# ASSOCIATION OF RADIATION ONCOLOGISTS OF INDIA

Quarterly Newsletter | December 2017 Vol.13, Issue 4


# From-Office of AROI

## GBM Minutes


Dr. GV Giri
Secretary AROI


**The GBM was started with paying formal respects for the departed members.**

**The Following points were presented and resolutions discussed:**

**The Aroi membership is 3005 at present.**

**Till date last year 53 applicants completed the selected fellowships.**

**This year there were 39 members who applied for fellowships.**

**Change of name –**

**Oration : it was mooted by senior members to change the name of the Dr P K Haldar Oration to Dr B D Gupta Oration. This was proposed by Dr Vyas and seconded by Dr Ramesh. The motion was passed.**

**It was proposed and discussed that the north zone chapter would pay the seed money for this oration in Instalments. This proposal was accepted by the house.**

**Best of ASTRO :**

**It was decided by the house to continue BOA in the current format : Proposed by Dr Vyas and seconded by Dr Belliapa. The Motion was passed.**

**Fellowships : It was decided by the house to explore and search for sponsors for various fellowships and to use the interest amount from the AROI deposits for other purposes.**

**Bids of teaching program:**

**ESTRO advanced technology course for 2019 and 3rd AROI ESTRO Gyn teaching course 2019.**

**Dr Shahi, BHU Varanasi, agreed to conduct the 2019 ESTRO - Advanced technology course.**

**Dr Manoj Gupta, AIIMS Rishikesh agreed to conduct the ESTRO-AROI Gyn course in 2019**

**Change of nomenclature:**

**It was decided to pursue the nomencleature change from Radiotherapy to Radiation Oncology only, and no other nomenclature change would be pursued.**

**Chart rounds India :**

**The initiative of chart rounds India would be continued with site specific consultants having online discussions on every Thursday evening at 4pm across India . . Local faculty would also be involved apart from American faculty.**

**Dr Kaushik Bhatacharya gave a detailed explanation regarding the working of the chart rounds.**

**The motion for continuation of this program was proposed by Dr Manoj Gupta and seconded by Dr Siddana Pallad.**

**Choosing wisely :**

**The concept of "choosing wisely " which is hugely popular in Canada & USA, was introduced by Dr Vijay Anand Reddy. It was proposed that this concept would be introduced in India over the next 3-6 months by a task force.**

**The resolution was proposed Dr Vyas and seconded by Dr Srinivasan .**

**AROI association with other International Radiation Oncology Groups : Dr Suresh proposed active collaboration with other International Radiation Oncology Groups, other than the already collaborating groups. This was accepted by the house.**


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# ARTICLES

## "CHOOSING WISELY" INDIA INITIATIVE"

Dr. P. Vijay Anand Reddy, President AROI

Dear AROI members,

"Choosing wisely" aims to identify low value, unnecessary, or harmful services that are frequently used within our healthcare systems. It is also intended to start the conversation between physicians and patients on ensuring high-quality health care while avoiding the use of unnecessary tests, procedures and treatments that do not add value.

Choosing wisely concept is very popular presently in Canada (https://choosingwiselycanada.org/) & USA (http://www.choosingwisely.org/)

We are developing a parallel initiative through the creation of a Choosing Wisely India cancer list relevant to Indian Physicians and patients. Task Force India with direct support and advice from the CW Canada experts will design it with the inputs from Indian Oncology Community. In this process we will develop a "Top 10" list of low-value practices within the cancer system of India. This process will be guided by input from the Radiation Oncologists, Medical Oncologists, and Surgical Oncologists of India and will include perspectives from both public and private sectors as well as patient representatives and advocates.

In this regard, we are writing to seek your suggestions in the development of the "Top 10" Indian Cancer list – Eg.: Avoid using PET or PET-CT scanning as part of routine follow-up care to monitor for a cancer recurrence in asymptomatic patients who have finished initial treatment to eliminate the cancer unless there is high-level evidence that such imaging will change the outcome.

Once the list is finalized, AROI will endorse the final list, which will be used by clinicians to help improve cancer care for our patients. We anticipate this request to come to us by the end of DECEMBER 2018. We will disseminate the final "Choosing wisely" list across our association and membership.

We humbly request you to actively participate in this very important initiative which would help both Physicians, Patients and Society in general.

Sincerely,

Dr. P. Vijay Anand Reddy

Task Force

Choosing Wisely India Initiative

## AROI
## WISH YOU
## A HAPPY & PROSPEROUS NEW YEAR

# ARTICLES

## Global Issues in Radiation Therapy and Disparities in Cervical Cancer Treatment

**Dr. Akila N. Viswanathan, MD MPH**
**Professor and Executive Vice Chair**
**Department of Radiation Oncology and Molecular Radiation Sciences**
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**Delivered Padmashree Prof K Dinshaw Oration**
**at 39th AROICON with 2nd Indian Cancer Congress held at Bengaluru, 8-12 November, 2017**

Cancer is a growing problem in the health of all populations around the world. The WHO World Cancer report showed that the incidence of cancer increased from 12.7 million in 2008 to 14.1 million in 2012.1 This rate is expected to increase 70% to nearly 25 million cases a year over the next 20 years. Half of these cases are preventable, and due to lifestyle, such as tobacco use, alcohol and highly processed food consumption, and lack of physical activity.

We are facing a global health cancer crisis. Cancer care is expensive and resources are limited. In 2030, the world will have twice as many older adults. There will be a 30% increase in the number of cancer survivors, and a 45% increase in cancer incidence. The world faces a global shortage in all cancer professions, particularly in impoverished areas, and training programs have limited expansion plans due to the cost associated with training.

Disparities exist at all level: between countries, between states, within counties, and by economic status within a city. In global health, countries are divided into high income (HIC) (US/Canada, Australia, Europe), middle income (South America, North Africa, China), and low income (Africa, India) (LMIC). This income status also correlates with insurance status and overall health. Over the past decade the age-standardized incidence rate for all cancer has increased >20% in Australia, and it has also increased in all of Africa, North and South American and Europe. The only decrease in incidence > 10% occurred in China.2

Cervical cancer is the top ranked cancer by absolute incidence for all ages in females in Bolivia, Kenya, Somalia, Niger, Botswana, Guinea, Nicaragua, and Guatemala.2 It is the fourth most prevalent female malignancy.3 In 2005 there were 532,132 new cases, while in 2012, there were 528,000 new cases and 266,000 deaths due to cervical cancer , while in 2015, 525,907 new cases were reported globally. The highest number of deaths due to cervical cancer is in Africa, due to the dearth of available treatment. Based on the 2005 numbers, accounting for population growth and aging, one would expect 663,070 cases, indicating there has been a 1.2% relative reduction in cervical cancer cases.4

Disparities in access to screening and care differs based on income status of each country, and between rural versus urban centers. From 1955 to 1992, HIC observed a 70% decrease in cervical cancer in contrast to LIC that were unchanged due to a lack of screening.4 HPV vaccination programs have had variable success in HIC while LMIC face greater challenges. From 2007 to 2016, the number of LMIC with vaccine experience grew to 465, while there was a 60% increase between 2012 and 2015 in the number of national HPV programs; these were primarily vaccinating against HPV 16 and 18. A total of 82 out of 196 countries have introduced HPV vaccine in their national programs. 61 million girls from high and upper income countries have been vaccinated against HPV. Current HPV vaccination programs target only 14% of young adolescent females worldwide. HPV screening is being adopted and is a powerful complement to HPV vaccination. Populations with the highest incidence and mortality of disease remain largely unprotected.

In terms of cancer therapy, a paucity of trained health professionals exists in many impoverished areas, with a lack of essential equipment, a limited infrastructure, and there are many financial constraints of nations and patients to consider. Approximately 70% of the global population currently lacks access to key surgical services.5 Provider density, including general surgeons, anesthesiologists, and obstetricians, averages 0.7 per 100,000 people in LIC but 5.5 per 100,000 in LMIC.6 On average, 12% of surgeons in HIC were trained outside of country of practice; 8.4% migrate from LMIC. In 2014, the Lancet created the Commission on Global Surgery and proposed that core surgery and anesthesia care packages should include OB/GYN components.

The disparity in radiotherapy access is seen in many places. Africa is functioning at 25% of its potential treatable capacity for cervical cancer alone.7 56.4% of the world's cancer patients are able to access only 31.7% of the world's current teletherapy units.

# ARTICLES

## "Global issues in radiation therapy and disparities in cervical cancer treatment"

Dr. Akila N. Viswanathan

Whereas the recommended ratio is 1 radiotherapy unit per 120,000 - 250,000 people, in LMIC that ratio is approxately 1 unit : 1.4 million people. Only 4 out of 139 LMIC meet current radiotherapy needs.8 55 nations had no access and 30 were in Africa. The maldistribution of teletherapy units in LMIC is seen within continents, e.g. in Africa 60% of teletherapy units are in South Africa and Egypt.9 Approximately 4,221 teletherapy units are present in LMIC (38-49% of total need).10

Despite rapid global development, radiotherapy utilization in rural or poor urban areas even in HIC faces many hurdles. Substantial barriers to radiation delivery exist, including the machine cost, need for service contracts with the machine vendor, continued preventive maintenance cost and service availability and availability of trained physicists service personnel, and MDs. Ways to combat disparities are complex, and start with government investment from the Ministry of Health. In countries where absolutely no radiotherapy exists, even brachytherapy alone may be a basic way to cure approximately 25% of women with locally advanced disease.11 With external beam radiation is added to brachytherapy, a substantially higher (>50%) of women should be cured. Brachytherapy is a very effective cytotoxic treatment that is very cost effective. It is a core solution to the cervical cancer global problem, rather than relying on external beam as heavily. Brachytherapy improves survival when added to external beam. External beam modalities alone have a lower survival rate than when brachytherapy is added to external beam.12 In the US, disparities in the administration of brachytherapy exist based on race. In one study of 15,194 patients with locally advanced cervical cancer in the NCDB, only 44.3% of patients received standard of care (SOC) treatment and had significantly improved OS. Medicaid patients were treated at low volume centers, or were treated at non-comprehensive community cancer centers. High volume centers, academic centers, comprehensive community cancer centers, private insurance, and higher income had a higher likelihood of receiving SOC. Black patients were less likely to receive SOC: 26.8% of patients received no radiation boost. 23.8% received an EBRT boost only. 49.5% of patients received EBRT with brachytherapy. For the boost, an EBRT boost was advantageous over no boost at all (HR 0.720, p= 0.001); brachytherapy better than EBRT boost (HR 0.554, p=0.001). Patients were more likely to receive no radiotherapy boost if they had lower incomes.13

technologies. Image-guided brachytherapy improves outcomes and reduces toxicities.14 When comparing MR to CT, both have good disease-free and overall-survival, but MR appears to have a slight advantage in patients with large bulky tumors with gross residual disease.15 CT-based treatments have a very high survival rate for stage I-II disease,16 whereas MRI may have its greatest impact on patients with stage IIIB-IVA disease.

In conclusion, disparities exist at multiple levels. In terms of radiation, access to radiotherapy treatment is one disparity that exists globally. Even within HIC, access to brachytherapy is not equally allocated as SOC treatment. The use of brachytherapy and external beam radiation with concurrent chemotherapy is imperative for locally advanced cases. Image-based brachytherapy improves outcome and attempts should be made to standardize brachytherapy access with imaging globally.

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# ARTICLES

## Fractionation: The Mystery Unfolded

**Prof U P Shahi**
**IMS, Banaras Hindu University, Varanasi, U P**

**Delivered Prof P K Haldar Oration at the 39th AROICON with 2nd Indian Cancer Congress held at Bengaluru, 8-12 November, 2017**

Fractionation is the most frequently used term in the field of Radiation Oncology and describes the delivery of radiation dose in multiple fractions of total desired dose to be given to achieve tumor control and cure. It is well known to everybody in the subject that single or a few doses of high magnitude suffers the limitation by causing unacceptable normal critical tissue toxicity in conventional terms. The corollary is the proposition that cancer cure may be achieved through fractionated large number of doses with a capability of sparing normal tissues to a large extent.

During the last century treatment of human cancers with ionizing radiation has grown in its capacity mainly through advanced physical technology with addition of computer capabilities, in such a way that planned dose may very precisely be delivered to the precisely localized malignant tumor sparing the organs at risk by way of image and intensity guidance. Recently Robotic arms have also been brought into the picture to emphasize the latest achievements.

However despite all revolutionary advancement the chief armamentarium that is the ionizing radiation has remained the same. A lots of scientific work has been done in the lab with radiobiology, much more remains to be explored and tested in clinical settings. The clinical milieu has been changing during the last few decades with better understanding the nature of malignant disease, early diagnosis of cases, refined imaging modalities to localize the tumor, and accurate and precise tumor dose delivery. The conventional treatment approaches particularly that of Radiotherapy has undergone a sea change. We see a variety of altered fractionation schedules ,manipulating fraction sizes, Total dose, number of fractions, overall treatment time etc., subjected to ongoing clinical evaluation in order to find the most appropriate one for individual requirements.

The conventional radiotherapy schedules to treat human cancers is: 60-70 Gy/30-35 #/6-7 Wks, d=1.8-2.2 Gy, treating 5 # per wk. This schedule has been most widely practiced all over the world for a quite long years. It may be considered a well defined curative radiotherapy approach at present. However it takes a long period, permitting enhanced proliferation of tumor tissue counteracting the tumor control probability. Patients have to spend weeks outside their home and workplace. They along with their relatives and friends suffer lot of financial losses, physical discomfort, travel lodging and food problems. Further, supportive care for a long period is required. This also puts lot of pressure on radiotherapy infrastructure, cancer care givers, and manpower. Further it adds to the physical, mental, financial, and logistics burden on cancer patients and their attendants. Such requirements of longer treatment duration and associated obstacles may discourage patients from completing their radiotherapy.

Since the days of joining radiotherapy in 1983, I observed and also practiced a large number of fractionation schedule for curative and palliative purposes especially affected by high patient load, limitations of equipments, institutional policy and patients consideration. This holds true even in the present era of high sophistication. The modern day radiotherapy has witnessed a large number of fractionation schedules from large no. of fractions with hyper fractionation to single or a few fractions of very high dose level.

At the Banaras Hindu University several studies were conducted as a part of MD theses during 2010 to 2016.Advanced Head Neck Squamous Cell Carcinomas were treated with Altered fractionation schedules (Accelerated hypo and hyper fractionation schedule ) reducing overall treatment from time 7 weeks to 6,5 and 4 weeks. (Table I and Table II)These altered schedules were compared with conventional 7 wks RT along with concurrent chemotherapy .These studies showed that it was feasible to treat with Altered fractionation scheme with reasonable tumor control and variable toxicities. Toxicities were higher in concurrent CT-RT arm, and accelerated hyper fractionation arm. However the studies do suggest exploring altered fractionation in larger and longer clinical trials and that these may be more suitable for treatment in Indian context to accommodate larger number of patients on already strained radiotherapy infrastructure and manpower.

In another study with Carcinoma Cervix, (Table III) patients were treated with concurrent chemotherapy (Cisplatin or cisplatin with Paclitaxel, weekly basis) and external beam RT (45Gy/20 #/4 wks) and Intra cavitory RT( LDR,30 Gy, Cs manual after loading applicators).The total treatment was completed in 4 wks, with ICRT attempted to be applied during 2nd to 4 th wk period together with continuing external beam RT. The overall reduction of duration of treatment was well tolerated and gave rise to acceptable outcome in terms of tumor control and toxicities. The above fractionation studies at the BHU were planned on the basis of LQ model derived formulations.

# Fractionation: The Mystery Unfolded

Prof U P Shahi

Table I - Studies on # atBHU:

HNSCC,oral cavity,pharynx,advanced

| study | RT details | BED10 | BED3 | Skin rk | Mucosal rk | TumorCR | Comments |
|---|---|---|---|---|---|---|---|
| CCRT Vs AFRT,N-41 2010-2011 | CT,3wkly 70 Gy/35# | 72.8 | 116.7 | 11/11 | 2/11 | 6/9 | AFRT Feasible |
| | 68Gy/34#/6# per wk | 75 | 113.3 | 4/10 | 0/10 | 5/8 | |
| | 64,5Gy/30#/6 # per wk | 75 | 110.7 | 2/10 | 0/10 | 7/7 | |
| | 57.5 Gy/25# 6# per wk | 69.4 | 101.6 | 0/10 | 0/10 | 6/8 | |
| AFRT-4W N-39(27) 2011-2012 | 60Gy/24#/4wk 6# per wk | 71-75 | 110 | 50% | high | RR-77% | Feasible |

Table II-

Fractionation Studies at BHU

HNSCC,oral cavity,pharynx,advanced

| study | RT details | BED10 | BED3 | Skin rk | Mucosal rk | TumorCR | Comments |
|---|---|---|---|---|---|---|---|
| AHFX Vs CCRT 2012-2013 N-28 | 60-64Gy/38-40 #/4 wks,d 1.6 Gy,BD,5d/wk Vs CT,P wkly 66-70 Gy/33-35#/convention | 69.6-74.2 | 95 mean | 31% Vs 17% | 67% Vs 62% | 66% Vs 70% | Feasible CT-Rt more toxic |

Table III

Fractionation Studies at BHU

Ca cervix,stage IIB& IIIB

| study | RT details | toxicity | TumorCR | Comments |
|---|---|---|---|---|
| CCRT-4W N-40 2014-2015 | CT: P &T P wkly EBRT-45Gy/20# - ICR,LDR 30 Gy to point A Trt completed within 4 wks | acceptable | Comparable | Feasible to complete CCRT-4W, No higher toxicity Results similar |

The accompanying table shows different Equivalent Dose 2 Gy (EQD2Gy= 70 Gy) schedules for different dose per fraction, d= 2Gy - 5 Gy ;total dose given from 6 wks to 3 wks. The last column shows EQD2Gy =70 Gy for late effect for different dose per # , which shows the tolerance dose for normal late responding tissues and guides acceptability of a particular schedule.

On the basis of calculations of EQD2Gy(70 Gy), different dose fractionation schedules were created theoretically. It suggested that it was rather impossible to get a curative dose schedule with more than 3.5 Gy per fraction level. Then, to get a 3-4 wk curative schedule we have following options to avoid tumor enhanced repopulation factor. Since enhanced tumor repopulation does not occur within 3 – 4wks,so for a schedule of 3-4 wks period, Saturday and Sunday( 7 – and 6-days) treatment may be avoided. Therefore the first five schedules may be striked out from the list given below.

Of these selected 4 schedules, the first one appears most suitable. The last 3 schedules appears too hot in terms of acute mucosal reactions and these require certain appropriate modification in terms of modifying dose per fractions ,total dose and total treatment time.

Suggested curative RT schedules may be proposed , which need to be tested and validated in forthcoming clinical trials.(modified on theoretical and clinical basis)

1.60 Gy/24 #/25 d/6#pw/4 wks

2.57 Gy/19#/25 d/5#pw/3.4 wks

3.54.4 Gy/17#/ 23 d/5#pw/3.2 wks

Therefore it may be concluded that further work is required to determine Tk, Tpot of individual tumors to find out better treatment schedules in HNC. Shortest duration Accelerated # (3-4 wks) should be studied to achieve the optimal radiobiological and radiation dose and response parameters.

Clinical/ Lab Radio-biological study should be done to explore survival/toxicity model with moderate and very high dose fraction accelerated radiotherapy. Newer Radiotherapy schedules should be developed and validated. Radiotherapy department should develop a radiobiology lab for a closer clinical and lab correlation.

# Fractionation: The Mystery Unfolded

Prof U P Shahi

## Table IV-
## Various schedules to achieve EQD2 (70Gy)for different dose fraction size(d) & Total treatment period(T): searching optimal RT schedule

| d(Gy) T(weeks,days) | 6 weeks 39 days | 5 weeks 32 days | 4 weeks 25 days | 3 weeks 18 daya | Nominal dose for Late effect |
|---|---|---|---|---|---|
| 2 | 68 Gy | 65.5Gy | 62.76 Gy | 60 Gy | 70 Gy/35 |
| 2.25 | 67.5 Gy/30 | 65/29 | 61/27 | 58.5/26 | 67.5Gy/30 |
| 2.5 | 67.5 Gy/30 | 62.5/25 | 60/24 | 57.5/23 | 65 Gy/26 |
| 3 | 63 Gy/21 | 60/20 | 58.5/19.5 | 55.5/18.5 | 58.5 Gy/19.5 |
| 3.5 | 61 Gy/17.5 | 58/16.5 | 56/16 | 54/15.5 | 54.25 Gy/15.5 |
| 4 | 60 Gy/15 | 56/14 | 54/13.5 | 54/13 | 50 Gy/12.5 |
| 4.5 | 56 Gy | 54 | 52 | 50 | 47.5 Gy/ |
| 5 | 55 Gy | 52.5 | 50 | 47.5 | 43.5 |

**Table-V: Theoretical Curative Radiotherapy Schedules**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 70Gy/35# /46d /5#perwk | Dose/# 2 Gy | BED 10 84Gy10 | BED3 116.7Gy3 | Corrected BED10 67.5 Gy10 | Acute Mucosal Reaction 53.1 Gy10 |
| 2 | 68Gy/34#/39 d/6#pw | 2 Gy | 81.6 | 113.35 | 69.8 | 56.26 |
| 3 | 66Gy/33#/33d/7#pw | 2 Gy | 79.2 | 110 | 71.28 | 58.61 |
| 4 | 67.5 Gy/30#/39d/5#pw | 2.25 Gy | 82.69 | 123.52 | 71.42 | 57.35 |
| 5 | 63Gy/28#/32d/6#pw | 2.25 | 77.2 | 110.25 | 69.91 | 57.37 |
| 6 | 60.75 Gy/27#/27d/7#pw | 2.25 | 74.42 | 111.17 | 70.76 | 58.58 |
| 7 | 62,5Gy/25#/32d/5#pw | 2.5 | 78.12 | 114.38 | 70.86 | 58.32 |
| 8 | 60Gy/24#/25d/6#pw | 2.5 | 75 | 109.8 | 72.36 | 60.74 |
| 9 | 57.5Gy/23#/23d/7#pw | 2,5 | 71.88 | 105.2 | 70.55 | 59.2 |
| 10 | 60Gy/20#/25d/5#pw | 3 | 78 | 120 | 75.36 | 63.74 |
| 11 | 54Gy/18#/18d/6#pw | 3 | 70.2 | 108 | 71.5 | 62.51 |
| 12 | 52.5Gy/15#/18d/5#pw | 3.5 | 70.88 | 113.71 | 72.9 | 62.16 |

**Table-VI: Theoretical Curative Radiotherapy Schedules**

| | Dose schedules | Dose/# Gy | BED 10 Gy10 | BED3 Gy3 | Corrected BED10 | Acute Mucosal Reaction Gy10 |
|---|---|---|---|---|---|---|
| 1 | 60Gy/24#/25d/6#pw/4wks | 2.5 | 75 | 109.8 | 72.36 | 60.74 |
| 2 | 60Gy/20#/25d/5#pw/4 wks | 3 | 78 | 120 | 75.36 | 63.74 |
| 3 | 54Gy/18#/19d/6#pw/3 wks | 3 | 70.2 | 108 | 71.5 | 62.51 |
| 4 | 52.5Gy/15#/18d/5#pw/3 wks | 3.5 | 70.88 | 113.71 | 72.9 | 62.16 |

**Suggested Reading: Fowler J F. Practical Time Dose Evaluation,or How to stop worrying and learn to love Linear Quadratics. In Levitt SH,Purdy JA,Perez CA,and Vijaykumar S.(Eds). Technical Basis of Radiation Therapy ,Practical Clinical Applications. 4 th revised edition,Springer Verlag 2006.**

# Implementing Hypofractionated Radiotherapy for Prostate Cancer in India.

**Dr Indranil Mallick**
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**Introduction**

Radiotherapy is a leading curative treatment option for localized prostate cancer, with dose escalated treatment resulting in excellent long term disease control rates. Over the last 2 decades, the emerging understanding of the growth kinetics of prostate cancer has resulted in the emergence of hypofractionated radiation therapy leading to a paradigm shift in the treatment patterns all over the world. In this short article, we look at the rationale and evidence for hypofractionation and its implementation in India, focusing on our departmental experience.

**What is the biological rationale for hypofractionated radiation therapy for prostate cancer?**

The conventional fractionation schedule of 1.8 to 2 Gy per fraction is based on the growth kinetics of rapidly proliferating epithelial cancers in contrast to more slowly replicating normal tissue cells. However, prostate cancer behaves differently from the common rapidly proliferating epithelial cancers. Laboratory studies have shown that in prostate cancer the proportion of actively dividing cells were low (low labelling index - LI) and the potential doubling time (Tpot) was long[1, 2]. This was similar to or even slower than the organs at risk for prostate cancer. This observation gave rise to the hypothesis that the α/β ratio for prostate cancer was low, and possibly even lower than the normal tissues surrounding it.

**How was the α/β ratio for prostate cancer derived?**

A number of studies attempted to derive the α/β ratio of prostate cancer by correlating the fractionation schedules of both external beam radiotherapy and high-dose-rate brachytherapy and the reported biochemical control outcomes in different hospitals and trials. Many of these derivation studies used large patient datasets. Most of these studies found the most likely value for the α/β ration was close to 1.5 Gy[3-5]. This value is lower than the α/β ratio of 3 Gy used for normal tissues. With such a low α/β ratio, there would be no benefit of fractionating radiotherapy over 7-9 weeks. Using a higher dose per fraction and reducing the total treatment duration would be possible in principle without increasing the risk of late toxicity.

**What is the evidence for moderately hypofractionated radiotherapy?**

The first steps towards clinical evaluation of hypofractionation were taken using fraction sizes between 2.5 to 4 Gy per fraction, and this range is today referred to as moderate hypofractionation. Following the initial success of several single arm Phase II studies, a number of Phase III randomized controlled trials have been performed specifically to test the concept of hypofractionation. Some were designed to test superiority and some as non-inferiority trials. These are summarized in Table 1.

| Study | Patients | Schedules compared | Summary of results |
|---|---|---|---|
| Italian Study[6] | 168<br>High risk | 80Gy/40Fr/8 wks<br>62Gy/20Fr/5 wks | Improved biochemical control with similar toxicity |
| Fox Chase study[7] | 303<br>Int and high risk | 76Gy/38Fr/7.5 wks<br>70.2Gy/26Fr/5.5 wks | Similar biochemical control with slightly higher GU toxicity with hypofrx. |
| RTOG 0415[8] | 1067<br>Low risk | 73.8Gy/41fr/8wks<br>70Gy/28fr/5.5wks | Non-inferior biochemical control. Slightly higher GI toxicity with hypofrx. |
| CHHiP[9] | 3216<br>Mainly int risk | 74Gy/37Fr/7.5 wks<br>60Gy/20Fr/4wks<br>57Gy/19Fr/4wks | 60Gy/20Fr non-inferior with no difference in toxicity |
| PROFIT[10] | 1204<br>Int risk | 78Gy/39Fr/8wks<br>60Gy/20Fr/4wks | Non-inferior<br>Slightly lower grade 3 toxicity with hypofrx |
| HYPRO[11] | 820<br>Int and high risk | 78Gy/39Fr/8wks<br>64.6Gy/19Fr/6.5wks | No difference in biochemical control.<br>Slightly higher Grade 3 GI toxicity with hypofrx. |

**Table 1: Phase III studies of moderately hypofractionated radiation therapy in the modern era.**

# ARTICLES

## Implementing Hypofractionated Radiotherapy for Prostate Cancer in India.

**Dr Indranil Mallick**
**Senior Consultant, Department of Radiation Oncology, Tata Medical Center, Kolkata**

Across the board these studies showed that moderately hypofractionated radiotherapy had equivalent biochemical control rates in comparison to conventionally fractionated radiotherapy. Also the late toxicity profiles were equivalent in most studies. As a result, hypofractionated radiotherapy has become a 'standard' fractionation schedule for prostate cancer.

**Is hypofractionated radiotherapy applicable in India?**

The logistic and cost benefits of hypofractionated radiotherapy are especially important for a country like India where reduction in the number of fractions would result in freeing up of radiotherapy time slots as well as cost and time savings for the patient.

Patients treated for localized prostate cancer in India tend to be diagnosed with locally advanced disease due to a lack of routine PSA testing in symptomatic individuals amongst urologists in the community. Nevertheless, there is enough evidence for hypofractionated radiation therapy in all risk categories of non-metastatic prostate cancer.

At Tata Medical Center, Kolkata we have used hypofractionated radiotherapy as the standard practice based on published evidence as well as our own clinical experience in more than 300 patients. Other institutions with a long history of hypofractionated radiotherapy include Tata Memorial Hospital in Mumbai which first pioneered hypofractionation in India.

**Choosing the treatment modality, fractionation schedule and dose constraints**

Intensity modulated radiation therapy (IMRT) is the standard treatment modality for prostate cancer when available due to superior sparing of the rectum and bladder. When IMRT is not available carefully planned multi-field 3D conformal radiotherapy should be used when delivering doses of 74Gy equivalent or higher.

As listed in Table 1, there are several moderate hypofractionation schedules that have been tested in Phase III studies. Our practice in Kolkata is to use 60 Gy in 20 fractions over 4 weeks. This schedule is backed by two of the largest Phase III studies and is the standard schedule in the UK and Canada at this time.

There are no clear guidelines on dose constraints for hypofractionated radiation therapy with each trial employing its own strategy. In Kolkata we devised our own dose constraints in 2011 derived from QUANTEC, which has been followed over the last 7 years, and is shown in Table 2. Our results with this strategy have been published and shows rates of toxicity comparable to other published studies[12].

**What kind of image guidance is required?**

Daily image guidance is the standard for prostate cancer IMRT, due to large daily random variations arising out of differences in rectal filling. We evaluated scenarios using less than daily offline strategies and found that these cannot be safely used unless large PTV margins are used anteroposteriorly, which is impractical[13].

**Can hypofractionated radiotherapy be used for node positive prostate cancer?**

There is a paucity of published data on hypofractionated radiotherapy for node positive prostate cancer. However, experienced Indian centers have used hypofractionated radiotherapy for prostate cancer with metastatic pelvic nodes. Our own experience in 61 patients treated with a hypofractionated nodal boost of 54-60Gy shows 5 year biochemical control rates of 82% which is very encouraging (presented at ICC 2017).

| Structure | Constraints |
|---|---|
| Rectum | V59Gy < 7%; V56Gy < 15%; V53Gy <20%; V47Gy < 35% |
| Bladder | V59Gy < 10%; V56Gy <20%; V53Gy < 25%; V47Gy < 35% |
| Bowel | V45Gy < 90cc |
| Penile bulb | V47Gy < 50% |
| Femoral heads | V15Gy < 5% |

**Table 2: Dose constraints for moderate hypofractionation used at Tata Medical Center, Kolkata**

**What is the role of stereotactic radiotherapy in prostate cancer?**

Stereotactic radiotherapy aims to deliver fraction sizes of 6 Gy or more using highly conformal techniques and image guidance to the prostate. While the initial use of stereotactic techniques was limited to low risk prostate cancers using the Cyberknife system, it's use has now expanded to intermediate and selected high-risk localized prostate cancers using traditional linac based IMRT techniques. Results from pooled analysis of Phase II studies have been very encouraging, both in terms of biochemical control as well as toxicity.

# ARTICLES

## Implementing Hypofractionated Radiotherapy for Prostate Cancer in India.

**Dr Indranil Mallick**
**Senior Consultant, Department of Radiation Oncology, Tata Medical Center, Kolkata**

**In India too, a few centers have started to use this technique in carefully selected patients. At Tata Medical Center in Kolkata, we conducted a Phase I/II study of stereotactic radiotherapy to a dose of 35Gy in 5 fractions delivered weekly. The toxicity and biochemical control rates have been excellent and has been presented at ASTRO 2017[14]. Further studies have been planned in view of the encouraging results.**

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# GBM Minutes

**Dr. GV Giri , Secretary AROI**

Cont. From page: 1

**AROI office:**

**The options put forward for establishing a permanent office for AROI were discussed :**
**The Options were as follow:**
**To Continue as such.**
**To buy a flat in the name of AROI [Rooms can be used as guest house and lobby as office ]**
**To rent an office.**
**It was decided to maintain a status quo and postpone this resolution to a more appropriate time.**

**ICRO venues for 2018 :**
**Dr M Nagrajan : Coimbatore**
**Dr Sandeep Jain : Jaipur**
**Dr Maqbool Ione: Srinagar**

**Finance:**

**The financial statements were presented and passed by the house. At the end of the previous financial year, the current balance in both FD & SB is 2.8 crores**

**Continue with ICC:**

**The proposal to dissociate by the AROI from the ICC was discussed at length. The decision of the house was to continue to be a part of future Indian Cancer Congress.**

**Dr Francis invited the body for the AROICON 2018 at Trivandrum.**

# ARTICLES

## Functional Radiosurgery for Trigeminal Neuralgia

Dr.Shankar Vangipuram
Director, Radiosurgery Program, HCG Cancer Center, Mumbai

Trigeminal neuralgia (TGN), nicknamed as suicide disease, is universally regarded as the most painful, brutal, unpredictable condition that is known to the medical world & is characterised by fascial pain resulting from overreaction to everyday stimuli such as talking, eating, cold breeze, smiling & light touch. These stimuli lead to intense, electric shock like one-sided head pain that bores into the forehead and often spreads down to the eye, face, mouth, gums and teeth. It is more painful than kidney stones, giving birth or a heart attack. TGN is disease of elderly aged 50-70yrs with incidence being 5.2 per 100,000 females and 3.0 per 100,000 males. There is a lack of certainty regarding the aetiology and pathophysiology of TN.

Primary TGN is caused – Neurovascular conflict (50% cases), Idiopathic (40%).

Secondary TGN in 20% of patients is caused by herpes infection, multiple sclerosis, tumours or nerve injuries.

➢ Diagnosis:

- The correct clinical diagnosis is the most important factor for sufficient treatment.
- History remains the essential tool for diagnosis.
- Pain occurs in paroxysms, which can last from a few seconds to several minutes. The frequency of the paroxysms ranges from a few to hundreds of attacks a day. Periods of remission can last for months to years, but tend to get shorter over time. The condition can impair activities of daily living and lead to depression. Experts find that symptoms worsen over time and become less responsive to medication despite dose increases and adding further agents.
- Electrophysiological examination can reliably distinguish Symptomatic TN from Classic TN : The diagnostic accuracy of trigeminal reflex testing including the blink reflex for identifying patients with STN was relatively.
- Imaging is important in the pre-surgical assessment of the presence of nerve vessel conflicts. Sensitivities and specificities vary widely (sensitivity 52–100%; specificity 29–93%) probably due to the difference in the MRI techniques employed in these studies. It is also uswful in evaluating the CP angle SOL's Consequently there is insufficient evidence to support or refute the usefulness of MRI in identifying vascular contact.

➢ Medical Options:

Pain Medications The treatment of TN can be very challenging despite the numerous options patients and physicians can choose from. This multitude of treatment options poses the question as to which treatment fits which patient best.

Anticonvulsant medicines used to block nerve firing are generally effective in treating TN1 but often less effective in TN2. These drugs include carbamazepine, oxcarbazepine, topiramate, gabapentin, pregabalin, clonazepam, phenytoin, lamotrigine, and valproic acid.

Tricyclic antidepressants such as amitriptyline or nortriptyline can be used to treat pain. Common analgesics and opioids are not usually helpful in treating the sharp, recurring pain caused by TN1, although some individuals with TN2 do respond to opioids. Eventually, if medication fails to relieve pain or produces intolerable side effects such as cognitive disturbances, memory loss, excess fatigue, bone marrow suppression, or allergy, then surgical treatment may be indicated. Since TN is a progressive disorder that often becomes resistant to medication over time, individuals often seek surgical treatment.

➢ Non- Medical Options:

1. Non-Ablative Option: Microvascular decompression(MVD) involves craniotomy and the removal or separation of various vascular structures, often an ectatic superior cerebellar artery, away from the trigeminal nerve
2. Ablative Options:

a. Rhizotomy — Rhizotomy encompasses a number of percutaneous surgical techniques that are performed by passing a cannula through the foramen ovale, followed by lesioning of the trigeminal ganglion or root using one of several options:
   - Radiofrequency thermocoagulation rhizotomy, which creates a lesion by application of heat
   - Mechanical balloon compression, which uses a Fogarty catheter to compress the gasserian ganglion
   - Chemical (glycerol) rhizolysis, which involves the injection of 0.1 to 0.4 mL of glycerol into the trigeminal cistern

3. Stereotactic radiosurgery - Uses Advanced computer and MR imaging to direct highly focused beams of radiation at the site where the trigeminal nerve exits the brain stem. This causes the slow formation of a lesion on the nerve that disrupts the transmission of sensory signals to the brain. SRS is least invasive procedure for TN & is a good treatment option

a. for patients with co-morbidities, high-risk medical illness, or pain refractory to prior surgical procedures.
b. for most patients with medically refractory trigeminal neuralgia, especially those who do not want to accept the greater risk of an MVD for a greater chance of pain relief.

# ARTICLES

## Functional Radiosurgery for Trigeminal Neuralgia

Dr.Shankar Vangipuram

- **Diagnostic Criteria Using the International Headache Society Definition. Evaluation of the type of trigeminal pain is made according to the classification proposed by Eller et al.**

1. **Idiopathic TN Type 1, described as typically sharp, shooting, electrical shock–like, with pain-free intervals between the attacks, present for more than 50% of the time; and**
2. **TN Type 2, described as an aching, throbbing, or burning pain, present for more than 50% of the time and constant in nature (constant background pain being the most significant attribute)**

- **Target delineation for Radiosurgery: - Defining the optimal target is generally the biggest technical challenge confronting the novice who embarks upon the initial treatment of patients with TN.**
- **Imaging:**

a. **MRI - 3-tesla preferred over 1.5 tesla because of less scan time, translates into less motion degradation, Thin section multiplanar SSFP sequences, which are heavily T2- weighted thus providing excellent contrast resolution between the CSF and adjacent soft tissue. SSFP sequences are often referred to by vendor-specific acronyms ( CISS/ Space – Siemens Healthcare, FIESTA – GE). Slice thickness – 1mm. Use Slice zero filling interpolation processing, which reconstructs twice as many slices by overlapping half of the slice thickness for reconstruction.**

**MRI Contraindicated:**

- **Clinical Contexts: Implanted pacemaker, aneurysm clips, Cochlear Implant Metallic vascular stents, severe obesity or claustrophobia**
- **Imaging tool of choice is CT cisternography. : In such patients the procedure begins with a lumbar puncture and the instillation of 5 to 8 cc of iodinated contrast (IsoView 300M) into the lumbar subarachnoid space. The patient is kept in a prone trendelenberg position for 10 to 20 minutes allowing contrast to traverse the foramen magnum. Ideally, but not necessarily, this can be monitored under fluoroscopy. Subsequent to the dye equilibrating throughout the intracranial cisterns, the patient is expeditiously imaged with thin slice high resolution CT through the entire head as is typically done for any other routine intracranial SRS case**

**oTarget - Prepontine cisternal component of the trigeminal nerve. Lies 3-4 mm away from pons surface à transition between central myelin (oligodendrocytes) & peripheral myelin ( Schwann cells).**

- **Tricks for target Identification include:**

**1) Identify the opposite trigeminal nerve with the understanding that anatomy tends to be symmetric.**

**2) Find the trigeminal eminence where the dorsal root merges with the lateral pons.**

**3) Find Meckel's cave in every patient by virtue of its characteristic notch on CT, and on MRI, the splaying of the three trigeminal divisions.**

**4) Once the nerve has been identified at the brainstem and within Meckel's cave, it is a fairly safe bet to conclude that the trigeminal sensory root will travel from one to the other.**

**5) It is important to reference the reconstructed coronal and sagittal images throughout the entire process of target definition as well as the axial slices.**

**6) Generally speaking the target volume will be encompassed by 2 to 3, two mm thick MR slices**

- **Most Common mistakes :**

1. **Mistaking adjacent blood vessels for CN V itself; these are often the offending vessel responsible for producing the disorder in the first place. Note that vessels can be traced from slice to slice, and will enhance on CT, which is a good reason to use contrast for CT scanning.**
2. **In previously operated (MVD) patients, the delineation of the intracisternal nerve segment can be quite challenging; in such cases the teflon pledget distorts the normal anatomy and the mass itself often obscures the nerve. Such cases require extra diligence. It is critical to realize that the process of delineating the trigeminal nerve is never a simple process. In fact, many novices can badly misplace the target resulting in either an ineffectual or dangerous SRS procedure. However, credible target definition is almost always possible utilizing contemporary imaging techniques. (Please note this section is an excerpt from Dr. John Adler's Stanford University Trigeminal Neuralgia Guidelines.**

- **Delivery Platforms:**

- **Frame based – Gamma knife**
  **Immobilisation - In order to keep the head from moving during treatment, a box-shaped frame is attached to the head. Pins designed specifically for this purpose fasten the head frame to the skull. The head frame also is a guide to focus the gamma ray beams to the exact location of the lesion being treated.**
- **Frameless – Cyberknife, Linac Knife.**
  **Immobilisation - Double reinforced thermoplastic masks or Double reinforced thermoplastic masks and Byte Immobilisation**



# Functional Radiosurgery for Trigeminal Neuralgia

Dr.Shankar Vangipuram

➢ **Advantages of Frameless Radiosurgery: .**

1. **Non-invasive – No need for anaesthesia**
2. **No need for Blood , No risk of infections**
3. **Daycare procedure – Uses the most advanced FFF technology which enables fastest treatment delivery within 20-45mts.**
4. **Uses Robotics which give submm. Precision and accuracy in targeting the nerve.**
5. **Allows flexi-scheduling**

➢ **Frameless radiosurgery - Delivery technique:**

1. **Cyberknife: utilizes a non-isocentric beam treatment plan with a 5-mm fixed collimator generating 111-125 beams.**
2. **Linac Knife – Using Cones - 5 mm Stereotactic cones with 7-non-coplanar arc technique using advanced 6-DOF robotics image guidance & intrafraction imaging which gives isocenter stability of 0.2 +/- 0.1 mm to minimize dose to the brainstem.**
3. **Linac Knife – Using Micromultileaf Collimator: Volumetric Radiosurgery using 6DOF robotics and Intrafraction imaging**

➢ **Dosing Paradigm:**

a) **Radiation Naïve**

1. **Type 1 – 75 gray**
2. **Type 2 - 80gray.**
3. **90 Gy à Bothersome dysethesias & Permanent sensory dysfunction and better be avoided.**

2. **Re-irradiation:**

1. **Proposed only if the patients had good and prolonged initial pain cessation after the first TGN Radiosurgery, Pain recurrence is in reduced topographic distribution & with no other treatment alternative at the moment of recurrence.**
2. **Done for recurrences between 2-4 yrs.**
3. **The target is placed anterior to the first target so that the radiosurgical volumes at the second procedure overlap with the first one by 50%**
4. **Lesser radiation dose (50–70 Gy) for the second procedure, because a higher combined dose would lead to a higher risk of new facial sensory symptoms**
5. **Keep Cumulative target dose – 115gy, and cumulative cutoff lateral pons maximum voxel dose less than 44gy**

➢ **Follow-Up Monitoring:**

1. **Patients will be instructed to follow the pretreatment medication regimen for at least 1 month after Radiosurgery and then to diminish the doses progressively in periods of pain freedom.**

2. **Initial follow-up was based on clinical evaluation at regular intervals of 3 months, 6 months, and 1 year after the treatment and on a yearly basis thereafter.**
3. **Examine all patients for proper evaluation of safety and efficacy, including facial sensory testing, corneal reflex, and jaw motility.**

➢ **Explicit Definitions of Outcome Measures.**

**Efficacy is classified according to the Barrow Neurological Institute (BNI) scale:**

1. **Class I, no trigeminal pain, no medication**
2. **Class II, occasional pain, not requiring medication**
3. **Class IIIa, no pain with continued medication**
4. **Class IIIb, pain controlled with medication**
5. **Class IV, some pain, not adequately controlled with medication**
6. **Class V, severe pain, no pain relief. A successfully treated patient was considered a patient who was pain free without medication**

➢ **Predictive Factors for response:**

**While the results are similar between Gamma knife and linac delivery platforms, several factors are associated with the positive results TN like absence of multiple sclerosis, greater radiation dose, no previous surgery, typical pain features, and proximity of the isocenters to the brainstem edge**

➢ **Responses to Radiosurgery:**

**The response to Trigeminal neuralgia radiosurgery depends more on the plan complexity and ranges from immediate post procedure through a median response duration of around 1.5months.**

**The 1 year, 2 year, 5 year and 10 year pain response are usually in the range of 85-90%, 75-80% and 65-75%, 40-50%. All the patients who responded the pain medication will be usually stopped in 1-3 months time frame post treatment.**

➢ **Complications of Radiosurgery:**

1. **increased facial paresthesia and/or facial numbness that lasted longer than six months.**
2. **No other neurological morbidities**

**Many surgical treatments exist for trigeminal neuralgia, and long-term results have been reported.**

# Functional Radiosurgery for Trigeminal Neuralgia

Dr.Shankar Vangipuram

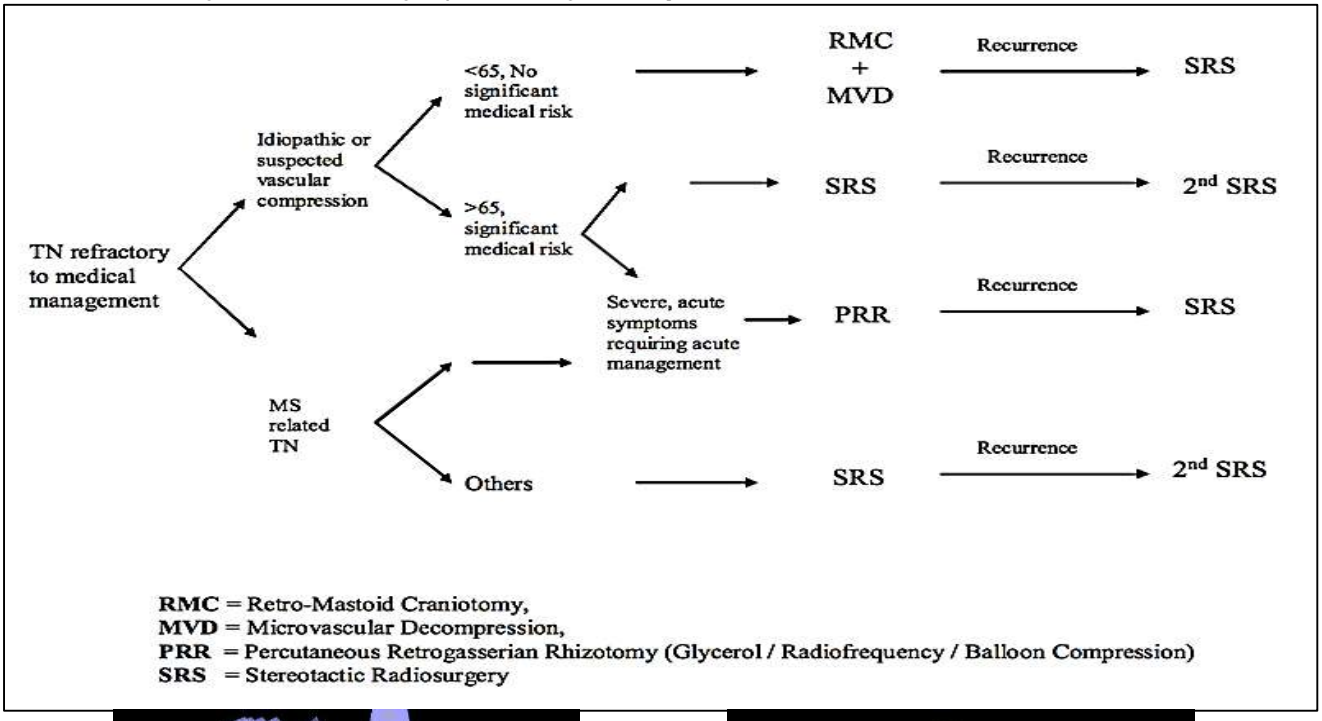
**A Pittsburg study identified a high rate of imaging-defined pontine or cerebellar infarction (24%) in patients who had prior microvascular decompressions. Radiosurgery for older patients > 65 yrs or infirm patients is preferred because it is the least invasive option. The lack of mortality and the low risk of facial sensory disturbance, even after a repeat procedure, argue for the use of primary or secondary radiosurgery in this setting. Repeat radiosurgery remains an acceptable treatment option for patients who have failed other therapeutic alternatives.**

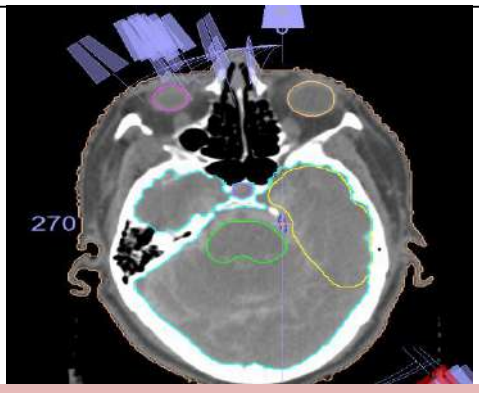
- **Management Algorithm – Trigeminal Neuralgia:**

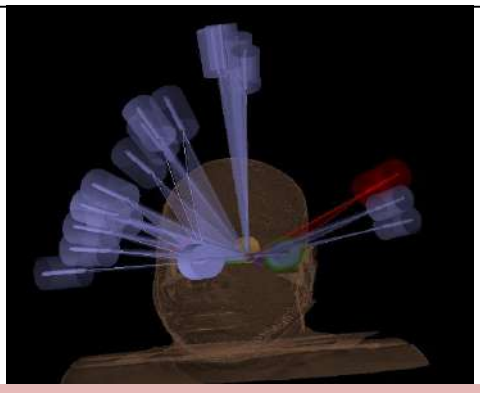
**The following factors are considered in recommending the treatment option to the patient:**

1. **Patient's age**
2. **Patient's medical condition**
3. **Presence or absence of multiple sclerosis**
4. **Presence or absence of vascular contact and/or compression on thin section MRI**
5. **Presence or absence of prior procedures**
6. **The type of prior procedure and its response**
7. **Severity of pain and how long the patient can reasonably wait for pain relief**
8. **Patient's concern and risk tolerance for dysesthesias, recurrence or complications from surgery**

- **A broad outline of management algorithm is shown below; however, the final recommendation is usually influenced by the recommending radiation Oncologist / Neurosurgeon's experience.**



# CONFERENCES

## 2nd Indian Cancer Congress-2017
## Bengaluru : 8th -12th Nov 2017

**Update from: Prof. Ramesh S Bilimagga, Secretary General, ICC-2017**

The 2nd chapter of Indian Cancer Congress was allocated by ICC-2013 committee to AROI at Delhi. This was intern given to AROI Karnataka Chapter to hold the ICC-2017 conference in Bengaluru. Accordingly, the conference was scheduled between 8-12th Nov 2017 at Clarks exotica Convention Centre, Bengaluru. It was a 4-day conference preceded by one-day pre-conference workshop.

8th Nov 2017 was a pre-conference day. Five Surgical live workshops were conducted at various Hospitals in Bengaluru and relayed to the venue halls of the conference. AROI had organized clinical trial workshop and contouring workshop on that day. This was well attended by our members.

On 9th Nov 2017, the first ICC Oration was given by Dr. Prabhakar Tripuraneni. The topic chosen was "Failures, Success and Hope in Head and Neck Cancer". This was followed by another ICC Oration by Dr. Jatin Shah, topic was "Staging of Head and Neck Cancer- Purpose, Process and progress". In the morning there were 09 numbers of parallel multidisciplinary session were held. In the afternoon Dr. U.P Shahi, Past president AROI gave Dr. P.K Haldar oration on " Fraction the mystery unfolded" in AROI Dr. K.A Din Shaw Hall. In the evening 39th AROI annual conference was inaugurated chaired by Dr. P Vijay Anand Reddy, AROI, president. Many members are awarded ICRO fellowships in this function. In the evening the 2nd ICC was inaugurated by Vajubai Rudabai Vala Honourable Governor of Karnataka. This was followed by keynote address by Dr. Edward L Trimble, Topic was "Cancer In Women - Optimizing resources "Light at the end of the tunnel"

On 10th Nov 2017, Day-2 ICC oration was given by Dr. Martine Piccart, " The Challenges of Drug Therapy escalation in Breast Cancer: Do we see light on the horizon?" This was followed by Dr. Lalit Kumar giving ISMPO Oration on " Multiple Myeloma: Improving the outcome in resource limited settings". On this day there were more than 11 numbers of parallel multidisciplinary session held. In the afternoon Dr. Veerendra Vayas Delivered AROI Dr. Rangi Prasad oration topic was " How to develop rural cancer centers, Problems and its solutions"

On 11th Nov 2017, Day-3 ICC Oration was given by Prof. Derek Manas on " Management of Retroperitoneal Sarcomas". This was followed by Dr. Akila Viswanathan Oration on " Global issues in Radiation Therapy and Disparities in Cervical cancer treatment". On this day also multiple more than 12 number of parallel multidisciplinary session held. In the afternoon AROI had its scientific programs followed by General Body Meeting.

On 12th Nov 2017, Day-4 ICC oration was given by Dr. Mahul B Amin on " The eight Edition of AJCC TNM staging manual – Vision, mission and path to personalized comprehensive classification" . Dr. G Kilara, our senior member of AROI, gave one oration on " Insight, Innovation and Integration in Radiation Oncology a journey of 4 decades" awarded by ISO. On this day also 09 number of parallel multidisciplinary session held.

Apart from the major scientific programs, this time we had one day program on Ayush, ICC-IFHNO Global CME, Molecular Oncology,A session on Beyond Oncology, Clinical Trials, Indo- UK summit, Psyco oncology program, Innovation Program, ICC-NCI Symposia, Nuclear Medicine, Epidemiology, INDO-US Consortium, Onco Anesthesia, Palliative Care, Onco Nursing and Pink Hope for cancer survivor. In addition we had 1800 Scientific poster presentation both standee as well as e-poster presentation. 2 nd FARO congress was also held at this time. There were official representation from ASCO, ASTRO and NCI-USA. In all, around 5000 delegates (both national and international) attended this conference.

This was organized by 4 National funding organization AROI, IASO, ISO, ISMPO and it was joined by another 4 National oncology associations and 4 more academic oncology institution. The onco-tech exhibition had 110 exhibition halls and it was well supported by trade sponsors. The Government of Karnataka was very much backbone of this conference both in terms of academics as well as financially. Dr. Kiran Mazumdar Shaw was the patron for this conference.

In the evening we had good cultural extravaganza on all the 3 days.

The valedictory function was held afternoon of 12th Nov Prof. Ramesh S Bilimagga thanked all the participants, supporters of the conference specially AROI for giving this opportunity to conduct this conference. The next 3rd ICC-2021 was announced which would be headed by IASO and will be held at Mumbai.

# CONFERENCES

## Through Lens - 2nd Indian Cancer Congress-2017


# CONFERENCES

## 29th UP AROICON 2017
## Kanpur : 14th - 15th Oct 2017

**Update from: Dr Madhup Rastogi, Professor & HOD Department of Radiation Oncology, Dr.RMLIMS,**

The 29TH UP AROICON 2017 was organized by Royal Cancer Institute & Research Centre, Kanpur on Oct 14th - 15th 2017 at The Landmark Hotel, Kanpur with a very novel theme "Multidisciplinary approach to Cancer Care". Dr Rajesh Agarwal was the Chairperson and Dr Anu Tiwari was the Organizing Secretary of the convention. The conference was inaugurated by and Prof. M.L.B. Bhatt, Vice Chancellor KGMU Lucknow and President UP chapter of AROI Dr. Madhup Rastogi, Prof and Head, Radiation Oncology, RMLIMS, Lucknow. A souvenir cum abstract book was also released by the Chief Guest. Prof Satyajit Pradhan from IMS, BHU was awarded prestigious Prof B.N. Lal Oration. He shared his views on "Response evaluation in Radiotherapy". Prof B. K. Mohanti from Fortis Hospital, Gurugram was awarded prestigious Prof M.C. Pant Oration. He spoke on a very pertinent aspect of Cancer care "Understanding Multidisciplinary Head & Neck Cancer management in India". The invited speakers were Prof S K Srivastava, Prof. Firuza Patel, Dr. S. Hukku, Prof Shaleen Kumar, Prof. Punita Lal, Prof Neeraj Rastogi, Prof D N Sharma, Dr B Paul, Dr Madhup Rastogi, Dr Sapna Nangia, Dr Munish Gairola, Dr. K.S. Chufal, Dr Bhavna Rai, Dr. Anurita Srivastava, Dr Ullas Batra, Dr Vivek Garg, Dr Ajeet Gandhi and Dr K J Mariadas session wise. The conference was accorded with 8 credit points by UP Medical Council.

There were 36 posters presented by Residents and physicists from all across the State. The convention attracted huge response and more that 130 delegates were registered from various medical colleges and cancer institutes in the state of Uttar Pradesh.

Best paper award was won by followings in various categories

Resident Category:

First: Dr Amit K. Pandey, KGMU, Lucknow

Second: Dr Sambit Swaroop Nanda, RMLIMS, Lucknow

Physicist Category:

First: Mr. Vasanthaman Vasu, Royal Cancer Institute & Research Centre, Kanpur

Talent Hunt--ONCO QUIZ-

WINNER: SGPGI, Lucknow Team

Runner up: JKCI, Kanpur Team

General body meeting was held on 15th Oct which besides transecting other general discussion also decided that next venue of AROI UPCON will be IMS-BHU, Varanasi by Prof U P Shahi in 2018. Conference concluded with a contouring workshop on Head & Neck cancers for Young Radiation Oncologists to gain practical hands on experience with newer radiotherapy techniques. It was conducted by Dr. Irfan Ahmad, Consultant Radiation Oncologist, Batra Hospital, Delhi.

# CONFERENCES

## Updates in Management of Head & Neck Cancer
## AIIMS, Delhi : 3rd – 5th November, 2017

**Update from: Dr Abhishek Shankar& Dr Supriya Mallick**

All India Institute of Medical Sciences, under the privileged guidance and mentorship of Prof G K Rath has successfully conducted the "Updates in Management of Head & Neck Cancer" from 3-5th November, 2017. Conference started with 3 parallel workshop on 4th August followed by 2 days conference on recent updates in management of Head & Neck Cancer. This conference is a part of educational series of National Cancer Institute, India and was presented by Indian Society of Clinical Oncology.

Workshop covered 3 important topics i.e. Target Volume Delineation for Radiation Oncologists, Live Surgical Workshop covering head and neck surgeries for Oto-rhinolaryngolosists/General surgeons/Surgical Oncologists, Integrative Oncology workshop covering basics of AYUSH treatment and how this can be integrated with modern medicine in treatment of cancer. This workshop was attended by a total of 200 participants from India, Nepal,South Korea, Chile, UK and USA. Among all workshop, Integrative Oncology workshop was attended by maximum participants and discussed many issues related to integration of both kind of cancer treatment.

This workshop was followed by 2 days conference which witnessed the attendance of more than 400 participants from different states in India and abroad. The program was designed in a manner to cover different aspects of management in head and neckcancer starting with epidemiology and prevention, screening, and stage wise management of different subsite of Head & Neck cancer, survivorship, different special issues in the management of Head & Neckcancer and possibility of incorporation of immunotherapy and Ayurveda. Overall the program was aimed to update all stakeholders about the importance of interdisciplinary coordination and updating the residents and young practitioners about recent advancement in management of gynecological cancer. This program was well appreciated among the attendants and many attendees already have expressed eagerness to attend the subsequent meetings.

## 1st Joint Symposium on Gall Bladder Cancer
## (NCI, India and MDACC, USA)
## AIIMS, Delhi : 6th -7th November, 2017

**Update from: Dr Abhishek Shankar**

All India Institute of Medical Sciences, under the privileged guidance and mentorship of Prof G K Rath has successfully organized 1st Joint symposium on Gall Bladder Cancer. After this symposium, Consortium was formulated to address important unsolved issues in management of Gall Bladder Cancer. This was jointly organized by National Cancer Institute, India and MD Anderson Cancer Center, USA on 6-7th November in AIIMS, Delhi and presented by Indian Society of Clinical Oncology. This symposium had detailed discussion on Gall Bladder Cancer, starting from epidemiology, screening, diagnosis and treatment, molecular landscape with possible targets. There was round table meeting among participants from different countries to discuss the work flow of this consortium with strategic priorities and possible deliverables. This program was attended by a total of 100 participants from oncology center of excellence in India, South Korea, Chile and USA.

All the participating Institutions agreed to work on various aspects of Gall Bladder Cancer including Epidemiology, Molecular landscapes, treatment protocols, palliative care, Translational Science, Biobank, Animal House, Integrative Oncology. This was decided to work together on conducting Clinical trials on Gall Bladder Cancer, Review Papers on different topics discussed in meeting, Book on Updates in Management of Gall Bladder Cancer with Springer. Overall the program was aimed to update all stakeholders about the importance of interdisciplinary coordination and this program was well appreciated among the attendants.

# CONFERENCES

## SRMS-IMS Contouring Classes
## R.R Cancer Institute, SRMS-IMS, Bareilly: 25th Nov 2017

**Update from: Dr. Piyush Kumar**

A two day fourth workshop of SRMS-IMS Contouring Classes was started on 25th November, 2017. The topic was "Contouring of Pelvic malignancies". The workshop aims to teach various radiation oncologists about the latest radiotherapy techniques. Dr. Piyush Kumar, Professor & Head of Department was course Chairman and Dr. Arvind Kumar Chauhan, Associate Professor was Course coordinator. Faculty and residents from GGSMC (Faridkot) and Kamla Nehru Memorial Hospital, Allahabad. attended this workshop. This workshop is unique and first of its kind in whole India where the delegates have been given 10hrs of hands on training on treatment planning system. This workshop provided hands on experience and exposure of existing advanced technologies for cancer treatment in radiation therapy to participants.

The faculty for the course was Dr. Pavan Kumar (Asst. Professor), Dr. Mrinalini Verma (Asst. Professor) along with Instructor Dr. Bhavya Pratyusha Pateneedi (Senior Resident) and four Tutors Dr. Ayush Garg, Dr.Sankalp Naidu, Dr. Shubhi Agarwal and Dr. Sudeep Bisht. A live demonstration of IMRT planning, verification with IGRT followed by execution of a pelvic malignancy case was demonstrated on second day. This training will help these delegates to become aware to this latest technology so that they can bring this technology to their centers and practice. The department's motto is "Treating patients, Teaching post graduates, Training Specialists"

## 27th ICRO Teaching program
## Max Hospital, Bathinda : 25th - 26th November 2017

**Update from: Mr. Balbir Singh**

On 25th -26th November 2017 .27th ICRO Teaching program was organized in Max Superspeciality Hospital, Bathinda under the banner of PMC in auditorium of central University under guidance of Dr. Rajesh Vashistha and Dr. Manjinder Singh Sidhu. Dr. Rajesh Vashistha welcomes delegates of teaching program. Course was inaugurated by Dr. M K Mahajan,Director Advance cancer Hospital and GM Mr. Sunil Mehta of Max Hospital .

Dr. Senapati ICRO chairman, give brief to all faculty,Punjab Medical Council and students .Why this course was selected and need of hyofractionation nowadays. Six credit hours were given by P.M.C .In the course 47 delegates participated from all over India. Teaching Faculty was Dr. Swarupa Mitra, Prof .Manoj Gupta, Mr.Ravikumar, Dr. Ashutosh Mukharjee, Dr. S.N.Senapati, Dr Haresh KP, Dr Vivek Kaushal, Dr Kaustav Talpatre, Dr. Sajal Kakkar, Dr. Anu Tiwari, Dr. Rajesh Pasricha, Dr. Satyajit Pradhan, and Dr. Manjit Jaura, Dr. Pardeep Garg. Students took active participation in discussion .In the last evaluation test were taken Dr. Krithikaa S & Dr. Anupama Reddy P.S. from Cancer Institute Adyar were winners of the course .Mr. Arvibd Suri highlighted why they running course and intrest of Sun Pharma in teaching. In the end Dr. Manjinder gave vote of Thanks to all faculties, Max Hospital, Dr. RC Garg, Punjab Medical Council and central University and students who participated.


# CONFERENCES

## PRODVANCE West Zone
## Jaipur : 7th – 8th Oct 2017

**Update from: Dr Rohitashwa Dana**

**Department of Radiotherapy SMS medical college Jaipur, organized PRODVANCE 2017 meet On 7th – 8th Oct 2017 under the auspices of ICRO wing of AROI. It was chaired by Dr. Vijay Anand Reddy President AROI, Dr. Rajesh Vashistha President Elect, Dr. GV Giri Secretary General AROI, Dr. SN Senapati Chairman ICRO, DR. Rohitashwa Dana Organsing Chairperson & Dr. Sandeep Jian Organsisng Secretary. This interactive educational event was designed to make budding Rdaiotion Oncologists familiar with the process of imaging, contouring & plan evaluation pertaining to the malignancies of head and neck, breast, Lung, Brain, Cervix, Prostate and Rectum. The Academic feast was attended by AROI members from west zone of India. It was an excellent platform for interactive learning, all the delegates had a meaningful discussion with faculty. The event concluded with much appreciation on 8th October. Study material given to candidates in pen drive.**

## South zone AROI-ICRO Radiobiology Teaching course
## Kamineni hospital, Hyderabad : 28th Oct 2017

**Update from: Dr. Ashwin M Shah**

**The Department of Radiation Oncology at Kamineni Hospital, LB Nagar , Hyderabad organized the South zone AROI-ICRO Radiobiology Teaching course on October 28th 2017. The course on 'Clinical Radiobiology for Radiation Oncologists' was conducted by Dr. Manoj Gupta, Head of Radiation Oncology ,AIMS,Rishikesh. The program was well attended by 83 post graduate students and 10 Consultants from Telangana, Andrapradesh, Karnataka and Tamil Nadu. The program was a huge success with good attendance from students coming from the entire south zone. Interactive sessions between the speaker and students, helped the students to understand the radiobiological principles, its clinical applications and implications.**

# CONFERENCES

## AOCMP-AMPICON 2017
## Jaipur : 4th -7th Nov 2017

**Update from: Dr.Arun Chougule**

The 17th Asia-Oceania Congress of Medical Physics and the 38th Annual Conference of Association of Medical Physicists of India (AOCMP-AMPICON 2017) was organized and hosted by the Department of Radiological Physics, SMS Medical College and Hospitals Jaipur, Rajasthan along with the Association of Medical Physicists of India (AMPI), the Asia-Oceania Federation of Organizations for Medical Physics (AFOMP) and the International Organization for Medical Physics (IOMP) with co-sponsorship and endorsement from the American Association of Physicists in Medicine (AAPM), the International Centre for Theoretical Physics (ICTP) and the Middle East Federation of Organizations of Medical Physics (MEFOMP) from 4th to 7th November, 2017. Also, IOMP officially held the 5th International Day of Medical Physics (IDMP) celebrations in Jaipur on the 7th day of November as part of the AOCMPAMPICON 2017. More than 850 delegates from over 30 countries participated and this was the first time AOCMP being held in India. The theme of the conference was "Advances in Medical Physics: Shaping the future of modern healthcare", aiming to promote the interdisciplinary research at global level. Medical Physics professionals from across the world have actively involved and contributed towards the success of the conference. The total number of visits to the conference website (aocmp-ampicon2017.org) was more than three lakhs. Dr Raja Babu Panwar, Honourable Vice Chancellor, Rajasthan University of Health Sciences (RUHS), Jaipur inaugurated the conference. The AFOMP newsletter, Souvenir and abstract book of the conference and the Medical Physics Gazette were released during the inaugural function. The scientific sessions played a vital role in disseminating knowledge and provided the optimal platform to discuss new avenues in Medical Physics. The conference focused also on the new emerging trends in Medical Physics, Radiotherapy, Nuclear Medicine, Diagnostic Radiology, Biophysics, Biomedical engineering, Radiobiology, Radiation safety and regulations, Medical Physics training and education. The key scientific sessions of the conference were the following:

☐ Proton & Heavy ion Therapy ☐ Modern Medical Imaging ☐ Affordable therapy technologies ☐ Advanced Medical Research ☐ Monte Carlo & Special Algorithms ☐ Latest CT Technologies ☐ Electron Beam Therapy & Special Procedures ☐ High Tech Radiotherapy and challenges

☐ Radiation incidents and accidents in medicine ☐ Nuclear Medicine & Radiobiology ☐ Radiological and Nuclear Emergencies ☐ Brachytherapy ☐ Modern RT Techniques & Planning ☐ New Developments in Photon Brachytherapy ☐ Dosimtery and Quality Assurance

☐ Materials and equipment for Research in Medical Physics ☐ Radiobiophotonics & Normal Tissue Protection- A Firewall ☐ Small Field dosimetry ☐ Medical Physics Research & Biomedical Engineering ☐ Radiobiology

☐ Diagnostic Dose Reference Levels (DRLs) ☐ e-Learning resources in Medical Physics ☐ Medical Physics Training and Education ☐ Female Medical Physicist: Global and Regional perspective ☐ Radiation Protection and Imaging of Women Patients.

This International conference provided a perfect forum to fulfil the objective, foster knowledge up gradation and encourage exchange of ideas. The comprehensive scientific programme included 42 sessions comprising 1 Oration, 1 keynote presentation, 37 invited talks, 90 oral papers, 257 posters, 2 panel discussions, 30 mini-symposiums talks, 12 IOMP School talks, 4 CMPI teaching talks, 13 IDMP talks, 3 Trade talks and 1 Lunch symposium. The scientific proceedings of the congress have been published as the Journal of Medical Physics (JMP) special abstract issue November 2017. (Available at: www.jmp.org.in). To impart social awareness of the role of Medical Physics in healthcare, the International Organization for Medical Physics (IOMP) celebrates the International Day of Medical Physics (IDMP) on November 7 annually in recognition of the pioneering research work on radioactivity by Madame Marie Sklodowska Curie. On 7th November 2017, the 150th birthday of Madam Marie Curie, the 5th International Day of Medical Physics was celebrated at Jaipur with the theme 'Medical Physics: Providing a Holistic Approach to Women Patients and Women Staff Safety in Radiation Medicine'. The social and scientific deliberations including a public awareness rally provided the opportunity to understand and tackle the concerns and hazards of the use of ionizing radiation in healthcare from women's perspective. The IDMP rally and the scientific deliberations were live webcasted internationally by the IOMP from Jaipur along with the live webcasts from the IAEA and the WHO in addition to the local and national printed, electronic and social media coverage. Various awards and grants including IOMP-IDMP awards, AFOMP awards, AMPI awards and ICTP grants were distributed.

We gratefully acknowledges the active participation, cooperation and support of the organizations AFOMP, AMPI, IOMP, AAPM, ICTP, MEFOMP, EFOMP, AROI and IPEM and all individuals involved in this conference.

# CONFERENCES

## AOCMP-AMPICON 2017


## AERB Regulatory Affairs –Meeting

### Mumbai : 30th November 2017

**Update from: Prof. Ramesh S Bilimagga,**

**Dr. Vijay Anand Reddy President AROI authorized Prof. Ramesh S Bilimagga and Prof. S K Srivatsav past presidents of AROI to represent AROI in NCRI-2017 meeting. Dr. Bilimagga had sent out mailer to all the AROI members and collected their views and consolidate the points along with Dr. Srivatsav. In the agenda of the meeting, total 30 minutes time was allotted to express the consolidated views from the representatives of Radiotherapy Associations which included AROI, AMPI, IBS, and ARTTI. All the representatives from the 4 associations met and prepared common representative PPT and we choose Mr. Subramaniyam, AMPI to present the same. After his presentation few clarification were also given by us. Dr. A.U Sonawane, Head DRA&C was chairing the session informed us that the proceedings of the meetings along with the answers and suggestions will be sent to us very shortly.**

**The points presented before the meeting are as follows:-**

| Sl | Issues | Possible solutions |
|---|---|---|
| 1 | Difficulty in finding & contacting officer who can clarify the queries | - AERB can designate a contact person for various related and discuss minor or major issues.<br>- As institution are involved in patient treatment, the issues sorting should be expedited |
| 2 | Application status – information of rejection of application takes almost a month and further takes a month for next query | - AERB can publish commonly occurring errors to help applicants<br>- Direct telephone contact with applicant (Two way communication needed)<br>- Approach through emails<br>- Priority basis dealing on rejection application |
| 3 | When application is rejected through eLORA, there is no clear explanation | eLORA letter should clearly mention the issue and possibly way to resolve |
| 4 | eLORA help desk rarely help answers queries, | - eLORA help desk need to be approachable<br>- eLORA should be modified as deemed necessary |
| | | |
| 5 | eLORA portal license transferability is not allowed without physical decommissioning | May be permitted |
| 6 | Custom Clearance: Ir192 has been categorized under radio-pharmaceutical, thus require drug license DGCI | AERB to clarify to DGCI and Finance Ministry to delete from present custom's list (Brachytherapy sources needing clearance from AERB and DGCI, causes delay in patient treatment) |
| 7 | Clearance from local 'police and administration' for radioactive installation. But police and administration are unaware. | Preferably SOP may be prepared for guidance to police and local administration |
| 8 | Meeting with stake holders | Regular meeting should happen with designated members of association and AERB administration for better functioning, preferably annually |
| 9 | Too short time is provided to Association to discuss | Provide more time & regular interactions |

# CONFERENCES

## 12th North East AROICON
## Aizawl, Mizoram : 27th - 28th Oct 2017

**Update from: Dr. ZothanKima**

**12th Annual conference of Association of Radiation Oncologists of India , North East Chapter was held at Hotel Regency, Aizawl, Mizoram during 27th and 28th October 2017. The Honourable Health Minister of Mizoram State graced the function as Chief Guest. Members of NE-AROI from different states of North East India and some faculties from outside the region had fruitful scientific interactions on different topics of oncology. Election of new office bearer of NE-AROI for 2017-2019 was held during the conference. Next NE-AROICON will be held at Arunachal Pradesh during 2018.**



## 32nd AROICON TNPY Chapter
## Trichy : 6th – 7th Oct 2017

**Update from: Dr.L.Padmanabhan**


# CONFERENCES

## North Zone AROI
## Hisar : 16th – 17th Dec 2017

**Update from: Dr. Ravindra Purohit**

**Annual conference of Association of Radiation Oncologists of India , North Zone Chapter was held at Guru Jambheshwar University of Science & Technology, Hisar during 16th & 17th December 2017. Members of NZ-AROI from different states of India and some faculties from outside the region had fruitful scientific interactions on different topics of oncology. Total 243 participants attended the meeting. Prof. B D Gupta Oration (First in Series) was delivered by Dr. S Hukku. 56 abstracts were submitted for the conference for awards.**





**Best Paper Awards**
**1st Rank – Dr Harpreet Singh**
**2nd Rank – Sarthak Tondon**
**3rd Rank – Dr Suigdha**

**Best E-Poster Awards**
**1st Rank – Dr Somitra Ranjan**
**2nd Rank – Anil Gupta**
**3rd Rank – Dr Sourav Majumbar**

**Quiz Winners**
**1st Rank – GMC Shimla Team**
**Dr Anoop Negi**
**Dr Poorva Vyyas**
**Dr Harpreet Angural**

**2nd Rank – RGCI & RC Team**
**Dr Kanika Sharma**
**Dr Masroor**
**Dr Sandeep Tiwari**

# Upcoming.....

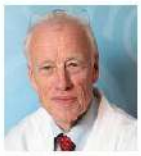

ESTRO School

## 2nd ESTRO-AROI GYN Teaching Course

**Theme** 3D Radiotherapy with a Special Emphasis on Implementation of MRI/CT Based Brachytherapy in Cervical Cancer

8th to 11th March, 2018

Department of Radiation Oncology
Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow (U.P) INDIA



**Richard Pötter**
ESTRO Course Director

**Umesh Mahantshetty**
AROI Course Director

**Madhup Rastogi**
ESTRO-AROI Course Organizer

: Venue :
Conference Hall, Administrative Block, Dr. RMLIMS, Vibhuti Khand, Gomti Nagar, Lucknow 226010 (U.P) INDIA

: www.estroaroi2018.in
: E-mail: estroaroilko@gmail.com
: https://www.estro.org/school/courses/ FirstLevel/Courses/SecondLevel/2018+Courses

## AROICON 2018

Thiruvananthapuram

**Nov 29- Dec 2, 2018**

We are delighted to invite you to Kerala – 'God's Own Country' for the next National Annual Conference of **AROI - AROICON 2018**. The capital city of Thiruvananthapuram will play host from **Nov 29th to Dec 2nd, 2018.**

President: Kerala Chapter
Dr Jayaprakash Madhavan

Secretary: Kerala Chapter
Dr Suresh Kumar K

### *Organising Committee*

| | | |
|---|---|---|
| Organising Chairman | Organising Secretary | Treasurer |
| Dr K Ramdas | Dr Francis V James | Dr R Rejnish Kumar |
| Vice Chairmen | Joint Secretary | Scientific committee Chairman |
| Dr Jayakumar KL | Dr Cessal T Kainickal | Dr Aswin Kumar |
| Dr Dinesh M | | |

Mahatma Gandhi Medical College and Hospital | NCI-All India Institute of Medical Sciences | National Institute of Immunology


## WORLD CONGRESS ON CANCER [WCC-2018]

**Venue: Mahatma Gandhi Medical College and Hospital, Jaipur, India; February 3-5, 2018**

WCC is being jointly organized by the Mahatma Gandhi University of Medical Sciences and Technology (MGUMST) Jaipur, National Cancer Institute-All India Institute of Medical Sciences (NCI-AIIMS), New Delhi and National Institute of Immunology, New Delhi under the auspices of the Indian Society for the Study of Reproduction and Fertility (ISSRF).

**Theme:** Cancer is the culmination of somatic genetic alterations that cluster around the acquisition of key traits-limitless replicative potential, suppression of apoptosis, invasion and insensitivity to growth regulatory signals. Thus dissecting the specific molecular anatomy of a tumor is likely to be critical for the development of more specific, efficacious and safer cancer treatments that can be based on an individual tumors oncogenic mechanism. The congress will address current and future therapeutic modalities targeting tumor antigens, on emerging trends, recent advances, new approaches and future approaches in the field of cancer vaccine, early detection and diagnosis, biomarker discovery, tumor biology & therapy. WCC will provide a platform to get associated with leading oncologists, doctors, scientists, academicians, specialists & business associates coming around the world.

**For information and registration visit:**
**www.nii.res.in/wcc.htm, E-mail: wcc2017@nii.ac.in**

# Upcoming.....


## Conference & Teaching Course for the year 2018 -19

**40th AROICON 2018:**
RCC Trivandrum 29th -2nd Dec 2018
Contact persons-
Dr. Francis V James, francisvjames@hotmail.com , Ph. +91 9847189270 /
Dr. K Ramdas, ramdask@gmail.com Ph. 9447042309

**41st AROICON 2019:**
GCRI, Ahmadabad (Gujarat Chapter)
Contact person- Dr. RK Vyas, vyas.rk@gmail.com
Ph. 9898284498

**6th AROI-ESTRO Advanced Technologies, 2018:**
GSL Cancer Hospital, Rajahmundry (AP Chapter)- 14-17 October, Contact person- Anand Rao ,Ph. 9440041422

**2nd AROI-ESTRO Gynae teaching course:**
Dr. RMLIMS, Lucknow, 8-11 March 2018
Dr. Madhup Rastogi, drmadhup1@rediffmail.com
Ph. 8176007010/9418155955

**2019:**
3rd AROI-ESTRO Gynae teaching course,
AIIMS, Rishikesh
Dr. Manoj Gupta, manojgupta16avg@gmail.com
Ph. 9549612612

**7th AROI-ESTRO:**
Advanced Technologies, BHU, Varanasi
Dr. U.P. Sahai shahiuday@gmail.com, Ph. 9450592811

**Best of ASTRO:**
2018:Delhi-Dr.ManishPandey,
manishpandey73@gmail.com
2019: Narayana Superspeciality Hospital, Howrah, (West Bengal) Dr. Suman Malik
mallick_suman@rediffmail.com, Ph. 9830545324

**AROI –ICRO SUN PG Teaching course, 2018:**
V.N. Cancer Centre at GKNM Hospital, Coimbatore (TN & P)
SEORA, Srinagar (North Zone)
SMS Medical College, Jaipur (Rajasthan Chapter)

**AROI -ICRO 2018 Dr Reddy s Post PG Teaching Course 2018:**
West Zone: GMC, Nagpur (Maharashtra Chapter)
North Zone: Bathinda, Ludhiana (North Zone)
East Zone: A.H.Regional Cancer Center, Cuttack (Orissa Chapter)
South Zone: AP/Telangana, Apollo Cancer Hospital Hyderabad

**AROI-ICRO-Intas Radiobiology 2018:**
North Zone: IGMC, Shimla
South Zone: Vydehi Medical College, Bengaluru (Karnataka Chapter)
West Zone: GMCH MGM Medical College, Indore (MP& CG)
East Zone: Medical Collage, Kolkata (West Bengal Chapter)
North Zone: Jammu Medical College Jammu

**YROC 2018:**
Max Superspeciality Hospital Patparganj
Conference Venue- Taj Vivanta Dwarka, New Delhi
12-4th Jan 2018
Contact persons-Dr. AK Anand,
akanand@maxhealthcare.com, Ph. 9810398838
Dr. Vineeta Goyal vineetagoel@yahoo.com ,
Ph. 9818045469

**PRODVANCE 2018:**
Kottyam Medical College 6th & 7th Jan-18
Dr. Suresh Kumar dr_sureshkk@yahoo.co.in Ph. 9496963838

**World Cancer Congress:**
Jaipur 3 – 5 Feberuary 2018
Prof. (Dr.) Arun Chougule- arunchougule11@gmail.com
Ph. 9928140113

Academic Program Support by: Sun Pharma, Dr. Reddy's Lab, INTAS

# Awards & Honours

## FICRO AWARDEES

1. Dr. Ashwath Narayana- Greenwich Hospital - Yale New Haven health system, Connecticut
2. Dr. D N Sharma- (AIIMS), New Delhi
3. Dr. J P Agarwal- TMH, Mumbai
4. Dr. Siddharth Laskar- TMH, Mumbai
5. Dr. Umesh mahantshetty- TMH, Mumbai

## WINNERS OF BEST PAPER

1. Best Proffered Paper >40 years age
   Dr. Robin Khosa- Indraprastha Apollo Hospital, New Delhi
2. Best Proffered Paper <40 years age
   Dr. Bhaskar Vishwanathan
3. Dr. G C Pant Young Doctor Award
   Dr. Harjot Bajwa- Basavatarakam Indo American Cancer Hospital and Research Institute, Hyderabad
4. Dr. M S Gujral Gold Medal
   Dr. Nivedita Sarkar- KIDWAI Cancer Institute, Bangalore
5. Dr. M C Pant Gold Medal
   Dr. Narayan Adhikari- AIIMS, New Delhi
6. Best Paper in Medical Physicist
   Dr. Senthil Kumar- Govt. Rajaji Hospital & Madurai Medical College Madurai -625 020, Tamil Nadu

## TRAVEL FELLOWSHIPS

1. Dr. Parneet Singh- Max Saket,New Delhi
2. Dr. Sebin George- Christian Medical College, Ludhiana
3. Dr. Hema padmini- GSL Medical College and hospital, Rajahmundry
4. Dr. Rashi Kulshrestha- MAMC Delhi
5. Dr. Vishnu Hari Lal- Acharya Tulsi Regional Cancer Centre, Bikaner,Rajasthan

## FELLOWSHIPS AWARDED

### Overseas fellowships

>50 years age group, Kirloskar Therapeutics Ltd. Fellowship

1. Dr. Thejaswini B- KIDWAI Cancer Institute, Bangalore
2. Dr. A K Rathi- MAMC , Delhi

### AROI Fellowship

1. 40-50 year's age group
   1. Dr. Aradhana K- Kidwai Cancer Institute Bangalore
   2. Dr. Budhi Singh Yadav- Post Graduate Institute of Medical Education and Research, Chandigarh
2. 35-40 year's age group
   1. Dr. Pooja Nandhwani Patel- Gujarat Cancer and Research Institute Ahmedabad
   2. Dr. Pramod Kumar Gupta- Superspeciality cancer Institute, CG City, Lucknow
   3. Dr. Praveen Ahlawat- Rajiv Gandhi Cancer Institute & Research Centre, New Delhi
3. <35 years age group
   1. Dr. S D Shamsundar- Kidwai Memorial Institute of Oncology, Bangalore.
   2. Dr. Vijay Karan Reddy- Apollo Cancer Institute, Jubilee Hills, Hyderabad.
   3. Dr. Shraddha Raj- IGIMS, Patna

4. AROI with in India Fellowship between 30-35 years
   Dr. Harjot Bajwa- Basavatarakam Indo American Cancer Hospital and Research Institute, Hyderabad

5. Neiljoseph Fellowship
   1. Dr. Abhishek Basu- Tata Medical Centre, Kolkata
   2. Dr. Poulami Basu- Medical College Kolkata
   3. Dr. Nivedita Sarkar- KIDWAI Cancer Institute, Bangalore
   4. Dr. Upasana Mukherjee- Medical College, Kolkata in West Bengal.
   5. Dr. Sai Sanklap Naidu- Shri Ram Murti Smarak Institute of Medical Sciences, Bareilly, UP
   6. Dr. Vishnu H Lal- Acharya Tulsi RCC, Bikaner

6. AROI Fellowship for Medical Physics
   Mr. Balbir Singh- Max Superspeciality Hospital Bathinda

7. AROI Fellowship for Radiotherapy technologist
   Ms. Kamaljeet Kaur- Max Superspeciality Hospital

## ICRO TEACHING COURSE WINNERS

**25TH –Dehradun**
Dr. Shwetabh Sinha- TMH, Mumbai
Dr. Reshma Purella- Omega, Hydrabad

**26th- Pondicherry**
Dr. Ashitha E A- GMC Calicut
Dr. S T Lalit Kashyap- Apollo Hyderabad

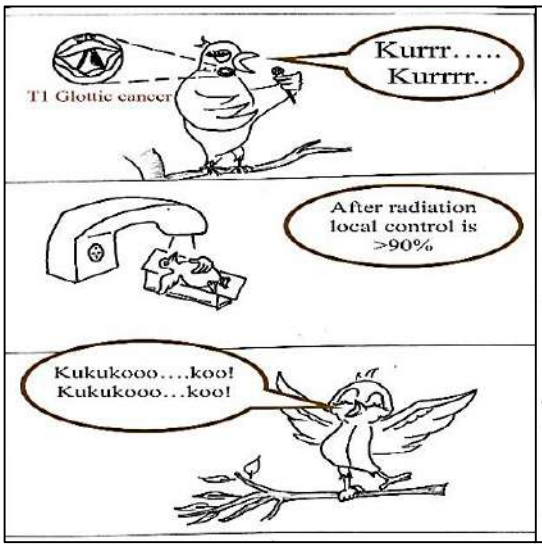
**27th- Bathinda**
Dr. Krithikaa S- Adyar Chennai
Dr. Anupama Reddy P.S.- Adyar Chennai

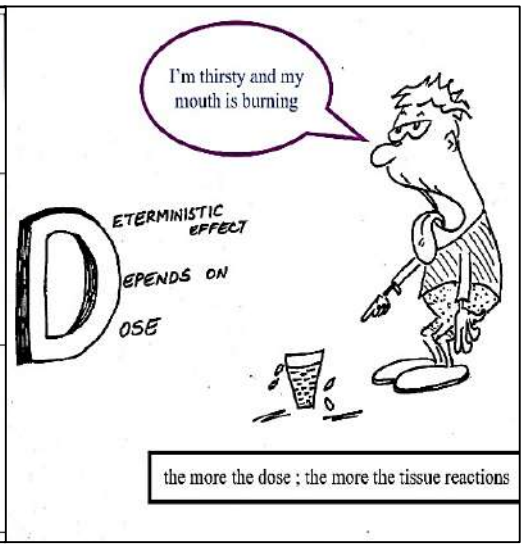
# Activity & Fun




**Upcoming Sessions** Login to Schedule

| Date/Time | Speciality | Disease Site | Specialist |
|---|---|---|---|
| Thu, Dec 21, 4:00 PM IST | Radiation Oncology | GU | Dr. Indranil Mallick |
| Thu, Dec 28, 4:00 PM IST | Radiation Oncology | CNS | Dr. Monica Malik |
| Thu, Jan 4, 4:00 PM IST | Radiation Oncology | SBRT | Dr. Supriya Chopra |
| Thu, Jan 11, 4:00 PM IST | Radiation Oncology | GU | Dr. Sajal Kakkar |
| Thu, Jan 18, 4:00 PM IST | Radiation Oncology | Lung | Dr. Srinivas Chilukuri |
| Thu, Jan 25, 4:00 PM IST | Radiation Oncology | CNS | Dr. Debnarayan Dutta |
| Thu, Feb 1, 4:00 PM IST | Radiation Oncology | GYN | Dr. Supriya Chopra |
| Thu, Feb 8, 4:00 PM IST | Radiation Oncology | Head and Neck | Dr. Cessal Kainickal |
| Thu, Feb 15, 4:00 PM IST | Radiation Oncology | GI | Dr. Kaustav Talapatra |
| Thu, Feb 22, 4:00 PM IST | Radiation Oncology | Breast | Dr. Sanjay Chandrasekhar |




**Cartoon Illustrations by:**
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**Bhagwan Mahaveer Cancer Hospital & Research Centre**
**Jaipur**

This issue is brought to you by **Dr. Vikas Jagtap, NEIGRIHMS, Shillong (Meghalaya), India for the Association of Radiation Oncologists of India**

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