Stanley Humby Benedict, M.S., Ph.D.

Philosophy of Care

Dedicated to the delivery of highly consistent, excellent, effective, and safe radiotherapy to all patients with utmost consideration.

Clinical Interests

Dr. Benedict is an academic-clinical medical physicist dedicated to the community by sharing knowledge and best practices, educating the future generation of scientists and healthcare workers, and practicing outreach to enable the full potential of radiotherapy around the world. Dr. Benedict is also dedicated to the advancement of medical physics by the pursuit of innovation and continuous improvement in radiotherapy by encouraging curiosity, creativity, and appropriate risk-taking.

Research/Academic Interests

Dr. Benedict's current medical physics research and collaborations include the following areas:

- Artifical Intelligence and Clinical Informatics in Improving Radiation Therapy Treatment Planning, Delivery, and Outcomes Analysis.
- Radiobiological Optimization for Hypofractionated and Stereotactic Radiosurgery treatment delivery.
- Developing Image Based Dosimetry Stategies for patient reporting and clinical trials outcome evaluations in RadioPharmaceutical Therapy (RPT).
- Treatment Planning Systems (TPS) based on biological and functional indices: (a) functional TPS (Incorporation of Lung Ventilation Parameters), (b) Equivalent Uniform Dose (EUD), and (c) treatment and repair interval strategies for interrupted and prolonged treatment delivery.

Title

Vice Chair of Clinical Physics, Department of Radiation Oncology
Professor, Department of Radiation Oncology
Professor Biomedical Engineering Graduate Group

Specialty

Medical Physics

Department

Radiation Oncology

Division

Radiation Oncology

Center/Program Affiliation

UC Davis Comprehensive Cancer Center

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Education

M.S., Radiological Health Physics, San Diego State University, San Diego CA 1984
Ph.D., Biomedical Physics, UCLA, Los Angeles CA 1992
B.A., Biology & Visual Arts, UC San Diego, La Jolla CA 1980

Board Certifications

American Board of Radiology, Therapeutic Radiological Physics

Professional Memberships

American Association of Physicists in Medicine (AAPM)
American Society for Radiation Oncology (ASTRO)
Health Physics Society (HPS)
International Society of Therapeutic Ultrasound (ISTU)
NRG Oncology
Radiosurgery Society (RSS)

Honors and Awards

Editor (Therapy), Journal of Medical Physics (2020-2026), 2020
Fellow, American Association of Physicists in Medicine (AAPM), 2008
Fellow, American College of Medical Physics (ACMP), 2007

Select Recent Publications

https://www.ncbi.nlm.nih.gov/sites/myncbi/10MMNXntqKrk9/bibliography/48169595/public/?sort=date%26amp%3Bdirection=ascending

Xiao Y, Roncali E, Hobbs R, James SS, Bednarz B, Benedict S, Dewaraja YK, Frey E, Grudzinski J, Sgouros G, Buchsbaum JC, Capala J. Toward Individualized Voxel-Level Dosimetry for Radiopharmaceutical Therapy. Int J Radiat Oncol Biol Phys. 2021 Mar 15;109(4):902-904. doi: 10.1016/j.ijrobp.2020.08.026. PMID:33610302.

St James S, Bednarz B, Benedict S, Buchsbaum JC, Dewaraja Y, Frey E, Hobbs R, Grudzinski J, Roncali E, Sgouros G, Capala J, Xiao Y. Current Status of Radiopharmaceutical Therapy. Int J Radiat Oncol Biol Phys. 2021 Mar 15;109(4):891-901. doi:10.1016/j.ijrobp.2020.08.035. Epub 2020 Aug 14. PMID:32805300.

Zhang X, Chen H, Chen W, Dyer BA, Chen Q, Benedict SH, Rao S, Rong Y. Technical note: Atlas-based Auto-segmentation of masticatory muscles for head and neck cancer radiotherapy. J Appl Clin Med Phys. 2020 Oct;21(10):233-240. doi:10.1002/acm2.13008. Epub 2020 Aug 25. PMID:

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32841492.

Dyer BA, Yuan Z, Qiu J, Shi L, Wright C, Benedict SH, Valicenti R, Mayadev JS, Rong Y. Clinical feasibility of MR-assisted CT-based cervical brachytherapy using MR-to-CT deformable image registration. Brachytherapy. 2020 Jul-Aug;19(4):447-456. doi:10.1016/j.brachy.2020.03.001. Epub 2020 Apr 21. PMID:32327343.

Chen W, Li Y, Dyer BA, Feng X, Rao S, Benedict SH, Chen Q, Rong Y. Deep learning vs. atlas-based models for fast auto-segmentation of the masticatory muscles on head and neck CT images. Radiat Oncol. 2020 Jul 20;15(1):176. doi:10.1186/s13014-020-01617-0. PMID:32690103.

He Y, Rong Y, Chen H, Zhang Z, Qiu J, Zheng L, Benedict S, Niu X, Pan N, Liu Y, Yuan Z. Impact of Different b-value Combinations on Radiomics Features of Apparent Diffusion Coefficient in Cervical Cancer. Acta Radiol. 2020 Apr;61(4):568-576. doi:10.1177/0284185119870157. Epub 2019 Aug 29. PMID:31466457.

Shi L, Rong Y, Daly M, Dyer B, Benedict S, Qiu J, Yamamoto T. Cone-beam computed tomography-based delta-radiomics for early response assessment in radiotherapy for locally advanced lung cancer. Phys Med Biol. 2020 Jan 9;65(1):015009. doi:10.1088/1361-6560/ab3247. PMID:31307024.

Yuan N, Dyer B, Rao S, Chen Q, Benedict S, Shang L, Kang Y, Qi J, Rong Y. Convolutional neural network enhancement of fast-scan low-dose cone-beam CT images for head and neck radiotherapy. Phys Med Biol. 2020 Jan 27;65(3):035003. doi:10.1088/1361-6560/ab6240. PMID:31842014.

Yuan Z, Rong Y, Benedict SH, Daly ME, Qiu J, Yamamoto T. 'Dose of the day' based on cone beam computed tomography and deformable image registration for lung cancer radiotherapy. J App Clin Med Phys. 2020 Jan;21(1):88–94. doi:10.1002/acm2.12793. Epub 2019 Dec 9. PMID:31816170.

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