



*Evidence Summary*

**Topic-specific Infobuttons Reduce Search Time but their Clinical Impact is Unclear**

**A Review of:**

Del Fiol, Guilherme, Peter J. Haug, James J. Cimino, Scott P. Narus, Chuck Norlin, and Joyce A. Mitchell. "Effectiveness of Topic-specific Infobuttons: A Randomized Controlled Trial." Journal of the American Medical Information Association 15.6 (2008): 752-9.

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**Received:** 12 February 2009

**Accepted:** 25 March 2009

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**Objective** – To assess whether infobutton links that direct users to specific content topics (“topic links”) are more effective in answering clinical questions than links that direct users to general overview content (“nonspecific links”).

**Design** – Randomized control trial.

**Setting** – Intermountain Healthcare, an integrated system of 21 hospitals and over 120 outpatient clinics located in Utah and southeastern Idaho.

**Subjects** – Ninety clinicians and 3,729 infobutton sessions.

**Methods** – To ensure comparable group composition, subjects were paired and randomly allocated to the study groups. Clinicians in the

intervention group had access to topic links, while those in the control group had access to nonspecific links. All subjects at Intermountain Healthcare use a Web-based electronic medical record system (EMR) called HELP2 Clinical Desktop with integrated infobutton links. An Infobutton Manager application defines the content topics and resources; in this case, Micromedex® (Thomson Healthcare, Englewood, CO) provided access to the topic links. The medication order entry module, the most popular of the outpatient modules, was selected to test the two configurations of infobuttons. A focus group of seven HELP2 users aided the researchers in determining the most salient topics to be displayed as a part of the intervention group's user-interface. The study measured infobutton session duration, or time spent seeking information, the number of

infobutton sessions conducted, and the outcome and impact of the information seeking. A post-session questionnaire displayed randomly in 30% of sessions measured outcome and impact. The study was conducted between May and November, 2007. This project was funded in part by the National Library of Medicine.

**Main Results** – Subjects in the intervention group spent 17.4% less time seeking information than those in the control group (35.5 seconds vs. 43 seconds,  $p = 0.008$ ). The intervention group used infobuttons 20.5% more often (22 sessions vs. 17.5 sessions,  $p = 0.21$ ) than those in the control group, a difference that was not statistically significant. Twenty-five subjects answered the post-session survey at least once for a total of 115 (9.9%) responses out of 1,161 possible sessions. The information seeking success rate was equally high in both groups (87.2% intervention vs. 89.4% control,  $p = .099$ ). Subjects reported high positive clinical impact (i.e., decision enhancement or learning) in 62% of successful sessions. Subjects conveyed a moderate or high level of frustration in 80% of responses associated with unsuccessful sessions.

**Conclusion** – Topic links provide a slight advantage in the clinical decision-making process by reducing the amount of time spent searching. But while the session length difference between the control and intervention groups is statistically significant, it is less clear whether the difference is clinically meaningful. As previous studies have indicated, infobuttons are able to answer clinical medication questions with a high success rate. It is unclear whether topic links have a clinically significant impact, or rather, whether they are more effective than nonspecific links. The authors believe that the study results “should generalize to high-frequency, medication-related infobutton users in other institutions” (758).

### **Commentary**

Infobuttons are decision-support tools designed

to use the context of an EMR interaction to retrieve clinically relevant content and to provide links to information resources. Topic-specific infobutton links are intended to be more efficient than nonspecific links by more closely matching a clinician’s implied information need at the point of care. Given that topic links are more difficult to implement, it is critical to know whether they offer a clinical benefit.

The authors compare and contrast the study to previous work; they cautiously assert that the literature reinforces the study results in a few cases. They thoroughly account for the limitations of the study, and the conclusions accurately reflect the analysis. The inclusion of survey details and a careful description of the methodology allow other researchers in similar settings to replicate the project.

The authors describe in detail the study population, setting, and group composition. Because the study focused on a subpopulation of experienced, frequent infobutton users, as the authors point out, the user success rate may have been exaggerated and may not be applied to low-frequency users. Since the questionnaire measured the success rate and outcome based on self-assessment, it was prone to bias, and may not objectively gauge clinical outcomes. The authors suggest alternate strategies to overcome this limitation. Moreover, as the authors make clear, approximately one third of the subjects were not enrolled until halfway through the study and thus may not have had enough time to perceive much difference between the infobutton configurations. The authors received support with the statistical analysis, however one erratum creates confusion about the number of subjects who actually used infobuttons during the study period. The authors first state that 90 out of 104 subjects used infobuttons, and of those who did not, most subjects never accessed the medication order entry module. Later the authors say that 102 of 104 accessed infobuttons. Presumably the first statement is correct. It is a small error in an otherwise well-written report.

While topic links provide a slight advantage in the clinical decision-making process by reducing the amount of time spent searching, the absolute difference in session length between the control and intervention groups in the study may not be considered significant enough to warrant a change in practice. The analysis of unsuccessful sessions (12% of survey responses) – some of which were due to code mapping problems, incomplete indexing or lack of content – underscores the need for continuous monitoring as a knowledge management practice. As the authors suggest, future studies are needed to evaluate the effectiveness of infobuttons in other EMR contexts, such as laboratory results modules, for example. Since the specific characteristics of an information resource such as Micromedex® influence effectiveness, it would be useful to explore “methods that are

able to more accurately predict the information needs that arise in a given context as well as the resources that are most likely to fulfill these needs” (758).

Like all technology trends, infobuttons provide both an opportunity and a challenge. They have the potential to improve efficiency, enhance clinical resources, and positively affect patient care. Since 1997, several of the authors of the current study have made major contributions to the literature on infobuttons (although it is worth mentioning that, to date, there is no medical subject heading for ‘infobuttons’ in MEDLINE). This study contributes to our knowledge of decision-support tools and helps decision makers weigh the benefits and shortcomings of the current state of infobuttons.