Oral Presentation 1 - Offline AI Model for Clinical Decision Support in Head and Neck Oncology

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Background:
AI tools are increasingly used in clinical settings. However, concerns about data privacy persist. This study explores a locally deployed AI model offering secure, offline decision support using NCCN guidelines.

Methods/Research Design:
Using the Llama3-ChatQA model on local hardware, NCCN guidelines were converted into vectors using the Universal Sentence Encoder. These were matched with processed user queries for response generation. Clinical scenarios were tested to verify AI performance.

Results:
The model returned guideline-consistent, accurate responses. Clinical cases included diagnostic workflows for HPV+ oropharyngeal SCC, staging protocols for nasopharyngeal carcinoma, and treatment plans for Stage III laryngeal cancer and metastatic HNSCC. Trismus and immunotherapy management were also accurately supported.

Conclusion:
A locally deployed AI can deliver accurate, guideline-based support without internet access, addressing privacy concerns and offering a viable tool for clinical decision support in head and neck oncology.