Structure of Postgraduate Training in Radiotherapy in India

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Introduction

- Radiotherapy - relatively new specialty compared to Medicine & Surgery

- Specialized subject and teaching & training mostly at PG level

- Considered low priority subject
Radiotherapy: A Low Priority Subject

Why??

- Inadequate exposure at UG level
- Limited Job opportunities ??
- Many PG students join by chance rather than by choice
- Some leave or change in between
Introduction (cont.)

- Different from other specialties due to
  - Expensive Infrastructure---Pvt-Govt
  - Radiation risk ??
- Most of health care physicians lack the awareness and knowledge of RT
- Constant rise in prevalence(Not Incidence) of cancer demands greater RT services
- Great need for research & teaching
RT is the vital specialty in Oncology particularly in India

- Dominant specialty of cancer treatment
- 70-80% cancer pts come in advanced inoperable stages
- About 60% pts require radiotherapy sometime during the course of their illness
- Useful for definitive, adjuvant, palliative treatment for most cancers
- To start a cancer Trt facility—RT IS THE FIRST
- TO BE ESTABLISHED
- Concept of Clinical Oncology
Radiation Oncology: Facilities

- No. of RT Centers: 214
- Teletherapy Units: 363
  - Cobalt-60: 263
  - Cesium-137: 8
  - Linac (Majority DE): 92
Radiation Oncology: Facilities

- No. of brachytherapy centers: 139
- RAL: 119
  - LDR: 37
  - HDR: 82
- Manual: 104
  - Intracavitary: 76
  - Interstitial: 28
Distribution of Teletherapy Machines: India

December 200

- < 0.2 machines / million population
- 0.2 - 0.4 machines / million population
- 0.4 - 0.6 machines / million population
- > 0.6 machines / million population

- # Linear Accelerators
- • Telecobalt
Requirement of Infrastructure
( WHO Guidelines )

- Teletherapy unit : 1 per million population
- Manpower
  - Radiation Oncologist : 2 per million population
  - Physicist : 1 per teletherapy unit

WHO technical series no. 644
Post Graduate Training Courses in Radiotherapy

- MD
- DNB
- Diploma (DMRT)
- PhD
- Foreign Degrees
- Super specialization: None as yet
- Others
  - House job (non academic residency)
  - Workshops/short training prog.
  - Fellowships, research schemes etc.
Indigenous Developments in India

- Cobalt-60 teletherapy-BHABATRON
- Linac- SIDHARTH-Jai Vigyan Programme
- Treatment Planning System
- RFA, EPID-under development
- Brachytherapy sources-Ir 192, Co 60, Cs137, I 125
- Dosimetric Equipments
PG Teaching : (Goal)

- To make the students understand the magnitude of ever increasing cancer problem in the country

- Students must be made aware about steps required for prevention and possible cure of this dreaded condition

*MCI Regulations on Graduate Medical Education, 1997: 45-6*
PG Training in Radiotherapy

- Initially a part of MD Radiology
- Presently, independent subject
- Limited no. of institutions/centers
- Many centers inadequate infrastructure
  (ICRO/AROI coordinating with MCI)
- There is a need to improve PG training
  - qualitative
  - quantitative
PG Training in Radiotherapy
(Fontives)

The student shall be able to

- Identify symptoms & signs of various cancers and their management
- Explain the effect of RT on human beings and the basic principles involved in it
- Know about radioactive isotopes & their physical properties
- Be aware of advances in RT management & equipments
- MCI Regulations on Graduate Medical Education, 1997:45-6
PG Training in Radiotherapy
(contd.)

- MD degree: 3 yrs duration, thesis must
- Diploma (DMRT): 2 yrs duration, no thesis (do we need to continue it?? - Opinion of the house required)
- DNB (Diplomate of National Board): 3 yrs, thesis must, equivalent to MD, awarded by NBE.
- Foreign degrees (FRCR, American Board)
PG Training in Radiotherapy (contd.)

Teaching curriculum consists of

* Theory, clinical and practical
* Basic knowledge of Oncology
* Basic radiation physics
* Rx of various cancers by radiotherapy
* Radiation Biology, protection
* Chemotherapy
* Palliative care
Output of Skilled Rad Oncologists

- MD : 50-60/yr
- DNB : 10-15/yr
- DMRT/PhD : <5/yr
- FRCR & Others : 2-5/5 yr
- Total (Approx.) : 60-70/yr

Existing Manpower : About 800

Needed : 2000 (WHO Guidelines)
Dental Teaching

- The radiotherapy teaching should be included in the teaching curriculum of undergraduate dental training since oral cancer is a common cancer in major parts of our country.

- This will help in prevention and detection of oral cancers at an early stage.
<table>
<thead>
<tr>
<th>State</th>
<th>College Name</th>
<th>Type</th>
<th>Year</th>
<th>Seats</th>
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<tr>
<td>Andhra Pradesh</td>
<td>Andhra Medical College</td>
<td>Govt.</td>
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<td>Delhi</td>
<td>Maulana Azad Medical College &amp; GB Pant Hospital</td>
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<td>West Bengal</td>
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http://www.mciindia.org
MD Radiotherapy Course

- Recognized centers : 26
- Total seats (recognized) : 42
- Permitted centers : 3
- Permitted Seats : 7
- Total Centres : 29
- Total seats : 49

http://www.meiindia.org
# PhD Radiotherapy

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Name and Address of Medical College / Medical Institution</th>
<th>Year of Inception of College</th>
<th>Annual Intake (Seats) (Information as Per Institution / MCI / Govt. of India)</th>
<th>Status of MCI Recognition</th>
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<tr>
<td>Ph. D - Radiotherapy</td>
<td>All India Institute of Medical Sciences</td>
<td>1956</td>
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[http://www.mciindia.org](http://www.mciindia.org)
Strategies to improve PG Teaching

Contd....

- PG & UG training should be improved simultaneously
- Every medical college/institute should have RT facilities adequate for UG and PG teaching
- University and Medical college education committees should participate & help MCI in maintaining proper teaching standards
- Free exchange of students between various centers to have a wider perspective
Minimum Requirements

- Teletherapy (Linac/Cobalt)
- DE LA-Preferable (Technology Boom)
- Brachytherapy facilities
- Conventional Simulator/CT Simulator
- Treatment Planning System
- Mould Room Facilities
- Dosimetry equipments
- Allied specialities like Surgical oncology
Qualified Staff

- Radiation Oncologists
- Radiation Physicists
- Radiobiologists
- Technologists
Conclusions

- PG training facilities are grossly inadequate
- Both UG & PG training should be promoted simultaneously
- Indegenisation must be given a boost
- Free exchange of students between various centers
- CME activities—like the present one
Thank You