

# Overcoming the Barriers of WEB-Based Interventions for Elder Patients: Enabling Strategies for the MI HEART Clinical Trial

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*The use of Information Technology (IT) by patients in order to improve their health is accelerating, notably on the Web. While a majority of elders are inexperienced with using IT, the preponderance of health resources allocated to them militates in favor of adapting software to their health needs. Other factors can potentially hinder the use of software by aged patients, in particular the concomitant loss of cognitive or sensory-motor skills due to their diseases. Since the number of publications dealing with accessibility and disabilities in the context of IT users is meager, it is not surprising that, to our knowledge, no paper deals with these factors in combination with IT-inexperience and old age. The proposed methodology, based on an extensive analysis of relevant literature, provides a functional and integrated approach to a mosaic of accessibility and usability solutions in conjunction with the frequent barriers to the use of IT experienced by diseased elders. The characteristics of the aged patients targeted by the MI HEART Clinical Trial provided a canvas to illustrate the solutions.*

## BARRIERS TO THE USE OF INFORMATION TECHNOLOGY BY OLDER PATIENTS

Table 1 shows the factors that can potentially hinder the use of software by aging patients.

### ENABLING STRATEGIES

Three sets of guidelines provide a pragmatic approach to hardware and software accessibility problems based on sound theoretical rationales.

1. The *W3C-WAI Accessibility Guidelines: Page Authoring* provide ways to transform webpages gracefully across bodily functions, users, techniques and situations.
2. The *Telecommunication Access Advisory Committee (TAAC)* provides guidelines to increase accessibility to software design and telecommunications equipment. The TAAC guidelines are the most valuable and comprehensive for substituting another bodily function for the impaired one.
3. The *Resource Guide for Accessible Design of Consumer Electronics from the Telecommunication Industry Association (TIA)* provides criteria for “forgiving” design and evaluation of the accessibility of electronic equipment.

Table 1

Potential barriers to the use of IT associated with Aging and Morbidity
<b>Human Factors</b> <ul style="list-style-type: none"> <li>• Functional impairment due to Age and/or Comorbidity (visual, hand motor function and dexterity, cognitive and perceptual abilities...)</li> <li>• Inexperience at using computers or novice software user (e.g. Web browsers)</li> <li>• Attitudes towards computers</li> </ul>
<b>Hardware and Operation related Factors</b> <ul style="list-style-type: none"> <li>• Access to a computer or the web</li> <li>• Authentication usability, accessibility and adaptability to functional impairment</li> <li>• Input/output devices usability, accessibility and adaptability to functional impairment</li> </ul>

### Other Strategies for Increased Usability

A well-known integrated design destined for inexperienced users is the “walk-up-and-use-kiosk” found in shopping centers.

### DISCUSSION

The MI HEART Intervention is designed to provide a tailored and personalized interactive education to patients. In order to reach a larger audience, it is designed to be used on the web. Some web-kiosk will also be available in the vicinity of the treating physician’s office for inexperienced or impaired users. Since the software development already provides the basis for a personalized intervention, the patient-computer interaction will also be individualized, adaptive to the patient and adaptable by the patient. For example, font and button sizes will be user-adaptable. The most simple interaction will be a web-slide-show presented with a simplified web browser without the use of the keyboard, the second level of interaction will allow for use of the keyboard and the most versatile level will allow for the use of a variety of web functionality such as hyperlinks, scrolling and frames. The use of a variation of accessible navigation devices will be made available at the kiosks. Therefore, the intervention and interaction will jointly be individualized.

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