Development and usability testing of ANSWER: A web-based methotrexate decision aid for patients with rheumatoid arthritis

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The issue

• In patients with RA, DMARD should be used early to prevent joint damage, but some patients would delay/decline treatment.
• The feeling of uncertainty:
  ➢ How likely will I get bad outcome from RA if I don’t take the medication?
  ➢ How likely will I get the side effects if I take the medication?

ANSWER: A methotrexate decision aid

• Help patients to choose between 2 options:
  • Start Methotrexate now
  • Refuse Methotrexate and talk to my doctor about other medical treatment options
• Features 6 patient stories
• Interactive questionnaire
• 1-page report for physician

If we build it, can they use it?

• A major barrier to using digital media tools is poor user-tool interface.
• User-centred design – focus on how users want to use the tool, instead of forcing users to change their behaviours to accommodate the tool.
• Usability test – to assess user-friendliness of a tool during the development.
• Little is known what users pay attention to when they test the tool.

Objectives

• To assess the usability of the ANSWER prototype
• To identify important components of usability testing from the patient’s perspective
  ➢ What patients attended to during the usability testing

Conflict of interest disclosure

• None

ANSWER. You decide.
Methods
- August – October, 2010 - Participants recruited from Vancouver, Canada
- Eligibility criteria:
  - Had physician-diagnosed RA
  - Was using or had been prescribed MTX
- Each participant completed the following:
  - Concurrent think-aloud session
  - System Usability Scale
  - Rapid cycle iterative testing

System Usability Scale (Brooke, 1996)
- 10 items scored on a 5-point scale: ‘Strongly Disagree’ to ‘Strongly Agree’.
- Questions focus on user-friendliness, content integration, the support needed to use the tool.
- Mapping scores to descriptions (Bangor 2000):
  - 100 = Best imaginable
  - 87.5 - <100 = Excellent
  - 75.0 - <87.5 = Good
  - 55.0 - <75.0 = OK
  - <55.0 = Poor

Analysis
- Content analysis of transcripts and field notes from the concurrent think-aloud session
- Constant comparisons to identify commonalities and range of opinions
- Descriptive analysis for the System Usability Scale

Results

<table>
<thead>
<tr>
<th></th>
<th>N = 15</th>
</tr>
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<tbody>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>20-34</td>
<td>2 (13.3%)</td>
</tr>
<tr>
<td>35-49</td>
<td>5 (33.3%)</td>
</tr>
<tr>
<td>50-64</td>
<td>7 (46.7%)</td>
</tr>
<tr>
<td>65 or older</td>
<td>1 (6.7%)</td>
</tr>
<tr>
<td>Women</td>
<td>13 (86.7%)</td>
</tr>
<tr>
<td>Disease duration</td>
<td>5.0 years (IRQ=0.83-10)</td>
</tr>
<tr>
<td>University / college graduates</td>
<td>8 (53.4%)</td>
</tr>
<tr>
<td># of hours on Internet per day</td>
<td>2.1 hours (SD=1.76)</td>
</tr>
<tr>
<td>Time to complete</td>
<td>56.1 minutes (SD=34.8)</td>
</tr>
<tr>
<td>System Usability Scale</td>
<td>81.2 (SD=13.5)</td>
</tr>
</tbody>
</table>

What patients focused on during usability test: 3 main themes

- User engagement (relevance)
- Relevance of the content and how it was presented in the tool
- Trust worthiness of information
- Clarity and credibility of information (how & by whom)
- User-tool interaction
- Ease of use & consistency of the design compared to the existing web-based tools

User engagement (relevance)
(On video #3: side effects)

“That’s a marriage headed for disaster, [laughs] Poor communication. Oh wait, we’re talking about methotrexate... That’s funny, that was the best one, that was... full of information about the actual medication itself. And the previous two (videos) I kind of – like that would have been very helpful when I was first diagnosed...”

(Emma, age group 50-64)
Trust worthiness of information

“...I like the voice of the narrator. It’s very clear...it just almost like he is very informed like he’s not just a narrator like he actually knows what he is saying...He is not trying to sell you anything yet he is just trying to make you understand what the steps are, what is coming up, what you are supposed to be doing so I like that part. It’s clear.”

(Jamie, age group 35-49)

User-tool interaction

(Navigating the homepage)

“...Well I’d be curious, so what I would do is I would probably click on, my first inclination is to click this because you know you’ve been programmed by YouTube to do that. Then I saw the narration button later and that’s why I was like, oh, okay, now what do I do? “

(Bob, age group 35-49)

Limitation & strength

• Men’s perspectives were under represented.
• Concurrently think-aloud methods might be associated with mental overload, resulting in decreased reactivity. \cite{vandenHaag2003}
• Participants might have behaved differently under direct observation.
• Strength – the rapid iterative testing approach allows the team to identify and respond to users’ comments and concerns quickly.

Conclusion & next step

• Although the SUS score has indicated ‘good’ usability for the ANSWER, the think-aloud sessions identified additional areas that were important to users.
• This information allowed us to make further refinement to the tool.
• Data collection is underway in 3 provinces in Canada to test the effect of ANSWER on patients’ decision quality and knowledge about methotrexate.

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Thank you!