DEVELOPMENT AND EVALUATION OF A CLINICAL INFORMATION SYSTEM SUPPORTING ONCOLOGICAL TUMOR THERAPY
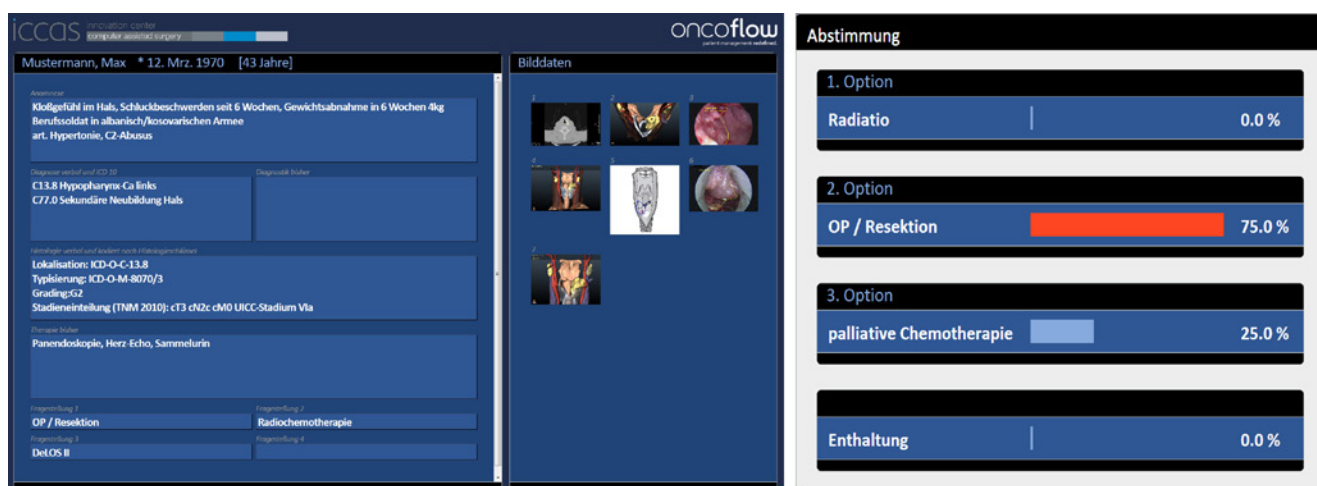

Fig. 1 – left: Compact overview of current patient with endoscopic images, right: voting result screen

Abstract:

The oncoflow information system supports physicians and surgeons in head and neck tumor therapy. Therapy–related information is automatically imported from various information sources, integrated within a structured information model, and used to improve the treatment process as well as the decision–making process on the tumor board.

Therapy planning for tumor patients is a lengthy, challenging process due to the complexity of disease patterns, multiple treatment options and the involvement of different medical disciplines. Numerous assistance and decision support systems are used in daily clinical routine to relieve physicians and surgeons from recurring and time-consuming tasks as well as to provide support for complex therapy planning scenarios (see Figure 3). However, these systems do not integrate well into the clinical workflow and are poorly integrated into the clinical IT landscape, while their possibilities for sharing patient–specific information with each other are limited. The clinical information system oncoflow is intended to support the physician and clinical staff throughout the entire treatment process. All necessary patient–related information is automatically imported into a centralized database via communication interfaces with relevant clinical information systems such as the Hospital Information System (HIS) and the Tumor Therapy Manager (TTM). Each information entity is stored in a structured way for further electronic processing, work-

flow assistance in daily clinical routine and usage in clinical trial studies, or for quality management purposes. The information is conveniently accessible for the clinical staff within a structured web interface. Based on the previously acquired patient-specific information, oncoflow supports the physician with various workflow support functions. An overview of the current medical status of a patient is crucial, especially for physicians who are not familiar with the current patient. The treatment summary in oncoflow addresses this issue and provides a condensed patient overview summarizing the main information in the current treatment phase. A prototypic rule-based implementation aggregates the latest information available originating from each process step into a one-page overview (see Figure 2). Upcoming clinical certifications from the DKG German Cancer Society (Deutsche Krebsgesellschaft) make high demands on tumor conferences. The existing requirements for cancer centers and the few compelling studies about the outcome of tumor boards form the basis for the implementation of a comprehensive tumor board assistance module. The module provides tumor board management including the creation and mailing of invitation letters
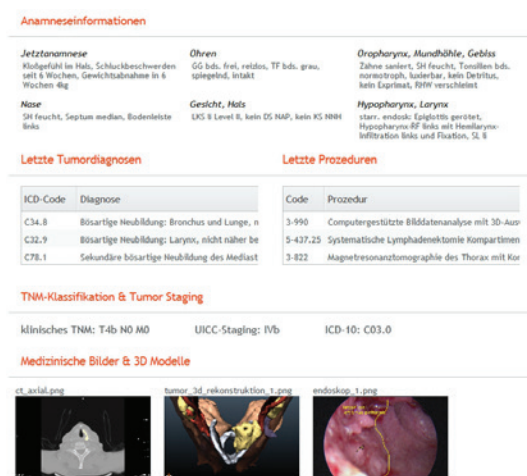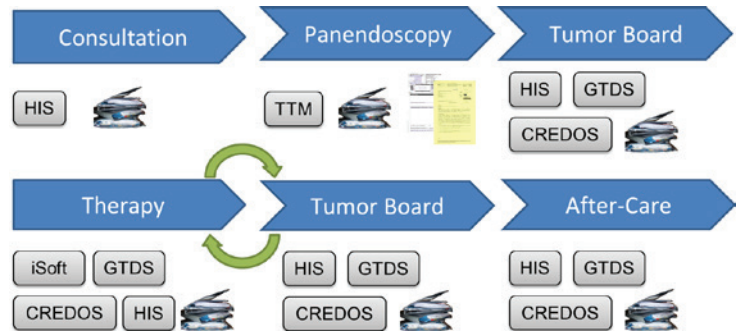

Fig. 3 – Treatment process and clinical information systems used for patients with head and neck cancer

and results documentation as well as extensive documentation features during the tumor board to make the decision-making process more transparent (see Figure 1). Additionally, the tumor board module has been designed according to the certification requirements of the DKG. The next steps in this project are the integration of additional information sources, the development of further clinical assistance functions, and supporting the entire patient treatment process in daily clinical routine. ■

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Fig. 2 – The treatment summary gives a brief overview of the patient's current medical status