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*

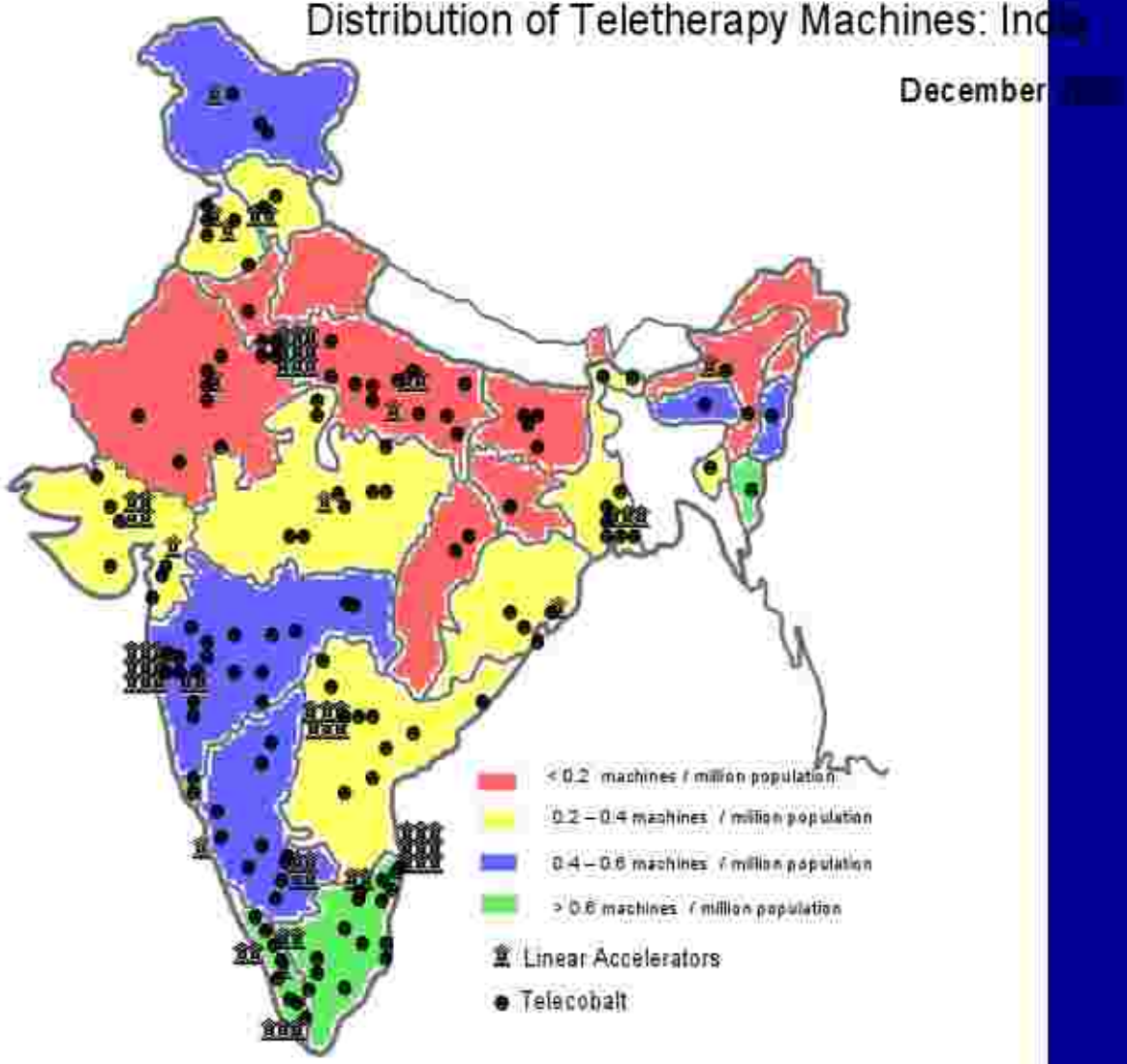
- **No. of RT Centers : 214**

- 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: Ind
December
< 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.

Indeginous 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 inRadiotherapy
(Objectives)

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

DMRT Courses

Andhra Pradesh	Andhra Medical College	Govt.	1923	-
Delhi	Maulana Azad Medical College & GB Pant Hospital	Govt.	1958	-
Karnataka	Bangalore Medical College	Govt.	1955	2
Maharashtra	Tata Cancer Research Memorial Institute	Govt.		-
Tamil Nadu	Chennai Medical College	Govt.	1835	6
Tamil Nadu	Christian Medical College, Vellore	Trust	1942	3
Uttar Pradesh	Institute of Medical Sciences, BHU	Univ.	1960	-
West Bengal	University College of Medicine	Govt.		-

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

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PhD Radiotherapy

Course Name	Name and Address of Medical College / Medical Institution	Year of Inception of College	Annual Intake (Seats) (Information as Per Institution / MCI / Govt. of India	Staus of MCI Recognition
Ph. D - Radiotherapy	All India Institute of Medical Sciences	1956	-	Recognized

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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 an 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