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PAPER TITLE Use of GafChromic Dosimetry Film for HDR Brachytherapy
.....
..... for Quality Assurance

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ABSTRACT (See instructions overleaf)

Both a blessing and a curse in the use of high dose rate (HDR) remote afterloading brachytherapy devices is the complete computer control of the clinical treatment. In our hospital's commercial system (Nucletron MicroSelectron), the treatment planning computer system downloads all information on source movement, both in time and in distance, onto a EPROM card that is used at the treatment console to control the Ir-192 source during treatments. Our QA procedure for the last 1.5 years involves testing this card prior to the patients first treatment to verify its correctness in controlling the source.

As a test we place clear GafChromic dosimetry medium (Model 37-041) in intimate contact with the applicator. The specific patients card then controls the irradiation (1-6 mins.). Examination of the now blue-colored film with a ruler allows quantitative determination of the distance between dwell positions seen as small dots and the offset of the first dwell position from the end of the applicator. Qualitative determination of relative dwell times is by inspection. It takes ~ 33 Gy to achieve an O.D. = 1 and to date no clinical case has given us a film too light or too dark to use. Advantages of this film include no need for external development so the image may be viewed immediately, insensitivity to normal room light, and archivability. The cost is ~ 2 \$U.S./case. Examples will be given to demonstrate practical techniques of this radiochromic film.