

13-8-2015

'Reference rot': A developing problem in Emergency Medicine Australasia.

Colm O'Connor

Royal College of Surgeons in Ireland, colmoconnor@rcsi.ie

Alan O'Connor

University of Adelaide

Citation

O'Connor C, O'Connor A. 'Reference rot': A developing problem in Emergency Medicine Australasia. *Emergency Medicine Australasia*. 2015. doi: 10.1111/1742-6723.12459.

This Other is brought to you for free and open access by the Library at e-publications@RCSI. It has been accepted for inclusion in Library Articles by an authorized administrator of e-publications@RCSI. For more information, please contact epubs@rcsi.ie.

— Use Licence —



This work is licensed under a [Creative Commons Attribution-Noncommercial-Share Alike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/).



"Reference Rot" – A Developing Problem in Emergency Medicine Australasia

Journal:	<i>Emergency Medicine Australasia</i>
Manuscript ID:	EMA-2015-094.R1
Manuscript Type:	Letter to the Editor
Date Submitted by the Author:	01-Jul-2015
Complete List of Authors:	O'Connor, Colm; RCSI, Mercer Library O'Connor, Alan; Women's and Children's Network, Executive Director Medical Services
Keywords:	References, URLs, Reference rot
Abstract:	<p>Objective To analyse the frequency of reference rot in the journal Emergency Medicine Australasia, and to analyse the breakdown of rotten references into link rot and content drift.</p> <p>Method All URL References in the journal Emergency Medicine Australia between 2010 and 2014 were listed. These were then manually checked for link rot and content drift. A URL which suffered from either link rot or content drift was classed as being affected by reference rot.</p> <p>Results A significant number of references suffered from reference rot. Link rot was a more common problem than content drift.</p> <p>Conclusion Reference rot is a developing problem for the Journal EMA and for academic scholarship more broadly. Reference Rot poses a real threat to the integrity of scholarly output and solutions are needed to address this.</p>

SCHOLARONE™
Manuscripts

1
2
3 Dear Editor,
4

5
6 The sourcing of the original references of scholarly articles is an integral part of academic
7
8 learning.
9

10
11
12
13
14
15 The increased use of online resourcing, and the referencing of same, has resulted in the
16
17 emerging phenomena of “reference rot “. This relates to the combination of two elements
18
19 which are commonly found when attempting to access web pages, which are:
20

- 21
22
23 1. Link rot – the article or webpage resource identified by the URL no longer exists or
24
25 has moved to another site, resulting in the ubiquitous “404 not found” error message.
26
27 2. Content drift – where the resource identified changes over time, and may evolve into
28
29 a resource that bears no resemblance to the content originally referenced.
30
31
32
33
34
35

36 We examined all issues of Emergency Medicine Australasia between 2010 and 2014 for
37
38 reference rot. A URL which suffered from either link rot or content drift was classed as being
39
40 affected by reference rot.
41
42
43
44

45
46 In total there were 30 issues and 5 supplements between 2010 and 2014 with a total of
47
48 10993 references. Of these, 1142 (10.38%) were URL references. Overall 389 URL references
49
50 (34.15%) suffered from reference rot.
51
52
53
54
55
56
57
58
59
60

1
2
3 Link rot was more prevalent than content drift. 13 URL references (0.19% of total references
4
5 1.14% of URL references) were affected by content drift. This compares to 376 URL
6
7 references (3.42% of total references, 32.9% of URL references) that were affected by link
8
9 rot.
10

11
12
13
14
15
16 In general reference rot increased as time went on. For articles written in 2014 15.34% of
17
18 URL references (1.96% of all references) were inaccessible due to reference rot. Reference
19
20 rot was almost twice as high for articles written in 2013, with 30.47% of URL references
21
22 being affected. The figures for articles written in 2012 and 2011 were 38.35% and 36.5%
23
24 respectively, while over half of URL references (57.98%) in 2010 articles can no longer be
25
26 accessed.
27
28
29

30
31
32
33
34 Our findings demonstrate that reference rot is a significant problem in the journal
35
36 Emergency Medicine Australasia. Over 34% of URL references in the five years studied are
37
38 affected by reference rot and are now inaccessible. This is in the midrange of previous
39
40 studies which found rates of reference rot ranging from 20% to 70%.¹
41
42
43
44
45
46
47

48 As academic scholarship relies on references to support the claims made by authors we feel
49
50 that reference rot poses a real threat to the integrity of scholarly output and solutions are
51
52 needed to address this.
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Yours sincerely

Colm O'Connor & Alan O'Connor

References

1. Klein M, Van de Sompel H, Sanderson R, Shankar H, Balakireva L, Zhou K, et al. Scholarly Context Not Found: One in Five Articles Suffers from Reference Rot. PloS one. 2014;9(12):e115253

Under review process