**Purpose:** Fluoroscopy can be very beneficial, but not without the possibility of high dose to the patient from prolonged fluoroscopy. The dose is determined indirectly by the Automatic Brightness Control (ABC), which chooses the kVp and mA to maintain image quality. These parameters will change based on the patient thickness. It is important to check these and the exposure rate to determine how much dose the patient will receive from an examination.

**Methods:** Using GE 9900 and Philips BV Pulsera C-Arms, a RadCal 10X5-6 ion-chamber was placed at 70 cm source-to-chamber distance. An Acrylic phantom was placed on the image intensifier, ranging from thicknesses of 1 inch to 12 inches. For each thickness of Acrylic, the kVp and mA chosen by the ABC and the exposure rate measured by the ion-chamber. The kVp, mA, and exposure rate were recorded for various types of fluoroscopy examinations (e.g. Thorax, Abdominal, etc.), Standard and High-Level fluoroscopy, and for the various magnification modes. The techniques were compared with those using Copper and various Nuclear-Associates phantoms.

**Results:** The ABC adjusts the kVp and mA in a linear fashion until the mA saturates and only the kVp increases, as the thickness of the Acrylic increases. As the magnification increased, the kVp and mA increased at a much faster rate than the lower magnifications. The exposure rate increased exponentially with the increased thickness of Acrylic. The thickness of Copper was compared to the thickness of acrylic resulting in the same exposure rate (i.e. 2 mm Cu is equivalent to 6.2 in. of acrylic).

**Conclusion:** From the exposure rate and fluoroscopy time, patient dose can be estimated for different thicknesses of patient, exam types, and magnification modes. The dose estimation program can use the techniques to assess the skin and organ dose. The dose estimation program will assist in the determination of the Joint Commission Sentinel Event of 15 Gy.

**References:**

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