Residency in Medical Imaging Physics

The *Naval Medical Center Portsmouth* Medical Imaging Physics Residency is a 24-month program designed for U. S. Military Officers with a M.S. or Ph.D. degree in Medical Physics who seek in-depth education and training in clinical medical imaging physics. The intent of the program is to prepare graduates for professional careers as independent diagnostic radiological physicists in support of the Department of Defense health care enterprise. Graduates will also be prepared for the *American Board of Radiology (ABR)* certification examination. The training program is based on the Guidelines for Accreditation of Medical Physics Residency Programs published by the *Commission on Accreditation of Medical Physics Education Programs* (CAMPEP) and *Navy Bureau of Medicine and Surgery* requirements for Radiation Health Medical Service Corps officers in in-service DUINS. Upon finishing the program, graduates are issued Certificates of Completion and, where possible, assigned to clinical utilization tours where they can directly apply their post graduate training.

Facility and Department

The Diagnostic Medical Physics Residency Program is administered under the Department of Radiology at the 275 bed Naval Medical Center Portsmouth (NMCP), Virginia. NMCP is the U.S. Navy's oldest, continuously operating hospital, serving over 1.5 million beneficiaries in the Hampton Roads region that composes the largest military population concentration in the world. The department includes 250 personnel including 32 faculty radiologists, and 3 board certified faculty physicists. The department has an extensive training mission including a diagnostic radiology residency, musculoskeletal imaging fellowship, diagnostic medical physics residency, clinical radiation safety officer preceptorship, and advanced clinical training for military medical radiographers and nuclear medicine technologists. The Radiology Department operates imaging facilities at NMCP's 1 million square foot main campus Charrette Health Care Center and nine branch clinics. Through the Tidewater enhanced multi service market (eMSM) and arrangement with the U.S. Atlantic Fleet, the department also supports imaging operations at nearby USAF Hospital Langley and McDonald Army Health Center and the Navy hospital ship, USNS COMFORT (T-AH 20). Medical physics residents have access to imaging equipment and support imaging operations at these facilities for their clinical training. Opportunities to obtain short term training at other Defense Health Agency (DHA) facilities are available on a limited basis based on operational need.

Equipment and Educational Materials Inventories

NMCP maintains an extensive portfolio of diagnostic imaging equipment at its core campus and supporting branch health clinics. The core campus imaging equipment inventory currently includes:

- (7) Radiographic units – both CR and DR supported – including one robotic radiographic room; portable radiographic systems are also available in Radiology and other parts of the hospital
- (3) Comprehensive fluoroscopic units – Urology table and full and miniature C-arm systems are also available in other medical center departments

- (1) O-arm with cross sectional imaging capability
- (4) Mammography units – all with tomosynthesis capability
- (1) Stereotactic mammography unit – DR and tomosynthesis supported
- (3) MRI units – including (1) 1.5T system and (2) 3T systems. Additional, different manufacturer units are available at in the Tidewater area.
- (12) Ultrasound units from two or more manufacturers
- (2) PET/CT units
- (5) Nuclear medicine units – including (1) SPECT/CT and (4) SPECT capable units
- (4) CT units –including (2) dual tube, multi energy units and one mobile CT unit
- (3) Angiographic units – including (1) biplane unit; all DSA capable
- (1) 250 TB Fuji® PACS – including 55 radiologist workstations + 33 clinical review workstations – a new PACS is scheduled for delivery in FY 2021
- (2) Cardiac catheterization labs – including (1) biplane unit; both DSA supported
- (1) Bayer Radimetrics® Enterprise Platform patient radiation dose management system (scheduled for delivery by 2021)

Additional radiographic, fluoroscopic, ultrasound, mammography, CT, MRI and ultrasound units are available at other nearby USAF hospitals, Navy Medicine East regional facilities (community hospitals and clinics) and aboard local Atlantic Fleet ships (including the hospital ship USNS COMFORT).

Residents also have access to an extensive diagnostic medical imaging library with over 750 hard copy and electronic volumes including over 50 medical physics titles.

Program Leadership

Program Director – *Brendan. K. Glennon, CAPT, MSC, USN (Ret), MS, DABR*
Assistant Program Director (Acting) – *LCDR Brandon J. Russell, MSC, USN, MS*

Residency Curriculum/Rotations

Standardized Curriculum over 2 years (normally start in July/Aug):

- Orientation/Safety – 1 week
- General department observation and clinical orientation – 3 weeks
- Radiography – 12 weeks
- Fluoroscopy – 6 weeks
- Interventional Radiology – 6 weeks
- Mammography – 9 weeks
- Computed Tomography – 14 weeks
- Magnetic Resonance Imaging – 14 weeks
- Ultrasound – 8 weeks
- Pediatric and Prenatal Imaging Risks and Dosimetry (multi-modality) – 2 weeks

- Radiation Safety (including shielding design, patient dosimetry and Master Material License (MML) support) – 7 weeks
- Nuclear Medicine Introduction (incl. SPECT and PET) – 4 weeks
- Imaging Display, Informatics & Patient Dose Analysis – 8 weeks
- Comprehensive Program Review (pre-examination) – 2 weeks
- Operational Medicine (concurrent during the two year training period)
- Ethics and Professionalism (concurrent during the two year training period)

(SPECT, PET and Radiation Safety training continue beyond the residency period to the end of the resident's military orders to NMCP)

Current Residents

LT M. C. Japzon, MSC, USN; Second Year Resident
LT A. Kaeck, MSC, USN; First Year Resident

Past Residents

LCDR J. L. Allen, MSC, USN, MS, DABR; Regional Medical Physicist, Navy Medical Forces Atlantic
LT J.L. Saunders, MSC, USN, PhD, DABR; Staff Medical Physicist, NMRTC, San Diego
LT S. W. Dahl, MSC, USN, MS; Radiation Health Officer, USS JOHN C. STENNIS (CVN 74)
LCDR B. J. Russell, MSC, USN, MS; In residence

Program History

Navy Radiation Health Officers (RHOs) have been trained at NMCP in advanced diagnostic imaging for over two decades. Prior to 2017, training was provided for RHOs graduating from a CAMPEP accredited graduate program or RHOs who had passed Part I of the American Board of Radiology examination in Diagnostic Radiologic Physics under the pre-2014 ABR certification regimen. Since 2017, RHOs have been trained per CAMPEP standards for accreditation of residential educational programs in medical physics.

Program statistics are as follows:

	2011	2012, 2013	2014	2015	2016	2017	2018	2019	2020
Applicants	NA	NA	NA	NA	1	1[d]	2[d]	2[d]	2[d]
Positions offered	NA	NA	NA	0	1[b]	1[b]	1[b]	1[b]	1[b]
Ranked applications	NA	NA	NA	NA	1	1	2	2	2
Residents accepted	1[a]	NA	1[a]	0	1[a]	1[a]	1	1	1
Residents matriculated	1	NA	1	0	1	1	1	1	1
Residents graduated	NA	NA	1	NA	NA	1	1	1	1
Graduates certified	NA	NA	NA	NA	1	0	1	1	0[f]
Graduate placement information	NA	NA	1[c]	NA	NA	1[c]	1[c]	1[e]	1[c]

[a]RHO assigned to NMCP under three (3) year military orders as a medical physics trainee
[b]Training billet offered for start the following fiscal year
[c]Assigned as a staff medical physicist at a CONUS or OCONUS Naval Hospital or other medical activity
[d]RHO(s) applied competitively under corresponding BUMEDNOTE 1520 (MSC) conditions
[e]Assigned as a RHO to a Navy non-clinical billet
[f]ABR examinations postponed to 2021 due to the COVID-19 pandemic

Admission

The program seeks candidates with excellent foundations in medical physics and strong desires to thrive in military clinical environments. The resident candidate is expected to have completed a comprehensive Medical Physics curriculum including some clinical exposure during his/her graduate education. Applicants shall have a strong foundation in basic physics. This shall be demonstrated either by an undergraduate or graduate degree in physics, or by a degree in an engineering discipline or another of the physical sciences and with coursework that is the equivalent of a minor in physics (i.e., one that includes at least three upper-level undergraduate physics courses that would be required for a physics major). Additionally, applicants must have graduated from a CAMPEP-accredited graduate program and should have successfully completed the ABR Part I examination prior to arriving at NMCP. The program selects residents from all CAMPEP qualified applicants; however, due to limited faculty staffing, candidates possessing a Ph.D. in physics or a related discipline who need a certificate program to meet the didactic requirements necessary to enter a CAMPEP accredited residency program cannot currently be accommodated. This may change in the future at the discretion of the Steering Committee.

How to Apply

The program is operated through the *Navy Medicine Professional Development Center's* (NMPDC) In-service Duty Under Instruction (DUINS) Program. We are not currently registered with *Medical Physics Match*. Barring unforeseen military requirements, the two year residency starts in July or early August. Application package content requirements and submission deadlines are listed in the current annual *BUMEDNOTE 1520 (MSC DUINS Degree and Non-degree programs)*. In addition to the requirements of the BUMEDNOTE, applicants shall also provide the following information directly to the Residency Program Director when submitting the BUMEDNOTE required package to the Navy Radiation Health Specialty Leader:

- A comprehensive and current curriculum vitae
- A copy of their graduate program curriculum (including clinical rotations and research requirements)
- Full undergraduate and graduate school transcripts. Applicants currently in graduate training and hoping to enroll immediately thereafter (i.e. the fall following graduation) shall send their transcripts through the semester of the DUINS Board convening date as soon as they are available

- One of the required letters of recommendation shall be from the applicant's graduate studies Program Director; a second should be from a graduate program faculty member
- Copies of relevant personal military, academic and civilian awards (e.g. Dean's List, AAPM Young Investigator Award, Industry awards, etc.)
- ABR Part One Examination results (if applicable)
- Most recent GRE results

An admission selection board convenes annually at a date that aligns with BUMED's Medical Service Corps DUINS selection timetable to review applications for the following academic year. In addition to having or making satisfactory progress towards a CAMPEP accredited graduate program degree and meeting other CAMPEP requirements in effect at the convening date, candidates are evaluated on the quality of their applications, academic strength, professional performance, promotion potential, physical readiness, and personal interviews with faculty.

CAMPEP Accreditation

The Naval Medical Center Portsmouth's Diagnostic Imaging Physics Residency Program obtained full CAMPEP accreditation on 2 Dec 18 and is the only accredited Federal Government residency. CAMPEP accreditation helps assure that a medical physics educational program meets consistent quality standards and covers all necessary didactic and training materials.

Resident Handbook
A resident handbook is provided to each matriculated resident upon arrival.

Additional Requirements

Officers selected for DUINS who fail to select for promotion will be disenrolled from the program. Officers already enrolled in DUINS who fail to select for promotion will be considered for continuation in the DUINS program on a case basis. Officers are expected to maintain Navy fitness standards during the duration of the residency. Residents failing to meet fitness standards may be disenrolled from the program. Officers successfully completing the program incur a three (3) year active duty obligation.

Resources

American Association of Physicists in Medicine
Commission on Accreditation of Medical Physics Education Programs, Inc.
BUMEDNOTE 1520 (current), DUTY UNDER INSTRUCTION PROGRAM FOR FULL-TIME OUTSERVICE/FULL-TIME INSERVICE DEGREE & NON-DEGREE PROGRAMS FOR MEDICAL SERVICE CORPS FISCAL YEAR 2020

Updated: 4 Nov 20

Links:

Term	Link
Naval Medical Center Portsmouth	https://www.med.navy.mil/sites/nmcp/dept/sitepages/GMED/residencies.aspx
American Board of Radiology (ABR)	https://www.theabr.org/medical-physics
Commission on Accreditation of Medical Physics Education Programs (CAMPEP)	https://www.campep.org/
Navy Bureau of Medicine and Surgery	http://www.med.navy.mil/Pages/Default.aspx
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LT A. Kaeck, MSC, USN, MS	alexander.kaeck.mil@mail.mil
Navy Medicine Professional Development Center	http://www.med.navy.mil/sites/nmpdc/Pages/index.aspx
Medical Physics Match	https://www.natmatch.com/medphys/
American Association of Physicists in Medicine	https://aapm.org
BUMEDNOTE 1520 MSC (current)	http://www.med.navy.mil/directives/Pages/BUMEDNotes.aspx