ABSTRACT

FluView interactive: using user-centered design and usability heuristics to improve visualization of influenza information

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Objective

The objective of this study is to report on the use of User-Centered Design and Usability Heuristics[1] to improve visualization of influenza-related information at the national level. The intention of the prototype is to make data more accessible to different stakeholders including the general public, public health officials at the local and state level, and other experts.

Introduction

Given the periodic nature of influenza activity, it is important to develop visualization tools that enable enhanced decision-making. User-Centered Design is a set of software development methodologies that primarily employ user needs to develop applications.[1] Similarly, Usability Heuristics provide a set of rules that increase the performance of user interfaces, and ease of use.[1] We combined some of these techniques to develop FluView Interactive, a prototype that will enable users to better understand influenza information.

Methods

Our goal was to improve the visualization of nationally reported data about influenza. In particular, we intended to enhance the accessibility of information presented in FluView.[2] FluView is one of the websites maintained by CDC, and it presents information collected by different reporting entities across the United States. First, we identified the need to present data interactively, given the particular needs of different stakeholders. Given the information already available, we conducted interviews with the staff members supporting influenza-like illness surveillance network. From these interviews, we elaborated a Paper prototype for testing (Figures 1 and 2). This prototype was tested with a user who had experience working at local public health department. The development team analyzed the subject feedback, and made modifications to the prototype that addressed the user needs. After these changes, one of the developers evaluated the application using Nielsen's Heuristics,[3] and suggested further modifications that improve usability.

Results

During paper testing, the user was able to identify the level of influenza activity. However, certain quality measures were not clear. In addition, comparing information between seasons was not easily achieved. After modifications, we conducted another evaluation using Usability Heuristics. This led to the inclusion of seasonal information for enabling immediate assessment and evaluation of trends. We included buttons to allow seasonal comparison.

Conclusions

Our prototype experienced various changes, given the different methodologies used. These methodologies allowed us to rapidly create an application while improving information access and reducing development costs.

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Disclaimer
The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.

Figure 1 Paper prototype.

Figure 2 Electronic prototype.

References

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2 FluView [Internet]. Centers for Disease Control and Prevention: Atlanta (GA). [cited 2010 August [19]. Available from: http://www.cdc.gov/flu/weekly/.

3 Nielsen J. *Usability Engineering*, 1st edn. Academic Press: San Diego, 1993.