

## **Diversity, Equity, and Inclusion in Academic Nuclear Medicine: National Survey of Nuclear Medicine Residency Program Directors**

### **Short Running Title:**

Diversity in Nuclear Medicine

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## **ABSTRACT**

A diverse health care workforce is a necessary component of equitable care delivery to an increasingly diverse US population. In nuclear medicine (NM), there is a paucity of data on the numbers of women and members of racial and ethnic groups that are underrepresented in medicine in the United States (URiMs). This study sought to: 1) characterize the current state of women and URiMs in academic nuclear medicine, 2) describe the demographics of Accreditation Council for Graduate Medical Education (ACGME) accredited NM residency program faculty and trainees, and 3) assess the extent of nuclear medicine exposure during medical school.

## **Methods**

This study was reviewed by the Institutional Review Board and deemed exempt. In this cross sectional study, a link to an online 15-item survey was emailed to 41 ACGME accredited NM residency program directors (PDs) in the United States. Data were collected between 9/2018-12/2018 using REDCap.<sup>TM</sup>

## **Results**

23/41 (56.1%) PDs responded to the survey, 18/23 (78.3%) male and 5/23 (21.7%) female. 3/23 (13.0%) PDs reported being URiMs.

Of the 60 residents in the 23 NM residency programs whose PDs responded, 37/60 (61.7%) are male (7/37 (18.9%) URiMs) and 23/60 (38.3%) female (5/23 (21.7%) URiMs). 14/60 (23.3%)

residents are US medical school graduates (US grads).

PDs describe demographics of 121 current NM faculty members: 86/121 (71.1%) are male (8/121 (6.6% URiMs) and 35/121 (28.9%) female (7/121 (5.8% URiMs). 65/121 (53.7%) are US grads. 16/34 (69.6%) divisional chiefs are male, and 7/23 (30.4%) are female. 4/23 (17.4%) divisional chiefs are URiMs.

7/20 (35.0%) of NM PDs report that NM is part of the medical school curriculum.

## **Conclusions**

Women and URiMs are underrepresented in NM training programs. This diversity gap is more pronounced among NM faculty and to an even greater extent in leadership positions. A greater proportion of NM trainees are international medical graduates compared to NM faculty members, suggesting declining NM recruitment among US grads. NM is included in the medical school curriculum at fewer than one-third of academic centers with NM residency programs, typically toward the end of medical school. Increased and earlier exposure of NM, especially to women and URiMs, may improve recruitment and mitigate diversity gaps.

**Keywords.** Diversity, women, underrepresented in medicine, nuclear medicine, training

**Abbreviations.** ACGME – Accreditation Council for Graduate Medical Education, AAMC – Association of American Medical Colleges, NM – Nuclear Medicine, PD – Program Directors, URiM – members of a groups underrepresented in medicine in the United States

## **Introduction**

A diverse health care workforce is one of the essential components to the provision of equitable and culturally competent care to an increasingly diverse US patient population (1,2). Shared traits between patients and physicians including gender and race or ethnicity have been linked to better communication, adherence to medical recommendations, and overall health care outcomes (3,4). Previous research indicates that improving patient-physician concordance of race, language, and social characteristics increases patients' trust of providers and satisfaction with care (5,6). The importance of a diverse workforce will only continue to increase in importance: US Census projections indicate that racial-ethnic minorities will become the majority by the year 2050 with Hispanics comprising 99.8 million people or 26% of the population (7), and people identifying as being of two or more races expected to become the fastest growing group over the next several decades (8).

Significant inequities in medical imaging have been documented, with individuals from racial-ethnic minority backgrounds disproportionately less likely to complete recommended imaging for both acute and chronic health conditions (9). For example, after adjusting for income, education, insurance and health care setting, Black people and people of Hispanic ethnicity in the Cancer Care Outcomes and Research Surveillance study population were less likely than non-Hispanic white people to receive guideline-recommended positron-emissions tomography (PET) imaging during staging for non-small cell lung carcinoma, with potential adverse impacts on diagnosis accuracy and long term survival (10). Other studies have reported that women are more likely to receive inappropriate single photon emission computed tomography (SPECT) myocardial perfusion imaging, suggesting a gender disparity in referral for this test (11).

Although women make up nearly half of United States medical school graduates, they

remain underrepresented in numerous medical specialties, comprise a minority of faculty positions in academic medical centers, less than a third of division and section chiefs, and less than 20% of department chairs and medical school deans (12). Likewise, members of underrepresented in medicine racial and ethnic groups in the United States (URiMs), previously known as underrepresented minorities (13), are underrepresented as medical students (14), medical school faculty members (15), and in medical school leadership positions (16).

There is a paucity of data on the representation of women and URiMs in nuclear medicine. While we know that women are underrepresented in radiology in the United States, comprising 27.2% of radiologists (17); women are likely even more underrepresented in nuclear medicine based on the fact that they comprise less than 20% of physicians certified by the American Board of Nuclear Medicine. While female residents comprised 44% of nuclear medicine residents in 2018 based on Association of American Medical Colleges (AAMC) statistics (12), there are limited data available on the range of representation of women and URiM residents in nuclear medicine training programs across the country, the representation of women and URiMs among nuclear medicine faculty, the percent of international medical graduates in nuclear medicine training programs, and board certification pathways for faculty and current residents. There are also limited data on exposure to nuclear medicine in medical school with only one study recently reporting that 80% of current nuclear medicine trainees first became interested in nuclear medicine after medical school (18). The authors of this study also found significant differences in perception of nuclear medicine exposure in the medical school curriculum between the faculty and nuclear medicine trainees. To address these knowledge gaps, we sought to:

1. Characterize the current state of women and members of URiM racial and ethnic groups in Accreditation Council for Graduate Medical Education (ACGME)-

accredited nuclear medicine residency training programs,

2. Describe the demographics of ACGME-accredited nuclear medicine residency program faculty and trainees including years in practice, country of medical school education, board certification status of faculty and board certification plans for residents, and

3. Identify the extent of nuclear medicine exposure during medical school.

We expect that insights gained could inform future strategies to address diversity gaps in nuclear medicine.

## **Materials and Methods**

This study was deemed exempt by our institutional review board (IRB) with a waiver of informed consent, and compliance with the United States Health Insurance Portability and Accountability Act (HIPAA) was maintained.

In this descriptive cross-sectional study, a link to a 15-item online survey was sent via email to program directors (PD) of the 41 ACGME accredited NM residency programs in the United States. The anonymous survey included questions about divisional faculty, leadership and resident characteristics including gender, race/ethnicity, and country of medical school graduation as well as medical school exposure to radiology and nuclear medicine (Appendix 1). While URiM is an evolving concept, our survey defined URiM as Black/African American, American Indian/Alaska Native or Native Hawaiian/Pacific Islander, or Hispanic/Latinx based on United States Census Bureau race and ethnicity categories and historically underrepresented racial/ethnic groups in medicine (13). Respondents could opt out of any question they preferred not to answer; IP addresses were not collected, and no protected health information was obtained for this research project. Survey responses were collected between September to

December 2018 and stored in REDCap.<sup>TM</sup> (a secure web application that serves as an electronic data capture tool for research studies) until downloaded for analysis.

## **Results**

Twenty-three out of the 41(56.1%) program directors (PDs) supervising 60 residents in ACGME-accredited nuclear medicine residency programs in the United States responded to the survey (Figure 1). All survey responses were complete.

### *Resident Demographics*

The percent of NM residents who are women and the percent of NM residents who are members of URiM racial and ethnic group (Figure 2 and Table 1) are lower than their respective percents in the general population (Table 2).

### *Faculty Demographics*

The percent of current NM faculty members who are women and the percent of NM faculty members who are members of URiM racial and ethnic group (Figure 2 and Table 1) are lower than their respective percents in the general population (Table 2). This is also true at the leadership level (Figure 2) where 5/23 (21.7%) PDs were female, 3/23 (13.0%) PDs reported being members of a racial or ethnic URiM group, 7/23 (30.4%) divisional chiefs were female, and 4/23 (17.4%) divisional chiefs were members of a racial or ethnic URiM group.

Figure 3 shows URiM representation in NM residents and faculty by gender.

### *Training and Certification of Faculty versus Residents*

PDs describe board certification status of 113 clinical NM faculty members. Of 113 NM faculty members, 2/113 (1.8%) are certified by the American Board of Radiology (ABR); 1/113 (0.9%) ABR plus subspecialty certification (ABR+CAQ); 61/113 (54.0%) American Board of Nuclear Medicine (ABNM); 41/113 (36.3%) ABR+ABNM, and 4/113 (3.5%) other (2 American Board of Internal Medicine (ABIM) + ABNM, 3 ABIM, 2 Certification Board of Nuclear Cardiology (CBNC), 1 European). Results are illustrated in Figure 4.

PDs describe country of graduation for 121 NM faculty members. The majority (65/121 [53.7%]) of NM faculty members graduated from medical school in the United States (US). PDs describe experience of 137 clinical NM faculty members. 51/137 (37.2%) have been out of training for >20 years, 33/137 (24.1%) 11-20 years, 31/137 (22.6%) 5-10 years and 22/137 (16.1%) <5yrs out of training.

By contrast, only 14/60 (23.3%) NM residents were graduates of US medical schools. In addition, 1/60 (1.7%) planned to become board certified by ABR, 0/60 (0%) ABR+CAQ, 24/60 (40%) ABNM, and 35/60 (58.3%) ABR+ABNM.

### *Exposure to Nuclear Medicine in Medical School*

Only 7/20 (35.0%) of NM PDs reported that NM is part of their medical school curriculum (3 PDs did not answer this question), with 5/7 (71.4%) institutions offering NM only as part of the radiology curriculum. Among schools where NM was offered as part of the radiology curriculum, it was mandatory in 4/5 (80%) programs. The majority 6/7 (85.7%) of the medical schools offering NM in the curriculum did so during years 3 and 4. Exposure to radiology and NM during medical school is detailed in Tables 3 and 4.



## **Discussion**

Our study results indicate that women and members of URiM racial and ethnic groups are underrepresented in nuclear medicine (NM) compared the general population.

Among women, this diversity gap exists at the resident level, is greater at the NM faculty level, and is even more pronounced in NM leadership positions. Our findings are consistent with other studies demonstrating underrepresentation of women in medical imaging both in the US and globally, especially in higher rank positions. In a recent study of nuclear medicine specialists in Canada and the United States, women comprised just 7.8% of first-in-command roles and 12.5% of second-in-command roles despite comparable academic performance in terms number of publications, number of citations, years of active research, and h-index, which takes productivity and citation impact of the publications into account (19). Women in NM are also underrepresented compared to women in academic medicine at the resident, faculty, and program director level. The percent of women division chiefs in our sample was slightly higher than the percent of women department chairs in academic medicine (30.4% vs 25.6%).

According to the Association of American Medical Colleges, URiM is defined as “those racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the general population”, and historically underrepresented URiM groups include individuals who identify as Black, Mexican-American, Native American (i.e., American Indian, Alaska Native, and Native Hawaiian), and mainland Puerto Rican (13). As of 2014, 18% and 13% of the U.S. population identified as Hispanic or Black, respectively, but these URiM groups represented only 8.9% of the physician workforce (20). In our study, we found persistently low representation of URiMs in NM (defined as Black/African American, American Indian/Alaska Native or Native Hawaiian/Pacific Islander, or Hispanic/Latinx based on United States Census Bureau race and ethnicity categories and historically underrepresented

racial/ethnic groups in medicine) particularly among faculty and leadership positions with just 6.6% of male faculty and 5.8% of female faculty belonging to a racial or ethnic URiM group. Although the percent of NM residents who are members of URiM groups is slightly higher than the percent of members of URiM groups in general academic medicine, members of these racial and ethnic groups as a whole are underrepresented in medicine compared to the general population. The percent of NM faculty who are members of an URiM group are similar compared to the underrepresentation of these racial and ethnic groups in general academic medicine but underrepresented compared to the general population. The percent of division chiefs in NM who are members of an URiM group are slightly higher than the percent of general academic medicine department chairs who are members of an URiM group but remain grossly underrepresented compared to the general population.

Notably, we found a higher proportion of female and members of racial or ethnic URiM groups among current residents with 38.3% being female and 20% members of URiM groups compared with clinical NM faculty, suggesting a positive trend for future greater representation.

Our results demonstrate a lower percentage of US medical school graduates among NM residents compared to faculty, which supports mounting evidence that fewer medical school graduates are entering the traditional NM training pathway in the United States. In the last decade, the number of ACGME-accredited nuclear medicine (NM) residency programs has dropped by 23% and the number of NM residents has dropped by 48%; as of 2016; just 54% of NM residency slots and 35% of nuclear radiology fellowship spots were filled (21). In addition, the percentages of IMG residents and faculty in NM are much higher than the percentages of IMG residents and faculty in the general medical workforce.

Furthermore, whereas the majority of NM clinical faculty members comprised US medical school graduates certified by ABNM alone, current NM residents were

predominantly international medical graduates planning to become board certified in ABR+ABNM. The increasing popularity of combining of NM and radiology may be explained by job market forces. Physicians who are trained in both diagnostic radiology and NM/NR have a competitive advantage over those trained solely in NM/NR because those with cross-training in diagnostic radiology can provide broader independent interpretations of imaging (21).

While cross-trained diagnostic radiology and NM/NR physicians are well-prepared to interpret imaging studies, the imaging focused approach of dual NM/NR programs may not adequately train physicians to apply targeted NM therapies such as nuclear theranostics for optimally managing cancer and other medical conditions, for example, the use of peptide receptor radionuclide therapy (PRRT) to target somatostatin receptors diagnostically and therapeutically (22), radioiodine to forecast response to therapy among patients with advanced thyroid cancer and inform treatment pathways (23), and lutetium prostate-specific membrane antigen (LuPSMA) for metastatic prostate cancer (24). Beyond oncologic care, the use of theranostics is actively being pursued for the management of myriad conditions including pulmonary (25) and neurological disorders (26). With increasing recognition of radiopharmaceutical therapy's (RPT) potential as a safe and effective targeted approach to treating numerous medical conditions, the clinical need for hospital-based radionuclide/radioligand therapy is expected to grow exponentially (27), making the training mismatch even more concerning, especially given the limited exposure of radionuclide/radioligand therapy topics in medical school curricula. While our study shows insufficient NM exposure during medical school, our study did not examine specific medical student exposure to NM therapies, but we hypothesize that exposure to NM therapies is similarly lacking to general NM exposure in medical school curricula, if not more so, and

future studies are warranted.

Our study identified low numbers of women and members of racial and ethnic URiM groups in NM, in addition to an overall decline in the percent of US medical school graduates pursuing NM. Physicians often cite exposure in medical school as a critical factor in specialty choice, and previous research has shown that women have less preclinical radiology exposure compared to men (28). In our study, NM was included in the medical school curriculum at fewer than one third of academic centers with NM residency programs and was typically not offered until the 3<sup>rd</sup> or 4<sup>th</sup> years of medical school. It is likely that students at medical schools without dedicated post graduate NM training programs have even less NM exposure.

These findings are in line with a recent study that found that most nuclear medicine experience came during radiology lectures or clinical clerkships. In this same study, there was a significant difference between the perception of nuclear medicine exposure by nuclear medicine trainees versus nuclear medicine exposure reported by faculty; the nuclear medicine trainee perception of exposure to nuclear medicine in medical school as 35% and 52% during preclinical and clinical medical school training, while that reported by faculty who teach nuclear medicine were 76% and 91.7% (17). This difference of perception highlights the necessity for teaching nuclear medicine in medical school, to do so early on, and for it to be a meaningful experience that allows students to imagine themselves becoming nuclear medicine and molecular imaging physicians. Accordingly, incorporation of all facets of nuclear medicine and molecular imaging into the medical school curriculum, from imaging interpretation to NM therapies, is warranted.

Female physicians have identified mentorship as an important factor in their career paths. Women with mentors have more publications and spend more time on research activity than those without mentors; in addition, women with a role model report higher overall career

satisfaction (29). A lack of female role models in NM leadership, and low exposure to NM in medical school may contribute to the underrepresentation of women in NM.

Possible barriers to members of racial and ethnic URiM groups and women choosing NM and reaching leadership positions in NM include lack of exposure to NM before medical school and in the first two years of medical school as well as lack of representation among NM faculty and leadership. As such, possible strategies to address diversity gaps in NM include increasing early exposure to NM, increasing NM mentorship and sponsorship, increasing awareness of structural racism and structural gender bias and how to combat them, and implementing leadership training, especially for women and members of racial and ethnic URiM groups.

Diversity gaps are not unique to medicine; they exist in many areas of society including in other fields requiring postgraduate training such as academia (in which the percentage of non-white professors at degree-granting postsecondary institutions is 22% and the percentage of women professors is 33% (30) and law (in which the percentage of people of color who are partners is <10% and the percentage of women partners is <25% (31)) as well as in finance (in which the percentage of African American officials and managers in the securities subsector is <5% of and the percentage of women officials and managers in the securities subsector is <35% (32)) and business (in which the percentage of Black CEOs of Fortune 500 companies is <1% (33) and the percentage of women Black CEOs of Fortune 500 companies is <8% (34)).

Our study had some limitations, most notably a small sample size of PDs answering on behalf of other faculty and residents. Responding to our survey was voluntary, and response bias is possible. However, program directors are well positioned to provide the type of factual programmatic information we sought in our research, so the information obtained is likely representative of respondents' institutions. In addition, our study focused on women and URiM racial and ethnic groups and did not assess representation of other URiM groups such as

LGBTQ+ individuals or individuals with disabilities, who deserve further attention in future studies. In addition, and importantly, URiMs are a heterogeneous group of people of different races and ethnicities who are grouped together in this study. Future studies examining specific representation of members of each racial and ethnic group and of people with cross-sectional identities are warranted. We also only surveyed PDs of AGCME-accredited NM residency programs; we did not look at nuclear radiology fellowships, nuclear medicine therapy fellowships, non-accredited nuclear medicine fellowships, or radiology residency programs with participants in the 16-month combined diagnostic radiology/nuclear radiology dual certification pathway. Nevertheless, the data we were able to gather enables a better understanding of representation of women and members of racial and ethnic URiM groups in a majority cross section of ACGME-accredited NM residency programs in the United States.

## **Conclusion**

Increasing early exposure to NM prior to and during medical school with a special focus on women and members of racial and ethnic URiM groups may improve recruitment of diverse trainees through both traditional and newer training pathways as one component of advancing diversity, equity, and inclusion in academic nuclear medicine. We hope that this study encourages readers to evaluate the diversity of their workforce and assess whether it matches their community.

## **Disclosure**

No potential conflicts of interest relevant to this article exist.

## Key Points

- **Question:** In nuclear medicine training programs, what percent of trainees and faculty members are women or members of racial and ethnic groups that are underrepresented in medicine in the United States (URiM)?
- **Pertinent Findings:** This survey study found that women and members of racial and ethnic URiM groups are underrepresented in nuclear medicine training programs; this diversity gap is more pronounced among NM faculty and, and to an even greater extent, in leadership positions. NM is included in the medical school curriculum at fewer than one-third of academic centers with NM residency programs, typically toward the end of medical school.
- **Implications for Patient Care:** Increasing early exposure to NM in medical school with a special focus on women and members of racial and ethnic URiM groups may improve recruitment of diverse trainees, which can improve the provision of equitable and culturally competent patient care.

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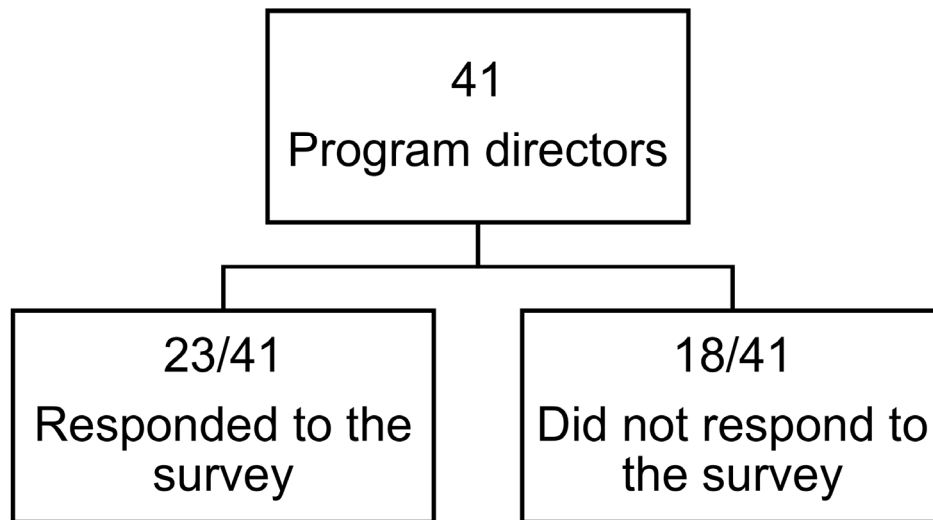
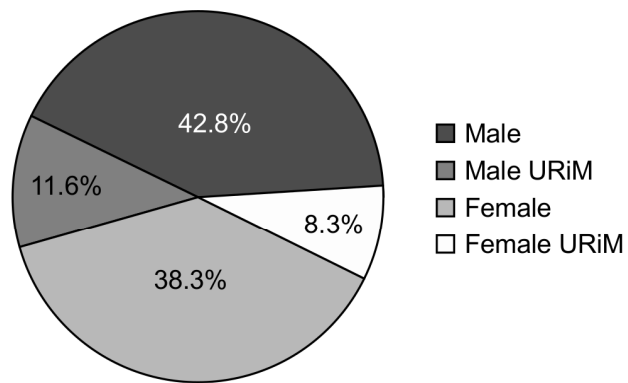
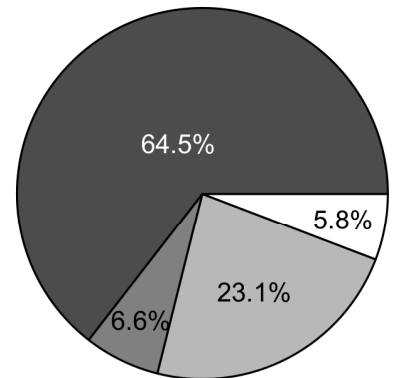


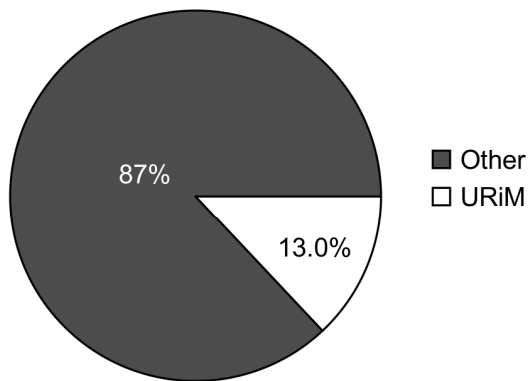
Figure 1. Flowchart of study participants.



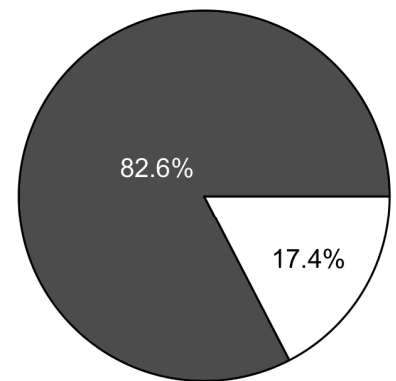
NM resident demographics



NM faculty demographics



NM program director demographics



NM divisional chief demographics

Figure 2. NM Resident, Faculty, Program Director, and Divisional Chief Demographics.

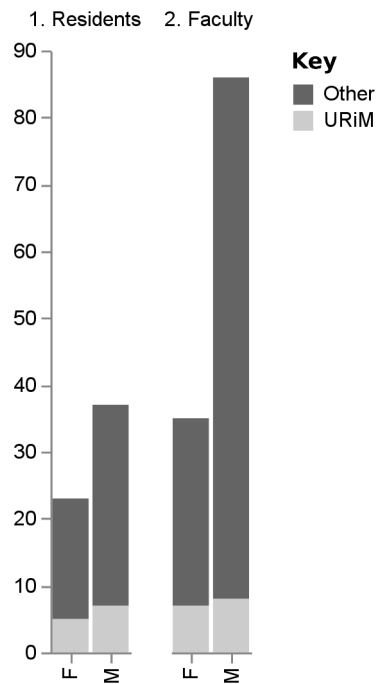


Figure 3. URiM Representation in NM Faculty by Gender.

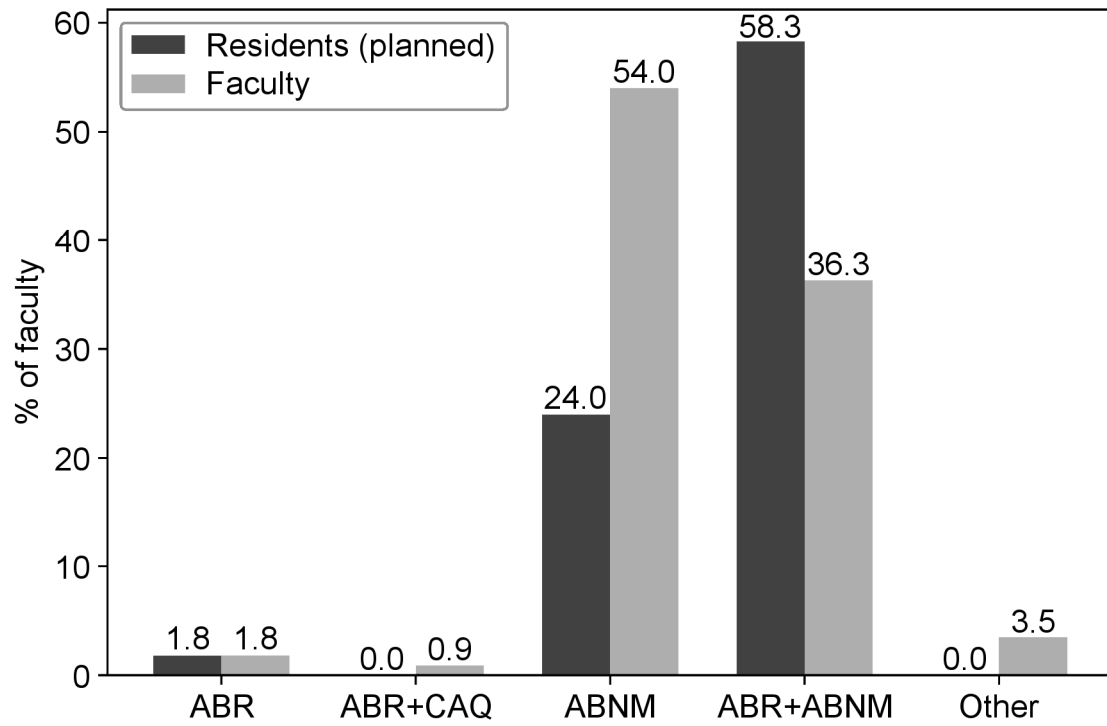


Figure 4. Board Certification of 113 NM Faculty at 23 Training Institutions.



## Tables

Table 1: Demographics of NM Residents and Faculty

	Residents (n=60)		Faculty (n=121)		Leadership			
					Division Chiefs (n=34)		Program Directors (n=23)	
	n	%	n	%	n	%	n	%
Male	37	61.7	86	71.1	16	69.6	18	78.3
Female	23	38.3	35	28.9	7	30.4	5	21.7
URiM	12	20.0	15	12.4	4	17.4	3	13.0
US graduate	14	23.3	65	53.7				
IMG	46	76.7	56	46.3				

Table 2: Demographics of Residents, Faculty and Department Chairs in Medicine and Demographics of the United States General Population

	Residents <sup>35</sup> %	Faculty <sup>36</sup> %	Leadership		US Population <sup>38</sup> %
			Chairs <sup>37</sup> %	Program Directors <sup>36</sup> %	
Male	54.1	59.0	74.4	69.9	51.1
Female	45.8	41.0	25.6	31.1	48.9
URiM	13.8	12.5	7.5		34.4
US graduate	76.9	77.1			
IMG	23.1	22.9			

Program	Year				Mandatory Elective	
	1	2	3	4		
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

Program	1	x	x
2			x
3	x		
4	x		
5			x
6	x	x	
7			x
8			x
9			x
10	x	x	
11	x		
12			x
13	x		
14			x

Table 3: Exposure to Radiology during Medical School

Program	Year				Elective Mandatory Independent course Part of radiology curriculum			
	1	2	3	4				
1								
2								
3								
4								
5								
6								
7								

Program	1	x	x
2	x		x
3	x		x
4	x		x
5	x	x	x
6		x	x

Table 4: Exposure to NM during Medical School

SUPPLEMENTARY MATERIAL

A

Are you:

☐ Male

☐ Female

☐ Other

Are you a member of an underrepresented minority group (i.e., Black/African American, American Indian/Alaska Native or Native Hawaiian/Pacific Islander, or Hispanic/Latino)?

☐ Yes

☐ No

☐ Black/African American

☐ American Indian/Alaska Native or Native Hawaiian/Pacific Islander

☐ Hispanic/Latino

☐ Other (please specify): (select all that apply)

Number of NM residents currently in your program (2018-2019) who are:

male:

(If none, please enter 0.)

female:

(If none, please enter 0.)

other:

(If none, please enter 0.)

Are any of your current NM residents part of an underrepresented minority group?

☐ Yes

☐ No

(i.e., Black/African American, American Indian/Alaska Native or Native Hawaiian/Pacific Islander, or Hispanic/Latino?)

Number of current NM residents who are part of an underrepresented minority group:

and male:

(If none, please enter 0.)

and female:

(If none, please enter 0.)

and other gender:

(If none, please enter 0.)

Number of your NM residents planning to become certified:

by ABR only:

(If none, please enter 0.)

by ABR+CAQ:

(If none, please enter 0.)

by ABNM only:

(If none, please enter 0.)

by ABR+ABNM:

(If none, please enter 0.)

by other than above (please specify, if applicable):

Number of current NM residents who are US medical school graduates:

(If none, please enter 0.)

B

Number of clinical NM faculty members currently in your department who are:

< 5 years out of training:

(If none, please enter 0.)

5-10 years out of training:

(If none, please enter 0.)

11-20 years out of training:

(If none, please enter 0.)

>20 years out of training:

(If none, please enter 0.)

Number of current NM clinical faculty who are members of an underrepresented minority group:

and male:

(If none, please enter 0.)

and female:

(If none, please enter 0.)

and other gender:

(If none, please enter 0.)

Is your divisional chief:

☐ Male

☐ Female

☐ Other

Is your divisional chief a member of an underrepresented minority group?

☐ Yes

☐ No

(i.e., Black/African American, American Indian/Alaska Native or Native Hawaiian/Pacific Islander, or Hispanic/Latino?)

☐ Black/African American

☐ American Indian/Alaska Native or Native Hawaiian/Pacific Islander

☐ Hispanic/Latino

☐ Other (please specify): (select all that apply)

Number of current NM clinical faculty who are members of an underrepresented minority group:

and male:

(If none, please enter 0.)

and female:

(If none, please enter 0.)

and other gender:

(If none, please enter 0.)

Is your divisional chief:

☐ Male

☐ Female

☐ Other

Is your divisional chief a member of an underrepresented minority group?

☐ Yes

☐ No

(i.e., Black/African American, American Indian/Alaska Native or Native Hawaiian/Pacific Islander, or Hispanic/Latino?)

☐ Black/African American

☐ American Indian/Alaska Native or Native Hawaiian/Pacific Islander

☐ Hispanic/Latino

☐ Other (please specify): (select all that apply)

C

Number of current NM clinical faculty certified:

by ABR only:

(If none, please enter 0.)

by ABR+CAQ:

(If none, please enter 0.)

by ABNM only:

(If none, please enter 0.)

by ABR+ABNM:

(If none, please enter 0.)

by other than above (please specify, if applicable):

Number of current NM clinical faculty who are US medical school graduates:

(If none, please enter 0.)

Is diagnostic radiology part of the medical school curriculum?

☐ Yes

☐ No

During what year(s) of medical school (select all that apply)?

☐ 1

☐ 2

☐ 3

☐ 4

(Select all that apply)

Is diagnostic radiology:

☐ Mandatory

☐ Elective

(Check all that apply)

Is nuclear medicine part of the medical school curriculum?

☐ Yes

☐ No

During what year(s) of medical school?

☐ 1

☐ 2

☐ 3

☐ 4

(Select all that apply)

Is nuclear medicine part of the radiology curriculum?

☐ Yes

☐ No

☐ Mandatory part of radiology curriculum

☐ Elective within radiology curriculum

Is nuclear medicine independent of the radiology curriculum?

☐ Yes

☐ No

☐ Mandatory and independent of radiology curriculum

☐ Elective and independent of radiology curriculum

Other (e.g., NM is part of another specialty's curriculum, please specify):

Appendix 1. Survey questions. (1A) Survey page 1. (1B) Survey page 2. (1C) Survey page 3.