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54

55 **Abstract**

56 **Background:** The chief resident role often includes additional administrative and educational
57 experiences beyond those of non-chief senior residents. It is unclear to what extent these
58 experiences influence the post-residency career path of those selected as chief residents. The
59 objective of this study was to evaluate the association of chief resident status on immediate post-
60 residency career characteristics relative to non-chief residents in emergency medicine (EM).

61 **Methods:** We retrospectively analyzed graduate data from 2016-2020 at six accredited EM
62 residency programs. Participating sites were geographically diverse and included 3- and 4-year
63 training formats. Each site abstracted data using a standardized form including: program, year of
64 graduation, chief resident status, publications during residency, and immediate post-residency
65 position (academic vs. non-academic). We calculated descriptive statistics and performed
66 logistic regression to explore differences between the chief resident cohort and other graduates.

67 **Results:** We gathered information on 365 total graduates (45.8% from 3-year programs and
68 54.2% from 4-year programs) including 93 (25.5%) chief residents. One hundred twenty-nine
69 (35%) graduates assumed an academic position immediately following residency. Fifty-six
70 (60%) out of 93 chief residents assumed an academic position immediately following residency,
71 compared to 74 (27%) of 272 other graduates. After controlling for program, year of graduation,
72 and number of publications completed during residency, chief resident status was a significant
73 predictor of immediate post-residency academic career (odds ratio for a chief resident assuming
74 an academic job 5.36, 95% CI [3.10, 9.27]).

75 **Conclusion:** The chief resident role within EM is significantly associated with pursuit of an
76 academic position immediately following residency compared to non-chiefs.

78 Introduction

79 The importance of the chief resident role is well-established in medical training.¹⁻³ This
80 role often comes with additional administrative and educational responsibilities, which demand
81 time and effort in excess of what is generally required of non-chief residents.¹⁻³ In return, chief
82 residents often receive additional training and opportunities to develop leadership skills, which
83 can aid them in their future careers.¹

84 While being chief resident is often viewed as a “stepping stone” to an academic career,
85 prior literature, although limited, has suggested that chief residents pursue a wide variety of
86 career paths following residency.¹ Many factors influence medical trainee career paths including

87 personal preferences and training program characteristics.⁴⁻¹¹ However, the impact of the chief
88 resident role on initial career position in emergency medicine (EM) remains unknown. It is
89 crucial for educators and mentors to understand how the chief resident position might influence a
90 trainee's initial postgraduate career path in order to optimize the experience and provide
91 meaningful guidance during training.

92 The objective of this study was to evaluate the association between the chief resident role
93 in EM and immediate post-residency position.

94

95 **Methods**

96 This was a multi-institutional, retrospective observational study of post-residency
97 positions among EM residents assessing the impact of the chief resident position. We adhered to
98 the strengthening the reporting of observational studies in epidemiology guidelines.¹² We
99 reviewed all graduate data from the last five years (2016-2020) at six Accreditation Council for
100 Graduate Medical Education (ACGME)-accredited EM residency programs in the United States.
101 Participating sites were intentionally selected to be geographically diverse and included both 3-
102 and 4-year training formats. All graduated residents were eligible for inclusion and there were no
103 exclusion criteria. Each site collected data using a standard abstraction form. The abstraction
104 form was created by the study team based upon a literature search and their experience in
105 residency leadership. We piloted the abstraction form prior to use. All abstractors were members
106 of education leadership and familiar with the characteristics of the institutions or groups at which
107 their graduates sought employment. Additionally, abstractors participated in a brief training
108 session to review the abstraction form and define categories prior to abstracting data. Abstracted
109 data included residency program name, year of graduation, chief resident status, number of
110 publications during residency, and immediate post residency career type. We defined an
111 academic position as fellowship or a full-time, faculty position with or without a research focus.
112 A non-academic position was defined as working at a community-based, non-residency hospital.
113 We calculated descriptive statistics and used logistic regression to explore differences between
114 the chief resident cohort and non-chiefs. As career choice could be influenced by the experiences
115 or mentorship a resident receives in any given training program, the behavior of peers, and the
116 job market in any given year, we chose to include program and year of graduation as covariates
117 in the regression analysis. Additionally, as scholarly productivity has been shown to be

118 associated with an academic career, we also chose to include number of publications as a
119 covariate.⁶ We entered and compiled all data using Microsoft Excel (Microsoft Corporation,
120 Redmond, WA) and transferred to SPSS (IBM SPSS Statistics for Windows, Version 27.0.
121 Armonk, NY: IBM Corp) for analysis.

122 This study was approved by the institutional review board of the David Geffen School of
123 Medicine at UCLA.

124

125 **Results**

126 We gathered information on a total of 365 graduates including 93 chief residents
127 (25.5%). There were no missing data on any graduates. One hundred sixty-seven residents
128 (45.8%) graduated from a 3-year program and 198 (54.2%) residents from a 4-year program.
129 Demographics of the programs are included in the Appendix A. The mean number of
130 publications completed during residency was 1.60 ± 4.21 for chiefs and 0.83 ± 1.25 for non-
131 chiefs. The majority of graduates went into community practice positions (233/365, 63.8%), with
132 or without teaching, immediately following residency. One hundred twenty-nine (35.3%)
133 assumed an academic position immediately following residency, including fellowship, full-time
134 academic position with research focus, and full-time academic position with non-research focus.
135 The positions of 3 (0.8%) graduates were characterized as “other” (i.e., did not fall into one of
136 the above specified categories). These graduates included one who was working in military
137 medicine and two who worked part-time at academic centers and part-time at community
138 practice sites without teaching. The immediate post residency positions of graduates are
139 displayed in Table 1.

140 After controlling for program, year of graduation, and number of publications completed
141 during residency, chief resident status was a significant predictor of immediate post-residency
142 career path. When considering the binary composite outcome variable of academic (including
143 fellowship, full time academic with research focus, full time academic with non-research focus)
144 vs. non-academic career (community practice non-teaching, community practice with teaching,
145 other), chief resident status was a significant predictor of immediate post-residency academic
146 career (odds ratio [OR] for a chief resident assuming an academic job was 5.36, 95% CI [3.10,
147 9.27]).

148 Our multinomial regression found chief residents more likely than other graduates to
149 enter a fellowship (OR 7.32, 95% CI 3.73, 14.34)], full-time academic position with research
150 focus (OR 6.27, 95% CI [1.80, 21.82], or full-time academic position with non-research focus
151 (OR 13.56, 95% CI [4.78, 38.44]) as opposed to a non-teaching community practice position.

152 Chief residents were also more likely to enter a community practice with teaching position (OR
153 4.33, 95% CI [1.87, 10.03]) as opposed to a non-teaching community practice position. For those
154 whose immediate post residency position was “other,” there was no significant difference
155 between chiefs and non-chiefs (OR 2.41, 95% CI [0.21, 27.61]).

156

157 Discussion

158 In this study, we found that the role of chief resident was a significant predictor of
159 immediate post-residency career position. Specifically, being a chief resident was associated
160 with initial pursuit of an academic career. This result held true after accounting for scholarly
161 productivity which is a known predictor of pursuing an academic career.^{6,13-14} This is not
162 surprising as chiefs often receive opportunities for advanced training and scholarship; such
163 activities have previously been found to be associated with an academic career.^{1,8}

164 Similar to previous literature, our study found that the majority of EM residents pursue
165 careers in community practice.¹⁰⁻¹¹ We also found a greater percentage of residents pursuing
166 fellowships and fewer pursuing full-time faculty positions immediately following residency
167 compared to 20 years ago, which is similar to more recent reports.^{6,9-11} This may be due to the
168 expansion of available EM fellowships and the competitiveness and increasing specialization of
169 academic faculty positions in recent years. Prior literature has shown that EM leaders strongly
170 recommend fellowship as a precursor to an academic career.^{13,15} Department chairs and those
171 with hiring decision-making capabilities may be looking for faculty applicants with more
172 advanced skills and experience than most new residency graduates possess.

173 While we found an association between the chief resident role and an academic career,
174 this does not equate with causation. It is not known if the chief role itself increases the
175 likelihood of pursuing an academic career or if it simply indicates that residents who are
176 interested in an academic career are more likely to find value in and seek out the experience
177 provided by the chief role. However, given this association, we believe that educators and
178 program leadership should ensure that chief residents are provided with ample learning

179 opportunities to prepare them for an academic career. Academic skill preparation has been
180 associated with a greater interest in an academic career.¹⁶ This preparation may include training
181 in leadership and communication skills, program administration, teaching, and scholarship.
182 Previous literature has demonstrated that residents do not often receive leadership training and
183 thus may feel ill-prepared for an academic career.^{5,16-17} Additionally, chief residents in other
184 specialties have noted a desire for more teaching and research experience.¹⁸⁻¹⁹ This is an area for
185 further investigation and future studies should assess if the chief role adequately prepares
186 residents for academic careers and how to best provide this training.

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188 **Limitations**

189 This study has several limitations which must be considered when interpreting the
190 results. This was a retrospective analysis and so may be limited by inaccurate or incomplete
191 documentation. We used multiple abstractors and it is possible that they may have categorized
192 initial job positions in different ways. However, we piloted the abstraction form and all
193 abstractors participated in a training session to minimize the chance of this occurring. We
194 assessed immediate post-residency positions, and it is unknown how long graduates remained in
195 those positions or if career paths subsequently changed. Additionally, participating sites were
196 not representative of all regions and program types which may limit generalizability. Despite
197 these limitations we feel that our findings provide insight into the impact of the chief resident
198 role on EM physician careers.

199

200 **Conclusion**

201 The role of chief resident is significantly associated with immediate post-residency
202 position. EM chief residents were more likely to pursue an academic position immediately
203 following residency compared to non-chiefs.

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260 Table 1. Immediate Post-residency Careers of Graduates 2016-2020.

	Chiefs n (%) (total n= 93)	Non-chiefs n (%) (total n = 272)	All graduates n (%) (total n= 365)
Community practice, non-teaching	21 (22.6)	164 (60.3)	185 (50.7)
Community practice, with teaching	15 (16.1)	33 (12.1)	48 (13.2)

Fellowship	42 (45.2)	57 (21.0)	99 (27.1)
	n (%)		
Program Region			
Midwest	2 (33)		
Northeast	1 (17)		
South	0 (0)		
West	3 (50)		
Number of Program Residents			
25-35	0 (0)		
36-45	1 (17)		
46-55	2 (33)		
56-65	3 (50)		
Program Format			
Full time academic, with research focus	1 (1.1)	1 (0.4)	2 (0.5)
Full time academic, with non-research focus	13 (14.0)	15 (5.5)	28 (7.7)
Other	1 (1.1)	2 (0.7)	3 (0.8)

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270 Appendix A. Program Characteristics

1-3 Years	3 (50)
1-4 Years	3 (50)

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