Early stage prostate cancer can be treated successfully by radioactive I-125 seed implantation or prostate brachytherapy with I-125 seeds. Approximately 50,000 brachytherapy treatments are performed in the US each year. Regarding these treatments, a 1994 Report from the AAPM Task Group 40 recommends that at least 10% of the seeds should be calibrated in each institution before implantation. Usually, a single seed is calibrated using an ionization chamber. However, sterilized cartridges containing multiple I-125 seeds have been mainly delivered to institutions in recent years. It is impractical to re-sterilize and re-load seeds after calibration in different institutions. In addition, calibrating all seeds one by one is extremely time consuming and may increase personal exposure. This invention describes a new method to simultaneously calibrate all seeds in a cartridge by using the “Brachytherapy Seeds Quality Assurance System (BSQAS).”

Outline of the invention

A new scanning mechanism in BSQAS consists of a cartridge holder, scintillation detector, collimator, and drive unit. The relationship between the seed activity (standard source activity) and count showed a correlation of ±10%. Activity calibration of I-125 seeds for prostate implantation can easily be done using a BSQAS. This method would be useful in all institutions required calibrate multiple I-125 seeds.