AbstractID: 1328 Title: A Universal DVH Analysis Toolbox for Objective Dose-Volume Reporting

As the trend is towards evidence-based medicine, accurate and comprehensive dose reporting becomes a vital issue. Current methods of extracting dose-volume information are time-consuming and user-dependent. Most treatment planning systems have interactive methods to extract dose-volume information. RTOG and DICOM RT formats export the DVH data to ACSII files that then require further human interaction. The purpose of this work was to develop a program to automatically analyze multiple DVH formats and enable objective reporting of dose-volume information. To demonstrate the limitations of the current methods we performed a retrospective study on 110 HDR prostate patients. Seven dose-volume variables were extracted both manually and using the program. Manual extraction took 20 minutes per patient, whereas automatic extraction, with the program running on a standard PC (1.50GHz, 256 MB RAM), took 7.5 minutes for all patients. The frequency of errors >5% was found to be as high as 17% for some variables. The random nature and large range of errors indicated that the manual process was extremely prone to human error. The program can extract any custom dose-volume information the user wishes to track. Data can be batch processed and the results written to a comma-separated variable file, which can be easily imported to a Database for automated tracking. The program can currently process DVH data from RTOG Format, Philips ADAC, Nucletron (NPS and Plato), Eclipse RTOG, Corvus RTOG, and Radionics Xknife RT2. The code is modular in construction and therefore data from other sources can easily be added.