



7-8 November 2016

IT Auditorium, Building 31-3-004, CERN, Geneva

AGENDA

CO-ORGANIZERS: C. Norman Coleman (ICEC), Manjit Dosanjh (CERN), David A. Pistenmaa (ICEC)

Monday, November 7, 2016

7:45 to 8:30: Special Shuttles from Main Building (no 500, outside stairs side) to Building 31

COFFEE and Registration: 8:00 – 8:30 AM

Morning Session: 8:30 AM – 12:00 noon

- 8:30 I. Welcome to CERN: Frederick Bordry (CERN)**
- 8:35 II. Welcome and Goals of the Workshop: Norman Coleman (ICEC), Manjit Dosanjh and David Pistenmaa (ICEC)**
- 8:45 III. Unique Partnerships to Improve Radiation Oncology in Low- and Middle-Income Countries**
Moderator: Manjit Dosanjh (CERN) (15' each)
- 8:50 A. Summary of Findings of the Global Task Force for Radiation Control of Cancer (GTFRCC): **Mary Gospodarowicz** (Princess Margaret Center, Univ. Toronto)
- 9:05 B. Balancing Equity and Advancement in Radiotherapy: How Economics Can Help Solve Global Health Challenges: **Danielle Rodin** (Dept. of Radiation Oncology, Univ. Toronto)
- 9:20 C. Cobalt-60 and Cancer Treatment: the NNSA Radiological Security Mission: **Katherine Holt** (US Dept. of Energy, NNSA)
- 9:35 D. Treatment Not Terror: Improving Cancer Treatment while Reducing Security Risks: **Miles Pomper** (James Martin Center for Nonproliferation Studies, US)
- 9:50 – 10:20 COFFEE BREAK*
- 10:20 IV. Lessons from Past and Current Radiation Therapy Initiatives: What Works or Does not Work in Low- and Middle-Income Countries, and Why**
Moderator: Yakov Pipman (MPWB)
- 10:25 A. IAEA's perspective: **Eduardo Zubizarreta** (IAEA)
- 10:45 B. Open Discussion
- 10:55 V. Design Considerations for a Linear Accelerator for Challenging Environments**
Moderator: Richard Lanza (MIT)
- 11:00 A. Radiation Oncology in Africa; Current State and Future Goals: **Surbhi Grover** (Univ. Pennsylvania)



11:15 B. Machine Parameters and Machine Operational Features to Satisfy Requirements: **Ahmed Meghzifene** (IAEA)

11:35 C. “Dreamliner” Novel Linear Accelerator Features for Challenging Environments: **David Pistenmaa** (ICEC)

11:40 VI. Considerations in the Modular Design of Complex Systems: Ron Cobbs (NASA)

12:00 – 1:00 PM LUNCH

Afternoon Session: 1:00 PM – 5:00 PM

1:00 VII. Options for Achieving a Novel Linear Accelerator for Challenging Environments; Exploiting advances in technology: Co-Moderators: Ugo Amaldi (TERA) and Alberto Degiovanni (ADAM)

1:05 A Technical presentations (12'+5' each):

1. Goals of Session: **Ugo Amaldi and Alberto Degiovanni** (5')
2. Experience gained from the GlobalDiagnostiX project: **Romain Sahli** (EPFL)
3. Problems posed by “difficult” environments to present linac-based systems: **John ALLEN** (Elekta)
4. Electron Linac Projects in Pakistan with CERN support: **Sumaira Zeeshan** (CERN)
5. IORT Linac and possible developments: **Luigi Picardi** (ENEA)
6. Experience on Electron Linacs at NCBJ (Poland): **Przemek Adrich** (National Centre for Nuclear Research, Poland)
7. Robust X-ray imaging: **David Jaffray** (Ontario Cancer Institute/Princess Margaret Institute)
8. Lower cost RT through new software tools (optimization and automation): **Johan Lof** (Raysearch Laboratories, Sweden)

3:05 – 3:30 COFFEE BREAK

9. Shielding in difficult environments: **Pawel Krawczyk** (NCJB, Poland)
10. PHASER: Application of Advanced RF Linac Technology to Medical Accelerators: **Sami Tantawi** (SLAC) and **Billy Loo** (Stanford University)
11. General design considerations on structures, power sources and accessories: **Maurizio Vretenar** (CERN)
12. Conclusions: **Ugo Amaldi**

B. Open discussion (30'). Co-moderators: **Ugo Amaldi, Alberto Degiovanni and David Pistenmaa**

5:00 ADJOURN FOR THE DAY

5:30 Bus to Main Building (no 500) – Parking Route Greinacher

7:00 PM GROUP DINNER: CERN VIP Restaurant 1 (Glass Box)

Dinner speakers: (10-15 minutes each)

- AFRICIS: A model for scientific collaboration in Sub-Saharan Africa: **Hubert Foy**
- Positive steps towards better cancer care in Botswana: **Surbhi Grover**



Tuesday, November 8, 2016

7:45 to 8:30: Special Shuttles from Main Building (no 500, outside stairs side) to Building 31

COFFEE and Registration: 8:00 – 8:30 AM

Morning Session: 8:30 AM – 12:00 noon

8:30 VIII. Summary of Design Characteristics for a Novel Linear Accelerator for Challenging Environments. Moderator: David Jaffray

8:35 A. Recommendations from Session VII: **Ugo Amaldi and Alberto Degiovanni**

9:00 B. Open discussion

9:50 – 10:20 COFFEE BREAK

10:20 IX. What Will it Take to Make it Happen? Moderator: Bruce Curran (AAPM, US)

10:25 A. How to translate design characteristics into a working machine (From machine shop to the clinic): **Jacques Bernier** (Genolier, Geneva)

10:00 B. Challenges in introducing new technology in the developing world: **Andras Fehervary** (Varian)

10:55 C. Entrepreneurial strategies to make it happen: **Ajit Singh** (Artiman, US)

11:10 D. Determining the cost of new technologies such as the linear accelerator under consideration: **Yolande Lievens** (ESTRO, Ghent Hospital & Univ., BE)

**11:25 X. Essential and Sustainable Infrastructure Needs in Challenging Environments
Moderator: Norman Coleman**

11:30 A. Physical Infrastructure Requirements and Opportunities in Challenging Environments.
Moderator: **Norman Coleman**

11:30 1. Clinical considerations: **Norman Coleman for Niloy Datta**

11:45 2. Equipment and facility needs: **Ahmed Meghzifene** (IAEA)

12:00 - 1:00 PM LUNCH

Afternoon Session: 1:00 – 4:00 PM

1:00 B. Technology to Connect the World: Moderator: **Patricia Hardenbergh** (ASTRO)
1. Using modern technology to share medical knowledge worldwide: **Eduardo Zubizarreta** (IAEA)

1:20 C. Panel Discussion: Estimating the Needs and Planning for Sustainable Training of Professional and Ancillary Personnel in Developing Countries: Moderator: **Yolande Lievens** (ESTRO, Ghent Hospital & Univ., BE)

1. Overview by the moderator

2. Presentations by panel members: **Norman Coleman** (ICEC), **Bruce Curran** (AAPM), **Patricia Hardenbergh** (ASTRO), **Ahmed Meghzifene** (IAEA) **Yakov Pipman** (MPWB)

3. Open discussion

2:30 – 3:00 COFFEE BREAK



- 3:00 XI. Recommendations from the Workshop and Plans for the Future: Norman Coleman, Manjit Dosanjh and David Pistenmaa**
- 3:00 A. Summary of recommendations from the Workshop
Moderator: Norman Coleman
1. Design characteristics for a novel linear accelerator for challenging environments: **Alberto Degiovanni or designee** (15')
 2. Achieving and sustaining the necessary infrastructure in challenging environments: Can we get by with less? **Bhadrasain Vikram** (NCI) (15')
 3. Estimating the needs and planning for sustainable training of radiotherapy professional and ancillary staff in developing countries: **Onyinye Balogun** (Cornell University) (15')
- 3:45 B. Next steps: **Norman Coleman, Manjit Dosanjh and David Pistenmaa**
1. Preparation of a Summary Report of the Workshop
 2. Dissemination of information from the Workshop
 3. Recommended additional actions
- 3:55 XII. Concluding Remarks by Workshop Co-organizers: Norman Coleman, Manjit Dosanjh and David Pistenmaa**

4:00 - ADJOURN WORKSHOP

COFFEE AVAILABLE

4:45 Bus to Main Building (no 500) - Parking Route Greinacher