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 (CDST) could assist shared decision making around CRS surgery. This project prototypes a web-based CDST tool to aid patients considering surgery for CRS. The user interface (UI) of the tool incorporated stakeholder preferences and user-centered design principles.

**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 (CDST) could assist shared decision making around CRS surgery.

**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**
- The tool is a proof of concept and does not include all tool elements needed.
- The tool is capable of quick adjustments.
- The algorithm used data from a multi-system NIH/NIDCD study of sinus therapy outcomes with SNOT-22 score as the outcome metric.
- Patients 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.

**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.

**References**

**Disclosures**