Implementation of the Brazilian National Training Program for Radiotherapy Technicians

Preliminary results

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Introduction

Situation in Brazil:

- A shortage of radiotherapy machines
  - 261 installations, around 320 machines
- A large number of cancer cases to be treated
  - *Estimate: 600 thousand new cases of cancer in 2017*
- A long waiting time for radiotherapy treatments

Education

- Lack of sufficient training programs for Radiotherapy technicians

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1 National Cancer Institute. Estimate/2016 – Cancer Incidence in Brazil, 2015
2012: Brazilian Ministry of Health
- Established the National Expansion Plan in Radiotherapy
- Has decided to buy 80 linear accelerators to be installed throughout the country

2015: National Radiotherapy Training
- Was conceived by the Cancer Foundation and developed in partnership with National Cancer Institute and Universidade Estadual do Rio de Janeiro and several radiation oncology centers
- To supplement the formal education and updating medical physicists, radiation oncologists and radiotherapy technicians.
The purpose of this program is:

**to train, qualify and update professionals,**

linked to public, philanthropic or private therapy centers,

which treat patients from the Brazilian Health Care System (SUS)
Professional Qualification Course for Radiotherapy Technicians

- To train 80 radiotherapy technicians, divided in 4 groups
- **Public Target**: radiology technicians
- **Duration**:
  - 6 months each course
  - 1040 hours of full time activities,
    - each course divided into 3 Modules
Professional Qualification Course for Radiotherapy Technicians

**Module 1: Basic**
- Theoretical practical classes
- Duration: 8 weeks 345 h
- 27 specialized teachers

**Module 2: Intermediate**
- Internship in teletherapy
- Duration: 8 weeks 350 h
- Local preceptors

**Module 3: Advanced**
- Internship in teletherapy and brachytherapy
- Duration: 8 weeks 345 h
- Local preceptors
Professional Qualification Course for Radiotherapy Technicians

Module 1: Basic
- Theoretical practical classes
- Duration: 8 weeks 345 h
- 27 specialized teachers

- Anatomy
- Physics of Radiotherapy
- Equipments, modalities of treatment and process
- Management and Quality control
- Processes in teletherapy and brachytherapy:
  - Simulation: 2D, 3D
  - Planning,
  - Treatment,
  - Patient care
Module 2: Intermediate

- Internship in teletherapy
- Duration: 8 weeks 350 h
- Local preceptors

Teletherapy
- Clinical experience under the supervision of a local preceptor
- Detailed weekly reports
- Reinforce all concepts, treatment techniques,
- In-depth safety barriers, information transfer
Professional Qualification Course for Radiotherapy Technicians

**Module 3: Advanced**
- Internship in teletherapy
- Duration: 8 week 345 h
- Local preceptors

**Teletherapy**
- are focused in the different phases of the radiotherapy routine process

**Brachytherapy**
- Practice
- Quality Control

- Detailed weekly reports about the routine
Results

Students concluded the 1st course on December, 2016.
0 students started the 2nd course in January 2017
20 students will start the 3rd course in July 2017.
Results

Review of the students reports provided during the internship
They positively observed and reported several flaws in the centers where they were doing their training.

- Fail to reproduce the simulation and treatment
- Extremely short time scheduled to attend each patient
- Lack of information about simulation data in the Treatment Chart
- The patient is not assisted when entering or leaving treatment.
- Treatments with IMRT and RAPID ARC, sometimes are performed even with doubts about the procedure, endangering the quality of the treatment and the patient safety.
Results
students reports …

- Only one technician per shift per machine.
- The technologist performs double check, not the second physicist.
- In brachytherapy, when X-ray equipment was under maintenance, individual planning has not been performed, and only some templates recorded in the TPS were used to release system.
- Scans are performed on computed tomography because the displacement is done with a ruler and redone for treatment area visualization.
- Lack of presence of the physician and the medical physicist in the first treatment session
Conclusions

The students concluded the course with sufficient technical and physical background as well as a critical view of the process. They have shown sufficient proficiency to treat the patients with the working knowledge as required by the recommended quality standards of practice.

Based on the students reports:
There is an urgent need to implement a continuous education program to professionals already working in the radiotherapy centers.

Lack of a comprehensive Quality Assurance Program in the services may compromise the expected positive clinical outcome and the patient safety.

The applied methodology, based in competency, was achieved all approved students.
At this time, 2nd course is being completed.
Thank you for your attention!

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