# AbstractID: 11202 Title: Effects of automatic dose rate control on patient dose in a digital flat-panel detector system

**Purpose:** The purpose of this study is to demonstrate how automatic dose control logics, which control dose rate depending on the body thickness, affect radiation doses of patients undergoing therapeutic and diagnostic liver interventional angiography using a modern angiographic unit with a digital flat-panel system.
**Method and Materials:** Seventy procedures of transarterial embolization (therapy) and hepatic angiography (diagnosis) were considered in this study. All procedures were performed on a digital flat-panel angiographic system (Siemens Axiom dBA Twin system software version VB31). Dose-area products (DAP) were measured by build-in transmission ion chambers. The DAPs, fluoroscopy time and skin doses (total calculated skin dose of acquisitions in one plane) for each examination were recorded. The organ doses and effective doses were calculated by WinODS (v1.0a; Rados Technology Oy, Turku, Finland). Moreover, the relationship between dose rates, weight, height and body mass index (BMI) were analyzed.
**Results:** The median DAP values were 105.5 and 117.2 Gy $cm^2$ for therapeutic and diagnostic liver interventional angiography, respectively. The dose rates were highly correlated with body thickness ($R^2$=0.888 and 0.866 for DSA and fluoroscopy, respectively) and BMI ($R^2$=0.773 and 0.840 for DSA and fluoroscopy, respectively) in one complete procedure. The dose rates were nearly the same for the patients with similar heights, weights, or BMIs. For patients with equal abdomen thickness, the dose rate increases with the BMI.
**Conclusion:** The results of this study indicated the dose varies according to patient sizes. It should be further investigated whether patient doses could be reduced without degradation of the diagnostic and therapeutic liver interventional angiography outcome.