Morning Report Blog: A Web-Based Tool to Enhance Case-Based Learning

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Background: Morning report is an interactive case-based teaching session common to internal medicine training programs across North America. Description: We report here on a morning report web log (“blog”), created and updated after morning report sessions by the Chief Medical Resident with pertinent clinical topics, links to journal articles, and medical images. Trainees on their internal medicine rotation were e-mailed a web link with each posting. The aim was to enhance learning on clinical topics discussed at morning report by reinforcing topics and promoting further reading. Evaluation: The educational impact of the blog was evaluated using detailed web metrics and surveys of attendees. The intended audience spent on average more than 5 min reading the blog and viewed more than 3 pages per visit. Almost half of attendees accessed the blog after completing their internal medicine rotation. The blog was also accessed by a global audience. Trainees rated the blogs a useful learning tool and cited it to be among the top 3 educational resources accessed during their rotation. Conclusions: In summary, a morning report blog was perceived by learners to be an effective complement to case-based teaching sessions. The combination of novel web metrics and survey data allowed for a multifaceted evaluation of the educational impact of the blog.

BACKGROUND

Morning report is an interactive case-based teaching session with a long tradition in North American academic hospitals. Recently, there has been renewed interest in initiatives aimed at improving the educational value of morning report. Such innovations include the use of techniques to promote collaborative problem solving, e-mails to expand on content related to the session, simultaneous literature searches with the support of a medical librarian, and the application of a structured matrix to analyze cases. We report on a Web log (“blog”) as an educational complement to morning report sessions at two teaching hospitals. Blogs are Web-based resources with multiple uses in medicine. Blogs are repositories of information or commentary and are typically updated by their author on a regular basis, often involving an interactive component with the target audience. Blog entries are archived in chronologic order, so individuals viewing a particular Web page are able to review past and recent postings. This allows for asynchronous learning and is available to trainees unable to attend teaching sessions while also allowing those in the audience to reinforce their learning at a later time. The educational impact of these blogs was analyzed through surveys and web metrics—a novel mechanism for evaluating medical Web-based educational resources.

DESCRIPTION

A morning report blog was created using a free online tool (http://www.blogger.com). The Toronto Western Hospital blog (http://morningreporttwh.blogspot.com) and the Toronto General Hospital blog (http://morningreporttgh.blogspot.com) were created in September and December 2008, respectively, and updated by Chief Medical Residents on average three times per week with items relevant to recent morning reports, such as medical content, links to pertinent literature, or medical images. A confidential e-mail was sent to morning report attendees and included a brief description of the case along with a link to the blog. The blog entries did not contain any identifiable patient content.
Web metrics for the TGH and TWH morning report blogs stratified for Ontario and non-Ontario viewers

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<tr>
<td>Total Blog Visits</td>
<td>416</td>
<td>48</td>
<td>192</td>
<td>206</td>
</tr>
<tr>
<td>Total Pages Viewed</td>
<td>2,132</td>
<td>157</td>
<td>739</td>
<td>609</td>
</tr>
<tr>
<td>Average Time on Blog (Min)</td>
<td>7.2</td>
<td>3.27</td>
<td>3.85</td>
<td>3.9</td>
</tr>
<tr>
<td>Average Pages Viewed Per Visit</td>
<td>5.12</td>
<td>3.9</td>
<td>5.8</td>
<td>2.96</td>
</tr>
<tr>
<td>Accessed Blog Directly (%)</td>
<td>80.2</td>
<td>50</td>
<td>77.6</td>
<td>8</td>
</tr>
<tr>
<td>Accessed Blog Through Search Engine (%)</td>
<td>9.6</td>
<td>25</td>
<td>14.6</td>
<td>91.7</td>
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Note. TWH = Toronto Western Hospital; TGH = Toronto General Hospital.

Web traffic data were collected between March and June 2009 using a freely available Internet tool (http://www.google.com/analytics). Individual computers accessing the blog were used as surrogates for individual users. When a computer views a Web page, a “cookie” is stored so that two separate individuals accessing the blog from the same computer would be counted as one individual. Data were filtered to represent computers accessing the blog for between 30 s and 30 min, a metric designed to identify meaningful visits (30 s representing the minimum required to read a blog entry and 30 min likely representing computers left unattended). We further segregated the analysis to visits originating in Ontario in order to capture visits likely to be from our trainees.

An online survey was distributed to all medical students and residents attending morning report 6 months after the blog was introduced to assess blog usage and educational utility. Quantitative and qualitative data on frequency of use, perceived educational utility, and applicability of the information to clinical practice were collected. The survey was repeated after 12 months with a new group of trainees, and respondents were additionally asked to compare the blog to other online medical resources as well as the perceived quality of the information presented in blog posts.

EVALUATION

Web Metrics

Web metric data collected between March 4 to June 24, 2009, are presented. These data are filtered to represent computers that logged on to the blog for a minimum of 30 seconds and a maximum of 30 minutes to identify meaningful blog visits. We further segregated the analysis to visits originating in Ontario in order to capture visits likely to be from our trainees (see Table 1). Non-Ontario visitors came from 166 different cities on six continents including visits from university servers in Europe, Australia, Asia, and South America (Figure 1). Differences in the out-of-province visitors between the two blogs seemed to be related to the time of introduction of the blogs, as the Toronto General Hospital blog was introduced 4 months after the Toronto Western Hospital blog. The most commonly viewed pages were the most recently updated page (42%), followed by pages dedicated to quotes from a well-known local professor (14%), an entry on mumps (12.7%), and posts on dementia syndromes (4.9%). For Ontario viewers who accessed the blogs via a search engine, the most common search terms include “Toronto General Hospital morning report” (34.6%), “morning report Toronto Western Hospital” (7.7%), and “Toronto Western Hospital blog morning report” (7.7%).

Survey Results

Ninety-three of 160 (58%) individuals surveyed responded to the first survey. The majority (75%) of respondents attended morning report greater than 80% of the time. Eighty-nine percent of those who completed the survey viewed the blog at some point during their internal medicine rotation, with 47% accessing the blog after their rotation was complete. Seventy-one percent agreed or strongly agreed that the blog helped reinforce topics discussed in morning report, with 63% reporting that this expanded their knowledge of internal medicine. Of all trainees accessing the blog, 52.3% reported frequently seeing cases on the wards similar to those discussed on the blog, and

FIG. 1. Cities from where the Toronto Western Hospital Morning Report Blog was accessed, for periods between 30 seconds and 30 minutes, between March and June 2009.
CONCLUSIONS

Web-based tools are increasingly common in medical education and now extend into Web 2.0 modalities such as blogs and podcasts; however, few studies have assessed their educational impact. Evaluations of medical education blogs have previously used surveys and hit-counters. Hit counters simply record the number of times a Web page has been accessed, without regard for duration or origin of the visit. Our study is the first to our knowledge to investigate detailed Web metrics as a mechanism of determining the utilization of online medical teaching tools. In addition to hits, we gathered Web-based data such as geographic origin of visits, number of pages viewed per visit, quantity of time individual pages were viewed, hour of the day that the blog was accessed, and search terms used to access the blog. A drawback of hit counters is that they likely overestimate meaningful visits to the blog. For example, of 2,509 individual visits to the Toronto Western Hospital morning report blog during our study period, 2,094 lasted less than 30 seconds and were likely not of sufficient duration to read the Web page. Using detailed Web metrics, we were able to define characteristics to better identify visits from our trainees (based on geographic location) and better assess the timing, depth, and topics covered in their visits. This mechanism allows for evaluation of the impact of individual blog posts and monitoring of topics favored by trainees. Web metrics can therefore be used to continuously monitor and enhance Web-based teaching tools. Although this study utilized user-friendly and freely available resources, there are other commercial resources available that are able to provide even more sophisticated Web metrics.

Our blog tool was unique in that it was integrated into case-based morning report sessions and was designed to anchor learning on cases, actively involving learners in exploring evidence (through hyperlinks), potentiating some of the principles of experiential case-based learning outlined by Irby. Of the limited number of medical education blog studies published, not all have met with success. A blog created to teach clinical reasoning skills to medical students in a problem-based learning session was as effective as traditional problem-based learning sessions; however, post hoc surveys demonstrated that students were not as accepting of online learning as a teaching modality. Our survey data at 6 months and 1 year combined with Web metric data suggest that the morning report blog was accessed frequently and that it was perceived as a useful educational tool.

The self-reported instances of blog topics being used during day-to-day clinical activities by trainees could be viewed as evidence of transfer of acquired knowledge. This is corroborated by a significant number of trainees rating the blog as a frequently accessed resource and is not unexpected, as morning report sessions reflect recent cases from the ward, which illustrate common clinical issues. A limitation of our study is the low survey response during the initial and 12-month blog evaluation. This may bias our sample to those who continued to read blog postings and select for survey data that favors the blogs. In addition, it is difficult to quantitatively comment on knowledge acquisition with Web metric and survey data.

An unintentional outcome of our project was the heavy use of this blog by individuals outside Ontario who seem to have been directed primarily through search engines. Web metric data enabled us to see that the blog was being accessed from multiple global locations including university servers in Europe, Australia, Asia, and South America.

In summary, a morning report blog was successful in complementing formal morning report sessions and enhancing case-based learning in those who accessed it. This is a useful, easy, and freely available online educational intervention. The triangulation of survey data and Web metrics provided a richer understanding of how learners utilized freely available online resources.

### Table 2

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<tr>
<td>6 Months</td>
<td>89</td>
<td>47.3</td>
<td>71</td>
<td>63</td>
<td>52.3</td>
<td>41.2</td>
</tr>
<tr>
<td>1 Year</td>
<td>97.8</td>
<td>73.3</td>
<td>77.8</td>
<td>77.8</td>
<td>60</td>
<td>64.4</td>
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*Note. IM = internal medicine; ASA = agree or strongly agree; MR = morning report.*
REFERENCES