University of Pittsburgh
School of Medicine

BIOGRAPHICAL

Name:	Mubina Akhtar Quader	**Business Address**:	Department of Radiation Oncology
Home Address:	100 Denniston Street Unit 40 Pittsburgh, PA 15206		UPMC St. Margaret 815 Freeport Road Pittsburgh, PA 15215
Home Phone:	(412)-215-6146	**Business Phone**:	(412)-784-4915
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EDUCATION and TRAINING

Undergraduate:

1974-1977	Dhaka University, Bangladesh	B.Sc.	1977	Physics

Graduate:

1977-1979	Dhaka University, Bangladesh	M. Sc.	1979	Physics
1979-1981	SUNY at Stony Brook, NY	M.A.	1981	Physics
1979-1984	SUNY at Stony Brook, NY PhD Thesis Advisor: Prof. D. B. Fossan	Ph.D.	1984	Nuclear Physics

Post-Doctorate:

1985-1988	Purdue University and Argonne National laboratory (Nuclear Structure Studies) with Prof. Patrick Daly
1989-1990	University of Rochester Cancer Center (Medical Physics) with Prof. Dale Kubo

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APPOINTMENTS and POSITIONS

Academic:

1990-1994	University of Rochester,	Senior Instructor
1994 -2003	Department of Radiation Oncology, University of Pittsburgh	Clinical Assistant Professor
2003 –present	Department of Radiation Oncology, University of Pittsburgh	Clinical Associate Professor

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CERTIFICATION and LICENSURE

Specialty Certification:

Certifying Board - American Board of Radiology 1995 Therapeutic Radiology Physics

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MEMBERSHIP in PROFESSIONAL and SCIENTIFIC SOCIETIES

American Association of Physicist in Medicine (AAPM)

American Society for Therapeutic Radiology and Oncology (ASTRO)

RESEARCH GRANT

Source/NIH Grant Number: R01DK117916-04
Grant Title: Hepatocyte xenografts for treatment of acute liver failure
Role in Project & Percentage of Effort: Co-Investigator
Years Inclusive: 4/01/2016-6/30/2023

PUBLICATIONS

Refereed Articles:

1. **M.A. Quader**, W.F. Piel, Jr., S. Vajda, W.A. Watson III, F.C. Yang and D.B. Fossan. Proton-Hole Induced Band Structure in Odd-Odd Sb and I Nuclei, Proceedings of the Conference on High Angular Momentum Properties of Nuclei, Oak Ridge, Tennessee, Vol 1, p. 80 (1982)

2. S. Vajda, W.F. Piel, Jr., **M.A. Quader**, W.A. Watson III, F.C. Yang and D.B. Fossan. Proton-Hole Induced Bands in Odd-Odd 118, ^{120}Sb, Phys. Rev. C27, 2995 (1983).

3. **M.A. Quader**, W.F. Piel, Jr., S. Vajda, W.A. Watson III, F.C. Yang and D.B. Fossan. Proton-Hole Induced Bands in Odd-Odd $^{116-112}$I Nuclides, Phys. Rev. C30 1772, (1984).

4. P.D. Cottle, J.F. Shriner, Jr., F. Dellagiacoma, J.F. Ennis, M. Gai, D.A. Bromley, J.W. Olness, E.K. Warburton, L. Hildingsson, **M.A. Quader** and D.B. Fossan. Level Structure and Deexcitations in 220Ra and Their Systematic Behavior as a Function of Neutron Number, Phys. Rev. C30, 1768 (1984).

5. W.F. Piel, Jr., **M.A. Quader**, P. Chowdhury, U. Garg, P.M. Stwertka, S. Vajda and D.B. Fossan. Collective Structure in the Odd-Z Transitional Nuclei ^{115,117}I and ^{121,123}Sb, Phys. Rev.C31, 456 (1985).

6. J .F. Shriner, Jr., P.D. Cottle, J.F. Ennis, M. Gai, D.A. Bromley, J.W. Olness, E.K. Warburton, L Hildingsson, **M.A. Quader** and D.B. Fossan. Level Structure of ^{220}Ra, Phys. Rev. C32, 1988 (1985).

7. **M.A. Quader**, C.W. Beausang, P. Chowdhury, U. Garg and D.B. Fossan. Band structure change in Z>50 Region: Doubly Odd ^{120,122}Cs and ^{126,128}La, Phys. Rev. C33, 1109 (1986).

8. T.Lonnroth, C. Beausang, D.B. Fossan, L. Hildingsson, W.F. Piel, Jr., **M.A. Quader**, S. Vajda, T. Chapuran and E.k. Warburton. Excited States in Neutron-Deficient ^{195}Bi, Phys. Rev. C33, 1641 (1986).

9. M. Piiparinen, M.W. Drigert, R.V.F. Janssens, I. Ahmed, J. Borggreen, R.R. Chasman, P.J. Daly, H. Emling, U. Garg, Z.W. Grabowski, R. Holzman, T.L. Khoo, W.C. Ma, D.C. Radford, **M.A. Quader** and W. Trzaska. Level Structure of ^{148}Gd up to I=44, Phys. Lett. B194, 468 (1987).

10. R. Holzman, I. Ahmed, B.K. Dichter, H. Emling, R.V. F. Janssens, T.L. Khoo, W.C. Ma, M.W. Drigert, U. Garg, D.C. Radford, P.J. Daly, Z.W. Graboswki, H. Helppi, **M.A. Quader** and W. Trzaska. Evolution of Nuclear Structure with Increasing Spin and Internal Excitation Energy in ^{152}Dy, Phys. Lett. B195, 321 (1987).

11. M.W. Drigert, R.V.F. Janssens, R. Holzman, R.R. Chasman, I. Ahmed, J. Borggreen, P.J. Daley, B.K. Dichter, H. Emling, U. Garg, Z.W. Grabowski, T.L. Khoo, W.C. Ma, M. Piiparinen, **M.A. Quader**, D.C. Radford and W. Trzaska. Evidence for Superdeformation in ^{148}Gd, Phys. Lett. B201, 223 (1988).

12. W.C. Ma, **M.A. Quader**, H. Emling, T.L. Khoo, I. Ahmed, P.J. Daly, B. Dichter, M.W. Drigert, U. Garg, Z.W. Grabowski, R. Holzman, R.V.F. Janssens, M. Piiparinen and W. Trzaska. Structure Changes Along and Above the Yrast Line of ^{154}Dy, Phys. Rev. Lett. 61, 46 (1988).

13. R.Holzman, T.L. Khoo, W.C. Ma, I. Ahmed, B.K. Dichter, H. Emling, R.V.F. Janssens, M.W. Drigert, U. Garg, P.J. Daly, M. Piiparinen, **M.A. Quader** and W. Trzaska. Structure in the E2 Quasicontinuum Spectrum of ^{154}Dy, Phys. Rev. Lett. 62, 520 (1989).

14. H.Emling, I. Ahmed, P.J. Daly, B.K. Dichter, M.W. Drigert, U. Garg, Z.W. Grabowski, R. Holzman, R.V.F. Janssens, T.L. Khoo, W.C. Ma, M. Piiparinen, **M.A. Quader**, I. Ragnarsson and W. Trzaska. Lifetime Measurements of Terminating and Collective High-Spin States in ^{155}Dy and ^{156}Dy, Phys. Lett. B217, 33 (1989).

15. M.W. Drigert, M. Piiparinen, R.V.F. Janssens, R.H. Emling, U.Garg, Z.W. Grabowski, T.L. Khoo, W.C. Ma, **M.A. Quader**, D.C. Radford and W. Trzaska, Discrete and continuum gamma-ray studies of ^{147}Gd and ^{148}Gd, Nucl. Phys. A515, 466 (1990).

16. R. Broda, **M.A. Quader**, P.J. Daly, R.V.F. Janssens, T.L. Khoo, W.C. Ma and M.W. Drigert, Inelastic and transfer reactions in ^{92}Mo + 255 MeV 60Ni collisions studied by □□ coincidences. Phys. Lett. 245 (1990).

17. H. Kubo, **M.A. Quader** and Peter J. Spacher, Determination of Replacement Correction Factors for"homogeneous" Cylindrical Chambers. Med. Phys., 22, 4 (1994).

18. F. V. de Mello-Filho, **M.A. Quader**, E.R. Cano, R.L. Carrau, E.N. Myers, and C.E. Miles, Effect of Mandibular Titanium Reconstructive Plates on Radiation Dose. American Journal of Otolaryngology, 24, 4 (2003).

19. F.V. de Mello-Filho, **M.A. Quader**, E.R. Cano, R.L. Carrau, E.N. Myers, and C.E. Miles, Effect of Mandibular Titanium Reconstructive Plates on Radiation Dose. American Journal of Otolaryngology 24, 4 (2003).

20. E.R. Cano, J. Johnson, R. Carrau, S. Agrawala, J. Flickinger, and **M. Quader**, Brachytherapy in the Treatment of Stage IV Carconima of the Base of the Tongue. Brachytherapy, 3, 1 (2004).

21. J. Novotny, J.P. Bhatnagar, A. Niranjan, **M. A. Quader**, M. S. Huq, G. Bednarz, J. C. Flickinger, D. Kondziolka, and L. D. Lunsford, Dosimetric comparison of the Leksell Gamma Knife PERFEXION and 4C, Journal of Neurosurgery, 109, 8 (2008).

22. J.P. Bhatnagar, J. Novotny Jr., , **M.A. Quader**, G. Bednarz, and M. S. Huq, Unintended Attenuation in the Leksell Gamma Knife® Perfexion ™ Calibration-Phantom adaptor and its effect on Dose Calibration, Med. Phys., 36, 4 (2009).

23. J. Novotny Jr., J.P. Bhatnagar, **M.A. Quader**, G. Bednarz, L D. Lunsford and M.S. Huq, Measurement of Relative Output Factors for the 8mm and 4mm Collimators of Leksell Gamma Knife Perfexion by Film Dosimetry., Med. Phys., 36, 5 (2009).

24. P. C. Gerszten, E.A. Monaco III, **M.A. Quader,** J. Novotny Jr., J.O. Kim, J.C. Flickinger, and M.S. Huq, Setup Accuracy of Spine Radiosurgery Using Cone Beam Computed Tomography Image Guidance in Patients with Spinal Implants, J. Neurosurg Spine, 12: 413-420, (2010).

25. P.C. Gerszten, J. Novotny Jr., **M.A. Quader**, V.C. Dewald, and J.C. Flickinger, Prospective Evaluation of a Dedicated Spine Radiosurgery Program Using Elekta Synergy S, J Neurosurg 113:236-241, (2010).

26. K.Jahnukainen, J. Ehmcke, **M.A. Quader**, M.S. Huq, M.W. Epperly, S. Hergenrother, M. Nurmio, and S. Schlatt, Testicular Recovery After Irradiation Differs in Prepubetal and pubertal non-human primates, and Can be Enhanced by Autologus Germ Cell Transplantation, Human Reproduction, 0:1-10, (2011).

27. P.C. Gerszten, **M.A. Quader** J. Novotny Jr., and J.C. Flickinger, Prospective Evaluation of spinal cord and cauda equina dose constraints using cone beam computed tomography (CBCT) image guidance for spine radiosurgery, J of Radiosurgery and SBRT, 1:197-202, (2011).

28. H. Tai, Z. Zhu, Y.J. Lin, H. Hara, M. Ezzelarab, M. Epperley, **M.A. Quader**, and D.K.C. Cooper, Attempted Depletion of Passenger Leukocytes by Irradiation in Pigs, J of Transplantation, 2011:1-9, (2011).

29 B.W. Cox, D.E. Spratt, M. Lovelock, M.H. Bilsky, E. Lis, S. Ryu, J. Sheehan, P.C. Gerszten, E. Chang, I. Gibbs, S. Soltys, A. Sahgal, J. Deasy, J. Flickinger. **M. Quader**, S. Mindea, and Y. Yamada, International Spine Radiosurgery Consortium Consensus Guidelines for target Volume Definition in Spinal Stereotactic Radiosurgery, Int. J. Radiat Oncol Biol Phy. 83, 5, (2012).

30. M.W. Epperly, N. Bahary, **M. Quader**, V. Dewald and J. S. Greenberger, The Zebra fish *Danio rerio* – is a Useful Model for Measuring the Effects of Small-molecule Mitigators of Late Effects of Ionizing Irradiation, In vivo, 26, 889, (2012).

31. P.C. Gerszten, A. Sahgal, J.P. Sheehan, R. Kersh, S. Chen, J.C. Flickinger, **M. Quader**, D. Fahim. J. H. Shin, B. Winey, K. Oh, R.A. Sweeney and M. Guckenberger, A multi- nation report on method for institutional credentialing for spine radiosurgery, Radiation Oncology, 8,158, (2013).

32. G.R. Yannam, B. Han, K. Setoyama, T. Yamamoto, R. Ito, J.M. Brooks, J. Guzman-Lepe, C. Galambos, J.V. Fong, M. Deutsch**, M.A. Quader**, K. Yamanouchi, R. Kabarriti, K. Metha, A. Soto-Gutierrez, J. Roy-Chowdhury, J. Locker, M. Abe, C. A. Enke, J. Baranowska-Kortylewicz, T.D. Solberg, C. Guha, and I. Fox, A Nonhuman, Primate Model of Human Radiation-Induced Venocclusive Liver Disease and Hepatocyte Injury, Int. J. Radiat Oncol Biol Phy., 88, 404, (2013).

33. K. A. Soltys, K. Setoyama, E. N. Tafaleng, A. S. Gutiérrez, J. Fong, K. Fukumitsu, T. Nishikawa, M. Nagaya, R. Sada, K. Haberman, R. Gramignoli, K. Dorko, V. Tahan, A. Dreyzin, K. Baskin, J. J. Crowley, **M. A. Quader**, M. Deutsch, C. Ashokkumar, B. L. Shneider, R. H. Squires, S. Ranganathan, M. Reyes-Mugica, S. F. Dobrowolski, G. Mazariegos, R. Elango, D. B. Stolz, S. C. Strom, G. Vockley, J. Roy-Chowdhury, M. Cascalho, C. Guha, R. Sindhi, J. L. Platt, I. J. Fox, Host conditioning and rejection monitoring in hepatocyte transplantation in humans, J Hepatol, 66, 987 (2017)

34. R. S. Kalsi, A. Ostrowska, A. Olson, **M. Quader**, M. Deutsch, N. J. Arbujas-Silva, Jen Symmonds, A. Soto-Gutierrez, J. J. Crowley, M. Reyes-Mugica, J.L. Platt, E. N. Tafaleng, and Ira Fox, A non-human primate model of acute liver failure suitable for testing liver support systems, Front. Med., V9 (30 Sep 2022)

Published Abstracts (Medical Physics):

1. H. Kubo and **M.A. Quader**. Comparison of the N_{gas} values of the parallel-plate chambers determined in high-energy photon and electron beams. Med. Phys. 17, 520 (1990).

2. **M.A. Quader** and H. Kubo. Material dependence of the cavity-gas calibration factors: TG-21 protocol. Med. Phys. 17, 533 (1990).

3. **M.A. Quader** and H. Kubo. Material and beam energy dependence of the cavity gas calibration factors: TG-21 protocol. World Congress on Med. Phys. and Biomedical Eng. (1991).

4. **M.A. Quader** and R.B. Chin. An efficient method of determining midline doses of total body irradiation patients. Med. Phys., 20, 931 (1993).

5. A.M. Kalend, Z.P. Chen, **M.A. Quader**, D. Gutti, J. Flickinger and J. Greenberger. A Pencil Beam Model Prediction of Dynamic Wedging in Photon Beams. Med. Phys., 21, 6 (1994).

6. A.M. Kalend, Z.P. Chen, **M.A. Quader**, May Lim, M. Izadbakhsh and J. Greenberger. Dose Optimization of 3-D Multileaf Collimation (MLC) Conformation by Minimization of Integral Dose. Med. Phys., 21, 6 (1994).

7. K. Blodgett, A.M. Kalend, Z.P. Chen, **M.A. Quader**, G. King and J. Flickinger. In vivo Mid-plane Lung Dose By Average of Entrance and Exit Diode Dosimeters. Med. Phys., 21, 6 (1994).

8. G. King, A.M. Kalend, **M. A. Quader,** S. Gomes and R. Fuhrer. Fewer Versus Many Dwell in Treatment of High Dose Linear Implant. Med. Phys., 21, 6 (1994).

9. A.M. Kalend, Z.P. Chen, K. Blodgett, G. King, **M.A. Quader** and J. Greenberger. Asymmetric Effects of Multi-Leaf Collimator in Static and Dynamic Photon Beams. Med. Phys., 21, 6, (1994).

10. **M.A. Quader**, A.M. Kalend, M Deutsch and J. S. Greenberger. Shallow and Deep Breath Lung Tumor Volume as Estimated by Spiral Volumetric CT in Comparison to Standard Axial CT Using Virtual Simulation. Int. J. Rad. Onc. Bio. Phy. Vol 32 Supp.1 (1995).

11. A.M. Kalend, **M.A. Quader**, M. Muthuswamy, J. Flickinger, M. Lim and J. S. Greenberger. Dosimetry Factors Expressing the Dosimetric Advantage of Multifield Non-Coplanar Conformal Radiotherapy. Int. J. Rad. Onc. Bio. Phy., Vol 32 Supp.1 (1995).

12. K. Blodgett, A.M. Kalend**, M.A. Quader**, M Deutsch and J. S. Greenberger. Dynamic Beam Compensator of the Breast ID vs 3D Dose Intensity Modulation for Missing Tissue. Int. J. Rad. Onc. Bio. Phy., Vol 32 Supp.1 (1995).

13. **M.A. Quader** and A.S. Beddar. Evaluation of a New Scintillator Detector System for Radiotherapy Quality Assurance. Radoither. Oncol., 37, Suppl.1, (1995).

14. A.S. Beddar, **M.A. Quader,** K.M. Ojomo, R.A. Brasacchio, M.C. Schell and L.S. Constine. The University of Rochester Cancer Center Experience in Total Body Irradiation: Techniques and Outcome. Radoither. Oncol., 37, Suppl.1, (1995).

15. A.M. Kalend**, M.A Quader**, and K. Blodgett. An Analytical Corollary Explaining a Low Limit Value Observed in the Virtual Transmission Factor of Photon Beam Dynamic Wedges. Med. Phys., 23, 6 (1996).

16. A.M. Kalend, and M.A**. Quader**. A Method of Extraction of Time Dependent Scatter in Dynamic Photon Beams Determined from Time Derivative Ionizations Measured with a Multiple Chamber Array Detector. Med. Phys., 23, 6 (1996).

17. **M.A. Quader** and A. Wu. Comparison of Multileaf-Collimated and Alloy-blocked fields. Med. Phys., 28, 6 (2001).

18. **M.A. Quader**, Y. Arai, and A. Wu. Evaluation of a Novel In-Vivo Glass Dosimeter System. Med. Phys., 29, 6 (2002).

19. Y. Arai, **M.A. Quader**, R. Selvaraj, and A. Bukovitz. Silver Activated Phosphate Small Glass Element, Novel Properties for Clinical Radiation Oncology Dosimatry: Stable Radiophotoluminescent Center and Pulsed Laser Readout. Int. J. Rad. Onc. Bio. Phy., Vol 54 Supp.2 (2002).

20. C. Saw, T. Combine, F. Ottino, **M. Quader**, L Tao, S. Bose, H. Chen. M. Huq and D. Heron. Oversight Protocols in the Management of Network of Facility Sites. Med Phys., 34, 6 (2007)

21. J.Novotny, J. Bhatnagar, **M. Quader** and M. Huq. Measurement of Relative Output Factors for Leksell Gamma Knife PERFEXION by film Dosimetry. AAPM 2008

22. J. Bhatnagar, J. Novotny, **M Quader** and M. Huq. Dosimetric Analysis of Attenuation in the Leksell Gamma Knife PERFEXION Calibration Phantom Adaptor. AAPM 2008.

23. **M.A. Quader,** J. Novotny, J.C. Flickinger. M.S. Huq, and P.C. Gerzten. Evaluation of Patient Positioning Accuracy During Stereotactic Spinal Radiosurgery Using Cone Beam. ASTRO 2008.

24 R. Mulherkar, E. Diego, M. L. Gimbel, **M. Quader**, R. P. Smith, P N. Barry, and S. Defoe, Case Report of Well-Tolerated Post-Mastectomy Chest Wall and Regional Nodal Irradiation in a Patient with Cowden's Syndrome. ACRO 2024

Conferences

Invited Speaker: Workshop on Nuclear Structure at Moderate and High Spin, Oct. 13-16, 1986, Lawrence Berkeley Laboratory, Berkeley, CA.

Participant: Conference on High-spin Structure and Novel Nuclear Shapes, April 13-15, 1988, Argonne National Laboratory, Argonne, Ill.

Participant: Gordon Research Conference on Nuclear Chemistry, 1985, Colby-Sawyer College, New London.

Attended and presented papers at different meetings of the American Physical Society and AAPM, and of ASTRO.

PROFESSIONAL ACTIVITIES

Clinical Duties/Experience:

1. External beam treatment planning – Planning, Double check of treatment plans, Weekly checks of all patients under treatment, End of treatment check,
2. Total body irradiation (TBI).
3. Low dose rate brachytherapy – interstitial, intercavitary brachytherapy and eye plaque
4. High dose rate brachytherapy (performed over 3000 cases using Nucletron HDR device)
5. Radiosurgery:
   a. Gamma Knife - University of Pittsburgh/UPMC.
   b. Linear accelerator-based SRS at University of Rochester and University of Pittsburgh / UPMC. Implemented Spine radiosurgery program at PUH (using ELEKTA Synergy machine) in 2007. Implemented SBRT program at SMH in 2019.
6. Intensity Modulated Radiation Therapy (IMRT).
7. Calibration and Quality Assurance (QA) of therapy machines
8. Commissioned - Accelerators (Varian 2100C/D, Varian IX and ELEKTA (Synergy S), CT simulator (Picker ACQ Sim) and Nucletron HDR unit,
9. Hyperthermia treatment
10. Intravascular brachytherapy
11. Implementing clinical trials.

Teaching:

1. Taught Radiation Oncology Therapist at University of Rochester **1990 – 1993**

2. Taught Radiation Oncology Residents at University of Rochester **1990 -1993** and University of Pittsburgh **1999 – 2005**

3. Taught Radiation Oncology Residents at University of Rochester 1990 -1993 and University of Pittsburgh **1999 – 2005**.

4. Have trained several dosimetrists to perform treatment planning work at PUH, CHP and SMH. Taught dosimetrists at SMH to perform IMRT and SBRT treatment planning. **SMH Radiation Oncology department was the first center in the UPMC system where Dosimetrists were independently planning IMRT plans**. One of the dosimetrists who later became lead dosimetrist in charge of training others in IMRT planning to meet goal of having inhouse IMRT planners.

5. Trained eleven PhD and three MS level Medical Physicists to perform special procedures and quality assurances in the Medical Physics division at PUH, CHP, SMH and at University of Rochester. The special procedures included Interstitial HDR and LDR,TBI,PSI, Spine SRS, SBRT and Eye Plaque. **(1994 – 2024)**

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Service:

1. Served in committees to hire new faculty members/medical physicists in Radiation Oncology Department, University of Pittsburgh/UPMC**.(1994- 2005)**

2. Implemented the Spine Radiosurgery program using Elekta LINAC at PUH in **2007.** Accepted and Commissioned the LINAC. Commissioned ADAC treatment planning software. Developed Quality Assurance Program for the procedure. Trained two physicists and a dosimetrist to perform the procedure.

3. As a lead physicist at PUH, several state-of-the-art devices and procedures e.g. CT simulator, interstitial HDR and LDR procedures, IVB (intravascular brachytherapy), IMRT and SRS were implemented under my guidance **(1994 -2013)**

4. Implemented medical physics program at CHP; commissioned new LINAC, new treatment planning software, implemented quality assurance program, created policy and procedures, implemented special procedures TBI and Liver radiosurgery in **2009.** Oversaw medical physics program at **CHP** from (**2009 -2013)**

5. Implemented at SMH Deep inspiration breath-hold (DIBH), a specific radiation therapy technique for Breast treatment to spare doses to the heart and lungs. **We were the first center in the system to implement this technique in 2014 and now is widely utilized within the entire UPMC Hillman Cancer Center system.**

6. Radiation Safety Officer of the Radiation Oncology Department at SMH since **2017**

7. Implemented SBRT program at SMH in **2019** using CLINAC IX. On average 60 patients/ year are being treated on this machine.

8. Covered other centers e.g. Gamma Knife **(1994-2020)** and CHP **(2013-2020).**

9. Member of the Promotion Committee since **2021**. Evaluated portfolio of faculty members for promotion and participated in review of promotion operations.

10. Member of Regional Medical Physics Coordinator's committee; the coordinators develop policy and procedures for the Radiation Oncology departments in the UPMC system; **2001 – present.**

11. Oversee all medical physics (MP) operations at SMH, which includes supervision of daily (MP) operation, purchase of new MP devices, implementation of new equipment and software for new procedures, prepare capital budget, perform patient care of higher than usual complexity – SBRT (60 Patients/year) and PSI (35 Patients/year) **(2013-present).**