

# Nurse Author & Editor

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### Learn to Love the DOI

**Julia Shaw-Kokot**

Finding and correcting citations often seems like an impossible task. Even when the references have been imported from a database into a reference management system such as EndNote® or RefWorks, the information can be confusing. Some databases, including PubMed, reformat citations for consistency while others, notably Google Scholar, just harvest from other websites. It is not unusual to find differences in an article's title, authors, journal name, and so forth. Add in the "to err is human" factor, and references can be difficult to track down. This is when the Digital Object Identifier (DOI) may save the day.

Uniform Resource Locators (URL), including those considered permanent, were long considered the best way to link to resources. In a publishing world where acquisitions and mergers have become the norm, URLs change and the links are lost. "Link-rot," a term for bad or lost URLs, happens frequently. In a late 2006 study, Bugeja and Dimitrova examined the half-life of online citations in nine journalism journals published since 2000. From those journals 53% of the online citations were dead. They calculated the half-life of citations for these journals to be 3.95 years (Bugeja & Dimitrova 2010). Another 2006 study conducted by a group at the National Library of Medicine examined URLs in MEDLINE abstracts from 1994 to 2006. The authors randomly accessed over ten thousand URLs once a day for thirty days and found that 81% of the links were available most of the time, but only 78% contained the intended information. Another 3% were available some of the time, and 16% of the URLs were "dead" (Ducut, Liu & Fontelo 2008). Both groups suggested that the DOI could be the key to adding stability to the world of electronic citations if they were used universally.

DOIs came rushing to the attention of writers and publishers in 2010 with the advent of the American Psychological Association's (APA) Version 6. The sixth edition of APA requires a DOI, if available, for articles and electronic books. Since APA began using the DOI as the key identifier, DOIs have proliferated and become important parts of citations. Other bibliographic formats, including the American Medical Association's 10th edition, have also added the DOI as a desired element. In the mid-1990s, the Association of American Publishers' Enabling Technologies Committee developed the DOI as a way to address several issues including changing ownership rights (Rosenblatt 1997). Publisher-assigned DOIs continue to identify an item even if it moves or changes ownership. A 2007 article in this publication described the publisher Blackwell's use of the DOI (Wates 2007).

The number of items with DOIs has grown rapidly over the last decade. According to the International DOI Foundation (IDF) information, more than 55 million DOI names have been assigned (IDF 2012a). IDF lists nine DOI registration agencies around the world (IDF 2012b) but perhaps the best known is CrossRef (<http://www.crossref.org/>).

Note the following citation:

Nelson D P, LeMaster T H, Plost G N & Zahner M L (2009) Recognizing sepsis in the adult patient.

American Journal of Nursing 109, 40-46.

As given, this information requires an author or title search in a database. By adding the DOI (10.1097/01.NAJ.0000346928.90369.10), the article can be found directly in many databases, and the citation is immediately retrieved. This reduces the amount of time and frustration in tracking down citations.

Nelson D P, LeMaster T H, Plost G N & Zahner M L (2009) Recognizing sepsis in the adult patient. American Journal of Nursing 109, 40-46.  
doi:10.1097/01.NAJ.0000346928.90369.10

One catch in DOI searching is that all not databases have added a DOI search function. For example, CINAHL and other EBSCOhost databases lack this functionality. When contacted, an EBSCO representative indicated there was currently an "enhancement request to make DOI a searchable field in EBSCOhost databases." EBSCO is not the only database producer struggling to incorporate DOIs in their searchable and downloadable fields. The number of databases incorporating DOI fields and search capabilities is consistently increasing. PubMed, Google Scholar, Web of Knowledge, and Scopus are widely used databases providing directly searchable DOI data fields that will also be downloaded as part of the citation into reference management programs.

Even if the DOI is not available from a database, it is often seen on the article itself and can be added manually to the bibliographic manager or a document. This approach still adds the "to err is human" factor. Another way to track down a DOI is to use the search feature in CrossRef, which allows for author and title searching. Rather than going to the CrossRef Home page, it is easiest to use the free DOI guest search <http://www.crossref.org/guestquery/>, which goes directly to the search page.

An increasing number of publishers are now also adding DOIs to ebooks and ebook chapters. Perhaps the most exciting "new" use of the DOI is ebook chapter DOIs, which will make searching and citing much easier. Below is an example an ebook with a DOI in APA format:

Hendrick, J. (2010). Law and ethics in children's nursing [electronic resource]. Chichester, West Sussex; Ames, Iowa: Wiley-Blackwell. doi:10.1002/9781444320428

Note that the DOI contains the Online ISBN: 9781444320428. This book also offers chapter level DOIs.

Hendrick, J. (2010). Law and ethics in children's nursing [electronic resource]. In Law and ethics in children's nursing. Chichester, West Sussex; Ames, Iowa: Wiley-Blackwell.  
doi:10.1002/9781444320428

Looks nice, but the issues are the same as in the early days of article DOIs. While the publishers are including the DOI, not all catalogs or aggregators are adding the DOI and making them searchable. To prepare the above citation, the DOI was copied from information in the ebook and pasted into the RefWorks DOI field. This adds another step to reference checking and formatting. However, these issues will likely change as the new guidelines are accepted. and book DOIs become used more widely.

At this point in time, when almost every article is available in electronic format, the article DOI is appreciated and widely used. Now the "ball is rolling" to increase book DOIs. The visions of having the DOI as a "white knight" may be coming closer to reality. Look for a future filled with DOIs.

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