

I have selected the comparison of brachytherapy irradiation of breast as a theme for my bachelor work. This comparison is demonstrated on two afterloading machines. The first machine is older and less frequent type of device - microSelectron LDR. This machine contains sources of low dose rate, isotope Cs 137. The second is more modern and more frequent type around the world - microSelectron HDR. This device contains one source of high dose rate isotope Ir 192. Both devices are produced by the Holland Company Nucletron. I focus primarily on a description of radiologic assistant work. Device control and check up belongs to my main responsibilities. Check up is performed according to the program of quality assurance formatted by our organization and according to tests distributed by SÚJB. Whole test program consists of two main exams: Operational stability testing and assistance to the physicist within longtime stability testing. Operational testings are selected according to the type of device: Pre - application, monthly, bi-monthly, semiannual and annual testing period. Our Organization does not use system DICOM. It was implemented only recently, some half year ago. Therefore I had to document the brachytherapy applications on X-ray films. Currently the DICOM system allows to transfer X -ray images directly to the planning system. The films or digital media are stored only to document exposures and radiation plans esp. in case of breast irradiation. Complete is calculated upon the pre-set coordinates of all needles introduced into the treated breast. The doctor controls whole application process and is responsible for the selected therapy. The most interesting part of my bachelor work consists of individual brachytherapy planning of each patient. I try to compare two computing systems. Plans for microSelectron LDR were performed in NPS system working in command prompt background. MicroSelectron HDR employs Plato system, designed in more user friendly 3D environment