CLINICAL DECISION SUPPORT TOOL AIDS IN MEDICAL SHARED DECISION MAKING FOR CHRONIC RHINOSINUSITIS ENDOSCOPIC SINUS SURGERY

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Background

- Chronic Rhinosinusitis (CRS) is an inflammatory condition of the paranasal sinuses lasting >12 weeks despite treatment
- If antibiotics fail in treatment, endoscopic sinus surgery is recommended.
- Shared decision making between patients and providers is necessary
- A clinical decision support tool (CDS) could assist shared decision making around CRS surgery
- This project prototypes a web-based CDS tool to aid patients considering surgery for CRS
- The user interface (UI) of the tool incorporated stakeholder preferences and user-centered design principles

Methods

- An interdisciplinary team spanning otolaryngology, clinical informatics, and computer science collaborated to develop the tool
- A web based clinical decision support tool was created using R- Shiny apps
- The tool uses a mock random-forest based machine learning algorithm with SNOT-22 score as the outcome metric
- The algorithm used data from a multi-system NIH/NIDCD study of sinus therapy outcomes with SNOT-22 as the outcome metric
- Surveying of the tool's utility was conducted using the System Usability Scale, Likert based survey questions used in previous clinical decision support tool creations, and free-text input for additional comments
- The survey included mock scenarios to guide participants through the tool
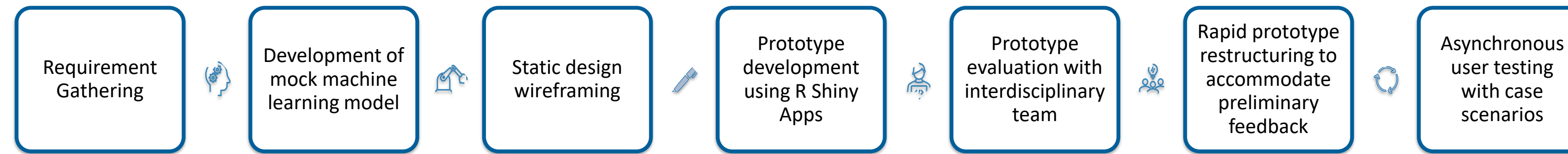
Results

Figure 1. Iterative design process for CRSCDS tool development. Wireframing = design principle where sketches were drawn to determine what tool elements were needed
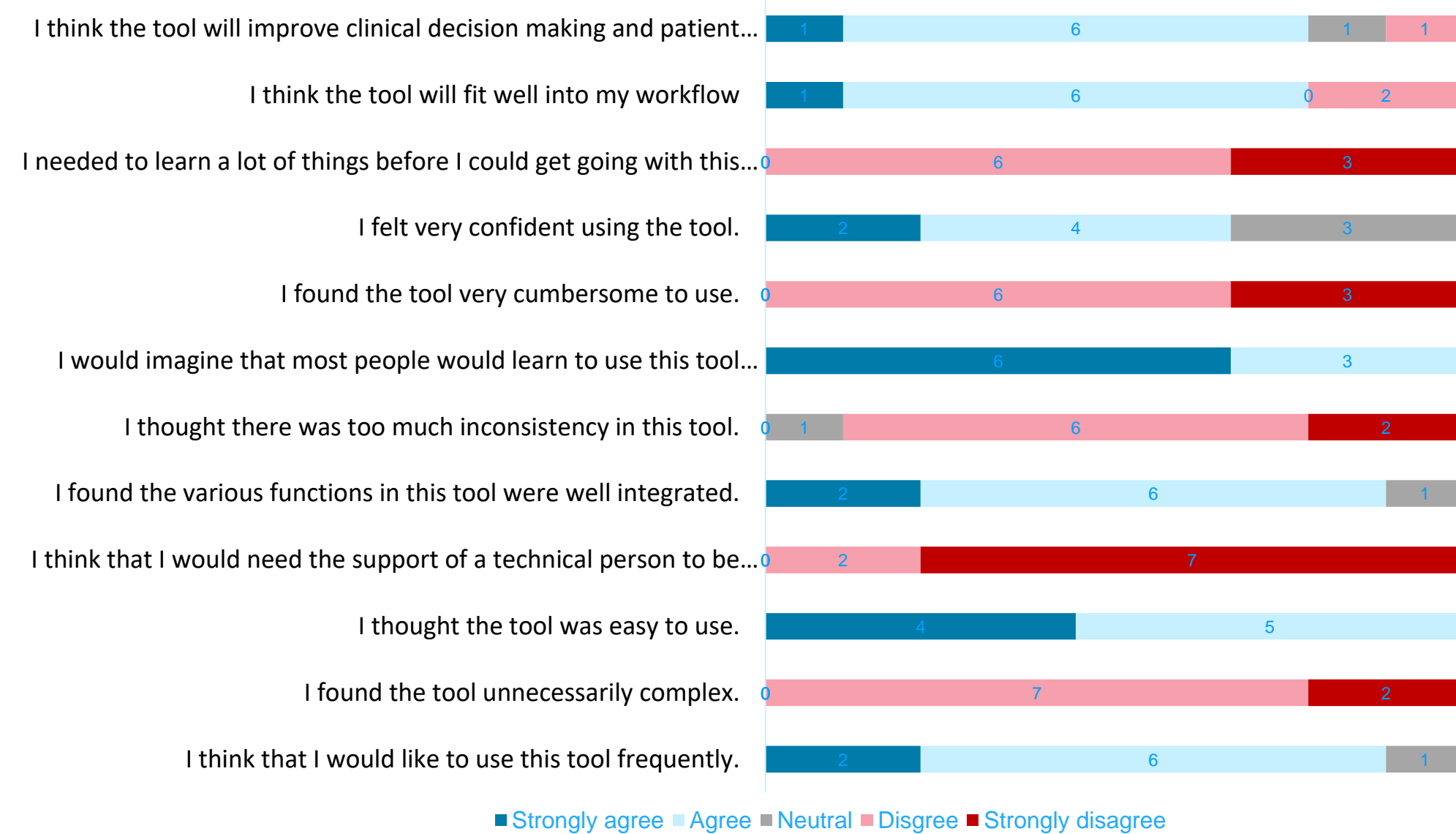

Figure 2. Likert scale responses to survey. The average time taken to complete the survey was 5 minutes.
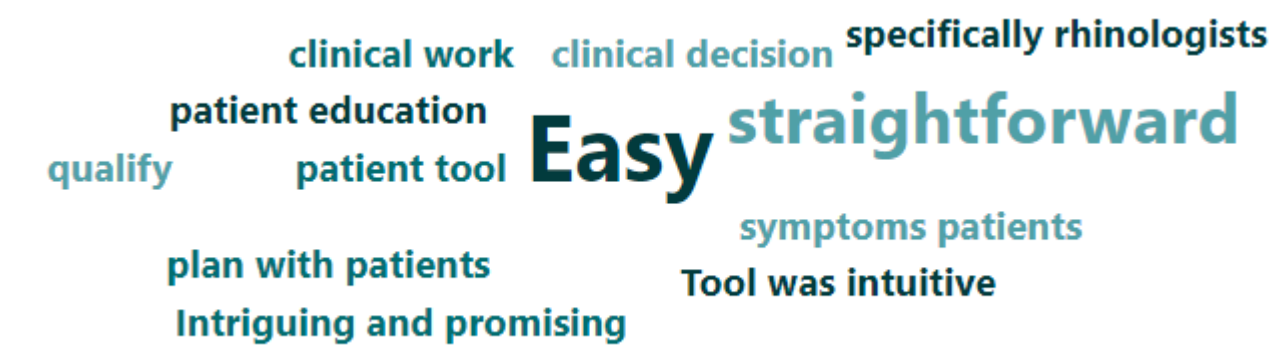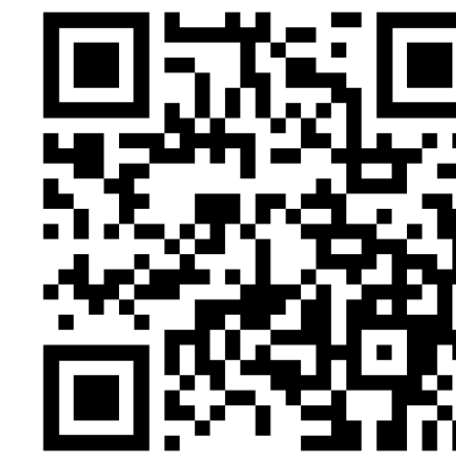

Figure 3. Word cloud from survey short text responses which asked open ended questions
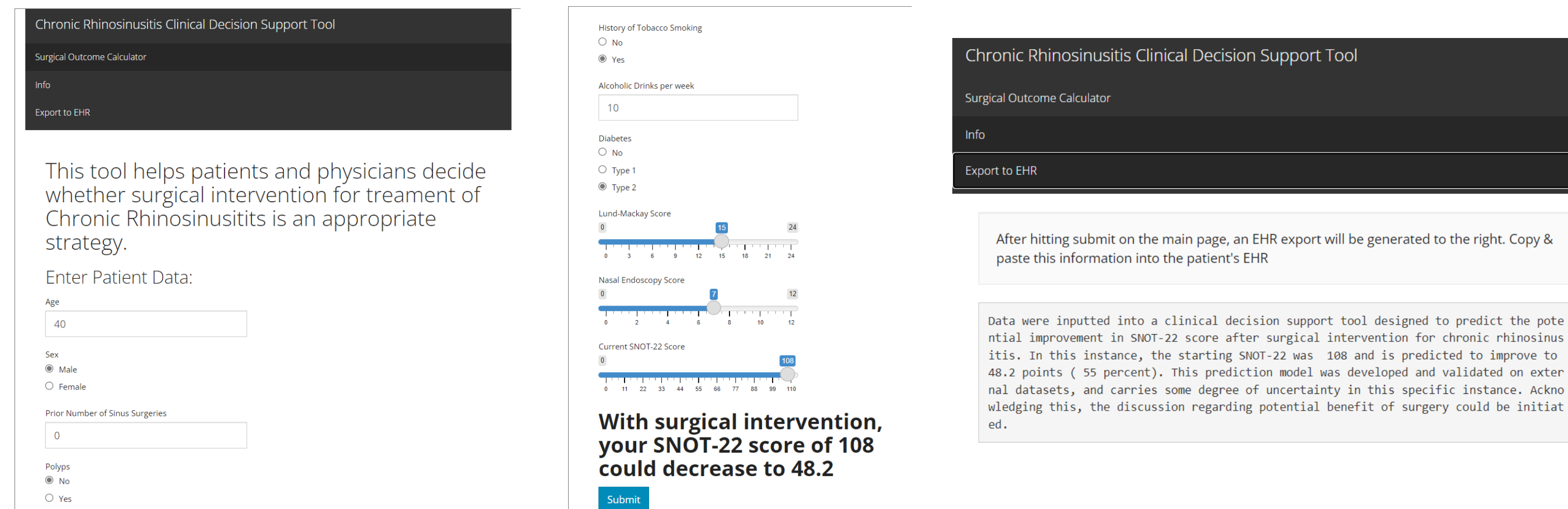

Scan to visit the tool

Figure 4. Several screenshots of the tool (Left) Prepopulated tool before user input. (Center) Tool with variables input after clicking submit (Right) Text box for users to copy and paste into preferred health record platform

Discussion & Conclusion

- Rhinologists who perform endoscopic sinus surgeries were surveyed to gauge efficacy of the tool.
- Preliminary findings suggest that most participants found the tool easy to use and would not need technical support to use the tool.
- Survey data indicated that nearly all participants agreed that they would use the tool frequently
- Most agreed that the tool would improve clinical decision making and patient care.
- The tool is mobile friendly, however participants were not asked to visit the mobile website
- The tool is a proof of concept and does not include a clinically validated model

Implications & Future Directions

- Suggestions were made to improve the tool such as measurement specifics, including MCID, and including other diseases into the tool
- The tool is capable of quick adjustments; therefore, we aim to integrate a validated algorithm in the future
- We plan to have a wider scope of providers complete the survey beyond rhinologists to see the general utility of a similar platform
- Electronic health record integrated clinical decision support tools can have increased efficacy and utilization, which we will pursue in the future.

Disclosures

References