



Contribution ID: 168

Type: Poster

## Improving of the training programs for medical physicists and engineers in N.N. Alexandrov National Cancer Centre of Belarus

Friday, 23 June 2017 10:35 (5 minutes)

Background: Due to economic and other circumstances in the countries of the former Soviet Union, there is a significant engineering and physics staff turnover rate in the radiotherapy departments (the average age of employees of the radiotherapy engineering and medical physics department, N.N. Alexandrov National Cancer Centre of Belarus is about 30 years). To maintain the high quality of radiotherapy services for oncological patients it is necessary to develop and implement a program of training of medical physicists and engineers, which will allow for rapid integration of new employees in the work of department and enhance the possibilities in the field of continuous professional education.

Methodology: In order to ensure standardization of the main technical procedures in external radiotherapy and brachytherapy relevant instructions and standard operating procedures in Russian have been developed and introduced into N.N. Alexandrov National Cancer Centre of Belarus clinical practice by the experienced engineers and medical physicists of the radiotherapy engineering and medical physics department. The documents describing in detail physics and engineering staff actions were introduced for the following radiotherapy procedures:

- ☒ patient positioning verification using and 3D CBCT images;
- ☒ RT chart physics actions;
- ☒ wall-mounted lasers position calibration;
- ☒ IBU images based treatment planning;
- ☒ 3D adaptive treatment planning for intracavitary brachytherapy with MRI control;
- ☒ patient irradiation using Flexitron brachytherapy unit;
- ☒ treatment planning using SWIFT TPS;
- ☒ patient irradiation using MicroSelectron brachytherapy unit;
- ☒ treatment planning using Oncentra prostate TPS;
- ☒ linear accelerator monitor unit calibration;
- ☒ producing of the shielding and aperture blocks;
- ☒ linear accelerator mechanical parameters calibration;
- ☒ MLC initialization;
- ☒ linear accelerator and OBI reboot and shut down procedures;
- ☒ linear accelerator mechanical and dosimetrical parameters daily checks and QA;
- ☒ linear accelerator weekly QA procedures;
- ☒ 2D image acquisition using EPID and OBI;
- ☒ linear accelerator service mode operation;
- ☒ treatment delivery using linear accelerator;
- ☒ CT and PET images registration procedure;
- ☒ analysis of the treatment planning statistics;
- ☒ import of the patient data to the Eclipse TPS;
- ☒ patient data transfer from CT to the dedicated data server;
- ☒ CT and MRI images registration procedure;
- ☒ 3D treatment planning using MasterPlan TPS;
- ☒ 3D treatment planning using Eclipse TPS;
- ☒ IMRT and VMAT verification using EPID;
- ☒ IMRT and VMAT verification using Octavius 4D;

- ☒ EPID calibrations;
- ☒ IMRT treatment planning using Eclipse TPS;
- ☒ VMAT treatment planning using Eclipse TPS;
- ☒ treatment delivery QA.

Results: A training for all employees of the radiotherapy engineering and medical physics department according to their job descriptions using the developed instructions were performed. Since 2016, each new medical physicist employee goes a step up training and allowed the implementation of complex planning procedures or clinical cases only after checking their knowledge on the basis of the criteria set out in the relevant instructions. Senior medical physicists check all the results of his work. For engineers in the department we apply the same approach except that all the work that he or she was trained with use of the developed instructions he does in the presence of a senior engineer who carries out the constant control over his actions.

Conclusion: The introduction of the developed instructions into N.N. Alexandrov National Cancer Centre of Belarus clinical practice helped streamline the process of training young employees of the radiotherapy engineering and medical physics department and more intelligently approach to the assessment of the knowledge they have received. This training system allows maintaining a high level of motivation of the personnel and its commitment to continuous professional education through additional financial stimulation of the education results. Standardization of the treatment planning and radiation therapy procedures has a positive effect on the quality of medical services for cancer patients.

## Country

Republic of Belarus

## Institution

N.N. Alexandrov National Cancer Centre of Belarus

**Primary author:** TITOVICH, Egor (N.N. Alexandrov National Cancer Centre of Belarus)

**Co-authors:** BIALETSKI, Aliaksei (N.N. Alexandrov National Cancer Center of Belarus); KAZLOUSKI, Dzianis (N.N. Alexandrov National Cancer Centre of Belarus); ZINOVENKO, Katsiaryna (N.N. Alexandrov National Cancer Center of Belarus); PIATKEVICH, Maksim (N.N. Alexandrov National Cancer Centre of Belarus); PATSIAPALAU, Pavel (N.N. Alexandrov National Cancer Center of Belarus); BOHDAN, Tatsiana (N.N. Alexandrov National Cancer Center of Belarus); HERTSYK, Volga (N.N. Alexandrov National Cancer Center of Belarus); MYSHKEVICH, Yury (N.N. Alexandrov National Cancer Center of Belarus)

**Presenter:** TITOVICH, Egor (N.N. Alexandrov National Cancer Centre of Belarus)

**Session Classification:** Friday morning - Poster Presentations - Screen4

**Track Classification:** Education and Training of Professionals Working in Radiotherapy