What Medical Market Researchers Should Know about Usability Testing

Kay Corry Aubrey
Usability Resources Inc
Background
Agenda
What you will learn

This presentation will be an “appetizer” on usability testing (about 50 minutes) within the Healthcare and Pharmaceutical industries.

You will learn
1. What usability testing is
2. Why you need it
3. How to do it

Focus will be on live usability testing with medical professionals

A detailed article and other materials are on the Virtual Learning Center and my Web site (www.UsabilityResources.net/PMRG)
What is a usability study?

• Qualitative Research where typical users try to do typical tasks with a product

• Point is to see whether the product “speaks” to them, meets their expectations, and fits into their typical work flow

• Moderator interacts with the participant

• Observers watch participant working and keep score of task success & failure, comments, body language

• Within medical realm focus is often on product safety
What can be usability tested?

- Medical Web sites, software applications
- Physical products touched by patients, their caregivers and clinicians: (e.g., glucose monitors, Electronic Health Records, home dialysis units)
- Pharmaceutical packaging, warning labels
- MRI machines, surgical instruments
- Device training, documentation, quick-start guides, FAQs

You can run a usability test on any product or service where there is user interaction
Why run a usability test?

- Ensure interaction with a product is as fluid & intuitive as possible
- Avoid embarrassment – expose usability problems
- Test design concepts
- See how your product stacks up against the competition
- To sell more, improve your product’s reputation, decrease need for technical support
- To save money and time
Why run a usability test in Healthcare?

- Prevent injury through misuse
- Get FDA approval for a medical device
- Test changes in packaging or instructions
- Expose and fix design flaws before a product goes out for clinical trials
- Acquire early understanding of the factors that influence product adoption
- Understand how lighting, noise, & distractions affect use
- Ability to promote ease-of-use as a differentiator
Required to gain approval

- FDA - Quality System Regulation 21 CFR 820 device manufacturer must demonstrate that key users can safely and effectively operate, install, and maintain devices under simulated or real-world conditions.

- ISO: 62366 Usability Engineering process defines requirements for how the usability validation process should be carried out.


Consult presentation materials for more resources.
Differences between usability testing and market research

- **SIMILAR**
  Listen to participant, note their body language, learn about their world, needs, attitudes, and perceptions. Client team can observe

- **DIFFERENT**
  Watch person’s behavior – how they use the product and keep track of their success and failure

**Biggest benefit** = help team agree on how the product should be designed
How to run a usability study
Phases parallel market research

1. Plan the study
2. Moderate the study
3. Analyze results
4. Create the report

A typical soup-to-nuts usability study takes about 70 hours
Plan the study
Take a long-range view

Plan for a series of usability studies vs. just one

- Create a time line
- Schedule a study at critical points in product development

You need a roadmap
Each usability study follows same steps

1. Define objectives
2. Recruit participants who match users
3. Create task list*
4. Gather prototypes & other stimuli
5. Manage logistics

*Unique to usability testing
Test one part of product, not entire design

Aspects of an interactive product design that affect usability

- Are the features, functions, and content appropriate?
- Does the organization and navigation align with the user’s task and work flow, their “mental model”
- Do users understand labeling & terminology?
- Do they know where to start, what to do next, and the range of available choices?
Study focus shifts as product design evolves

• **Formative** Chief concern: is this the right product?
• **Summative** Test usability of a fleshed-out design
• **Validation** (required by FDA for medical devices) – Demonstrate device is usable for specific types of users performing specific and critical tasks in a real-world context and that any usability issues that surfaced in previous studies have been fixed
## Don’t over-engineer stimuli

<table>
<thead>
<tr>
<th>Project Stage</th>
<th>Stimuli</th>
<th>Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formative</td>
<td>Paper or 3D prototype</td>
<td>Gather feedback on overall product concept, catch major design flaws</td>
</tr>
<tr>
<td></td>
<td></td>
<td>test high level aspects of the design such as terminology or navigation</td>
</tr>
<tr>
<td>Summative or Validation</td>
<td>Electronic or physical prototype</td>
<td>Task flow, visual design, page layout, specific features, validate redesign</td>
</tr>
<tr>
<td>Summative or Validation</td>
<td>Functioning product</td>
<td>Defaults, online help, feature integration, performance</td>
</tr>
</tbody>
</table>
Save money on venue

• **Focus group facility** makes sense when you have a lot of observers.

• **Live online** low-cost way to test online products. Can invite many observers and record sessions.

• **Simulated environment** approaches “real life” use.

• **Actual clinical environment** great choice if necessary and you can arrange it – prone to logistical headaches.
But aim to make testing environment as realistic as possible
Participant recruiting – things to keep in mind

• Usability studies involve smaller numbers than Market Research studies (e.g., 8-12 participants for a formative study, 15-25 for summative or validation)

• Choose confident and articulate participants who care about the product category and who have the right “foundational” skills

• Aim to recruit people with varying levels of experience

• Make sure participants understand what it means to be in usability study
Two caveats when recruiting for a healthcare usability study

1. Often need IRB (Institutional Review Board) approval. IRB typically asks to see screeners, artifacts related to recruiting

2. Must report to client any adverse effects participants describe related to using a drug or device

Review UPXA, QRCA, CASRO code of conduct guidelines
Creating the task list

**EXAMPLE TASK LIST**

“You just learned from a colleague about a new online resource called “ACME” for early stage bioassay research. You decide to give it a try!”

**Task 1** – Navigate to [https://acme.org](https://acme.org). Take a moment to check out ACME’s home page. Please narrate your thoughts out loud.

**Task 2** – You want to learn more about the antibiotic Cefoxitin

View the details for the first instance of Cefoxitin

**Task 3** – Next do a search to find all assays that are related to Cancer.

**Task 4** – Search for compounds similar to Cefoxitin
Healthcare usability studies are rigorous

When seeking FDA approval

• Show how task list addresses frequently-performed functions
• Replicate environment and target end users
• Provide performance benchmarks, qualitative and quantitative data to be gathered
• Demonstrate study design addresses safety concerns as well as usability issues uncovered in previous studies

Keep meticulous records of results from each study
Forget a planning step and you are dead

And there is lots of planning to do
Final planning advice – run a pilot study

Technology can be your weakest link

Run pilot sessions to test all the technology you’ll be using, individually and in unison

If the technology fails your session fails, even with careful planning and skilled moderation
Moderate the study
Tips for moderating a usability test

1. Establish rapport
2. Tell participant what they need to do – ask them to narrate their thoughts
3. Remain quiet

During a usability study you are watching people’s behavior and emotional reaction while listening closely to what they say.
What data do you collect?

- Task success and failure
- When they struggle and why
- Emotional reactions
- Comments on how product fits into their world
- Verbatim remarks and video clips that encapsulate key themes
- Time on task (depending on study objectives)
Use video to see product and participant

• “Picture in picture” video can be streamed over the Internet or broadcast directly to the backroom
• Video is also recorded

Picture-in-picture video
Record results in a “score sheet”

<table>
<thead>
<tr>
<th>TASK</th>
<th>Comment</th>
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</thead>
<tbody>
<tr>
<td>TASK 1</td>
<td>You are not sure how to find the specific link to the AT&amp;T Connect free trial site, so you start at the AT&amp;T site which is designed for small and medium-sized businesses.</td>
</tr>
<tr>
<td>TASK 2</td>
<td>Spend some time checking out the AT&amp;T Connect free trial site. Do what you would normally do when considering a free software trial.</td>
</tr>
<tr>
<td>TASK 3</td>
<td>Obtain a free trial for the AT&amp;T Connect product.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TASK 1</th>
<th>Completed with some issue or difficulty</th>
<th>Did not complete task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vanessa</td>
<td>no problem.</td>
<td>no problem.</td>
</tr>
<tr>
<td>Jeff</td>
<td>no problem.</td>
<td>no problem.</td>
</tr>
<tr>
<td>David</td>
<td>no problem.</td>
<td>no problem.</td>
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<tr>
<th>TASK 2</th>
<th>Comment</th>
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<tbody>
<tr>
<td></td>
<td>This is a lot of information to take in at once. I wish there was a product tour. She finds the link to the tour (task 7) and goes there.</td>
</tr>
<tr>
<td></td>
<td>No, problem.</td>
</tr>
<tr>
<td></td>
<td>Product overview contains a lot of data in plain English. It is written in clear and concise language.</td>
</tr>
<tr>
<td></td>
<td>He reads the product information carefully.</td>
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<th>TASK 3</th>
<th>Comment</th>
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<tr>
<td></td>
<td>The mechanics of filling out the form are easy. As she fills out the Registration form, however, she is very worried about whether AT&amp;T will be automatically debiting her card, or whether her information will be released to a third party.</td>
</tr>
<tr>
<td></td>
<td>She wants privacy rules that she can print out.</td>
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<tr>
<td></td>
<td>The last thing I want to do is sign on to something that I can’t get out of. She wants to print out all information that implies legal contract, but there is no way to do this. She stays away from free trials.</td>
</tr>
<tr>
<td></td>
<td>Does not want to give out his e-mail address.</td>
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<tr>
<th>TASK 4</th>
<th>Comment</th>
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<tbody>
<tr>
<td></td>
<td>Similar worries about giving personal information.</td>
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PMRG

share your thoughts #PMRGANC13

Evolve and Thrive

The New World of the Healthcare Marketing Researcher
Analyze the results
Analyze study results

• Tally task success/failure by participant and task
• Identify trends – What was easy? What was hard? How did the product design play into these results?
• Find verbatim comments and video clips that encapsulate key findings
• Debrief continuously
Keep your team on the same page

Affinity diagram is a magical way to build consensus
Create the report
### 3.5. Registration process

<table>
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<tr>
<th>Issue</th>
<th>Possible Solutions</th>
<th>Priority</th>
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| Participants had minor complaints about the registration form and confirmation screens:  
  - Thought the form was geared more towards an individual than a business  
  - Wanted guidance on how to create a password  
  - Felt “Secret Question” fields should be required |  
  - Place the “Company” fields into a separate section. Place under the “Name” section  
  - Display a template for the “legal” password format alongside the password field  
  - Credit Card information and secret question fields should be required | 3        |
| None of the participants were able to print their receipt.  
  - Several missed the “Print” button on Registration confirmation screen  
  - Want to have account info emailed to them |  
  - Use “Print registration info” label on button to draw attention to it  
  - Plan e-mail account info for a future release as many said they prefer to store this type of information electronically | 2        |
Two quick surveys I use all the time

**Product Reaction Cards**
- Participants quickly select 5 attributes from among 118 choices
- The attributes are balanced between positive and negative

**System Usability Scale**
- Participants answer 10 questions on key aspects of usability
- Survey produces a score between 0 and 100; a score <60 is considered poor
Humanize the information

Product Reaction Card results show emotion
System Usability Scale (SUS) scores describe usability

XYZ’s’ SUS scores from all 10 participants were between 75 and 100
Layer the information to meet everyone’s needs

**Executives** want an encapsulation of “the problems” and to learn how product was received

**Product managers and marketing** people seek insights on segmentation, product identity, competitive information, participant reaction to feature sets

**Product designers** want detailed usability feedback to guide refinements and to learn how design fits into the user’s work and task flow

**Engineering** needs to understand the usability bugs so they can prioritize them and fix them (**usually they make final decisions**) 

**Training and documentation** people want to know which content to include in their work
Acknowledgements

To prepare for this presentation, I would like to thank the following Market Researchers who shared their insights into what Market Researchers should know about usability testing

- Eddie Accomando
- Rosalie Gill
- Anne Camille Talley
- Betty Wallace
The End

Thank You!!
About your presenter

Kay Corry Aubrey - User Experience Research and Design

Kay Corry Aubrey is the owner of Usability Resources, and specializes in working with organizations who seek to incorporate usability into their approach to product development. She provides qualitative and usability consulting, team mentorship, and training in user-centered design techniques. Kay has over 20 years of experience in applying qualitative research methods, usability testing, and user interface design to improve the usability of products. She has led user research, usability, and design efforts for dozens clients including AT&T, the Broad Institute, Affinnova, Constant Contact, Monster Worldwide, the Massachusetts Medical Society, the Mayo Clinic, and iRobot.

Kay teaches usability and design for Healthcare within the Healthcare Informatics program at Northeastern University. She is a Managing Editor of the QRCA VIEWS magazine, a market research journal. Kay has an MSW from Boston University’s School of Social Work, an MS in information systems from Northeastern University’s Graduate School of Engineering, and a BA from McGill University. She is a RIVA-certified Master Moderator who enjoys doing research with both groups and individuals.

Contact information
Kay@UsabilityResources.net - 781-275-3020 - www.UsabilityResources.net
For a bibliography and a more detailed article on how to plan, conduct, analyze, and report on a usability study please send an e-mail to: Kay@UsabilityResources.net or visit http://www.usabilityresources.net/PMRG.html

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