 2015 many publications would be issued only in electronic form, that individual articles would have "electronic lives of their own", and that a considerable amount of scientific information would be freely available over the internet;
2. they stressed the importance of reaching a "true integration of multimedia information".

The *Journal of Pediatric and Neonatal Individualized Medicine* (*JPNIM*) – official journal of the Union of European Neonatal and Perinatal Societies (UENPS) – is issued only in electronic form, its articles are published as downloadable portable document format (PDF) files (so they have an electronic life of their own), and readers have immediate open access to its articles. Now is the time for our journal to take a step further and try to better exploit the opportunities offered by multimedia.

The aim of this contribution is to understand how these media can be effectively inserted in online medical publications and to review the current panorama in medical publishing. The reader will also be presented with the goals that *JPNIM* has for the near future regarding multimedia contents. The overall analysis focuses on the PDF versions of articles; the online (html) versions in the publisher's website will be analyzed only when needed for comparison purposes.

Multimedia content in medical publishing: the desirable self-contained publication format

As considered desirable by Ziegler et al. [2], medical publishing should seek a full exploitation of the potential of electronic publications. For researchers, this means in practice:

1. to overcome the limitation of traditional data presentation, which historically has been restricted to two-dimensional illustrations (2D), and provide readers with three-dimensional (3D) illustrations, audios and videos;
2. to make available said materials in a single PDF file together with the text, thus avoiding the creation of separate multimedia files uploaded on the publisher's website, with the consequent unappealing division of the text from potentially crucial information.

The idea of providing a single all-inclusive file is strenghtened by a technical report published in 2005 by the Lister Hill National Center for Biomedical Communications (a research division of the U.S. National Library of Medicine): "It is imperative that the document be self-contained. That is, the multimedia components should exist within the document, and not simply exist in remote databases at, say, publishers' web sites"; the aim was to overcome "traditional" multimedia publication (related to media objects through hyperlinks) and create an "interactive" publication (a "self-contained document") [3].

Multimedia content in medical publishing: the current panorama

Ziegler et al. pointed out that at time they were writing (2011) the potential of the PDF-embedding technique had not yet been exploited in medical publishing [2]. On analyzing the online medical publishing panorama in the last few years, we can see a lack of integration between multimedia and the actual publication containing the article's text. Hereafter we are going to analyze some examples of PDFs:

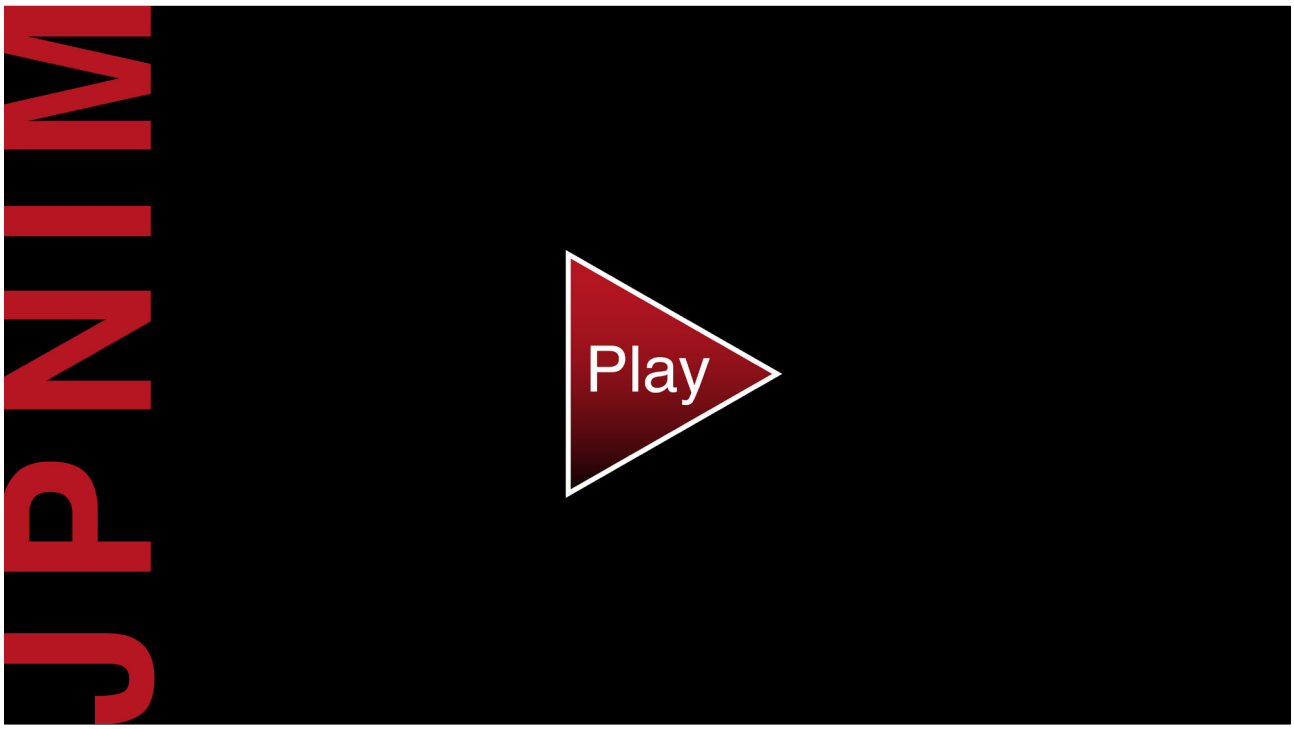
- sometimes, the multimedia content is still regarded as supplemental material, as occurred in a 2012 article of *the Journal of the American Medical Association* [4]: the multimedia contents are not embedded nor is there a direct link that allows reaching them with just one click. In fact, the reader is informed that a video explaining one of the analyzed procedures can be seen online: this piece of information is written inside the text and also in the information section at the end of the article; in both cases the link directs to the journal homepage, so there is no direct link to the video page nor to the online version of the article (where, instead, a direct link to the video page appears in a box called "Related Multimedia" in the right sidebar) [4, 5];
- other times, it seems that it is the text that is seen as a kind of supplemental material, as in a 2012 article of *the New England Journal of Medicine* (*NEJM*), pertaining to its *Videos in Clinical Medicine* series, where we can read: "This supplement provides a summary of the teaching points that appear in the accompanying video" [6]. The video appears on the *NEJM* website (where it can also be downloaded in two

different file formats and, incidentally, there is no html version of the written explanation of the procedure) [7], but in the PDF no link to it appears;

- in other cases, the multimedia content is seen as an essential part of the article, but the integration is not implemented in its PDF version. For example, we can look at an article of the *Journal of Visualized Experiments*, published in the current year [8]: the PDF version features only a video link, at which can be found "the video component of this article". The reader is redirected to the online version (where the video has an inline and pre-eminent position and starts to play automatically) [9];
- lastly, there are PDFs with embedded multimedia. Let us examine for example a 2012 article of *the Journal of Neuroscience*, which contains an embedded video [10]. In 2010 that journal had changed its policy about supplemental material, deciding not to accept or publish them anymore. One of the reasons was that "supplemental material (...) undermines the concept of a self-contained research report by providing a place for critical material to get lost" [11]. *The Journal of Neuroscience* stated that authors would be allowed to embed movies or 3D models in their articles [11]; this policy seems to have proved right, since in 2013 the same Editor-in-Chief wrote: "For several years we have allowed authors to embed essential videos and 3D models in the (...) PDF versions of their articles, and many authors have used this option to great effect" [12].

Multimedia content in *JPNIM*: our next goals

JPNIM has been conceived from its origins to constist of downloadable comprehensive PDFs, to facilitate their fruition and storage; from the very beginning, we decided to avoid the creation of supplemental material files and include all relevant images and tables inside the article. In these years, we have continued to search for better and more engaging means of medical communication, introducing for example *Question* and *Answer, Interview*, and *Mini Atlas* series of articles. Our striving for innovation is still ongoing: from now on, we intend to accept also 3D illustrations, audios and videos (e.g., with slide presentations or demonstrations of clinical procedures) to integrate (as PDF-embedded multimedia) into each kind of article, and we are planning to start a new *Video* series, featuring the explanation of medical procedures. You are welcome to send your contributions for evaluation (**Video 1**).



Video 1. JPNIM's next goals.
To view this video please open this PDF with Adobe Reader (Adobe Reader Version 7.1 or higher required).

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