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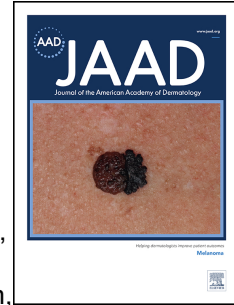
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Availability of Lasers and Hands-on Training in Cosmetic Dermatology in Residency

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98

99 **Attachments:** CROSS Checklist; Survey Instrument; JAAD Survey-based Research Requirements

100

101 **Keywords:** Availability; lasers; energy; devices; settings; hands-on training; cosmetic; dermatology; residency;
102 program; ACGME; survey

103

104

105 **BODY OF MANUSCRIPT**

106 Training in cosmetic and laser procedures is an important component of dermatology education.

107 Dermatologists are experts in minimally invasive cosmetic and laser procedures, and most residents plan
108 to integrate cosmetic procedures into their practices.^{1,2}

109

110 Though the ACGME requires dermatology residencies to provide cosmetic and laser education, hands-on
111 training is optional.³ Residents report that cosmetic education is lacking.^{1,4} In addition, training settings
112 and the extent of hands-on experiences vary between programs.⁵ Possible explanations include
113 differences in resources; faculty perceptions regarding cosmetics; the lack of a standardized cosmetic
114 curriculum; and the absence of numerical hands-on training targets in the dermatology program
115 requirements.^{2,3} That being said, prior studies are limited by low response rates, and potential selection
116 bias regarding the programs represented in the data.

117

118 This cross-sectional study aimed to describe the lasers and energy-based devices available for hands-on
119 training at dermatology residency programs, the settings in which training occurred, and the extent to
120 which training was hands-on. An electronic survey was sent to all Association of Academic Cosmetic
121 Dermatology (AACD) members in May 2022. AACD members were exclusively faculty who direct or co-
122 direct cosmetic and laser education at ACGME-accredited dermatology residency programs.

123 Respondents reported their program's laser and energy devices available for hands-on training, the
124 proportion of observed and hands-on cosmetic and laser training that occurred at the academic institution
125 versus local private practice(s), the type of faculty supervision, and cost to patients.

126

127 Ninety-six of 113 (85%) members completed the survey. Participants represented 71 dermatology
128 residency programs (50.4% of 141 ACGME-accredited residencies at the time) across 34 states. All
129 programs had at least one laser for hands-on training (**Figure 1**). Most programs had vascular (93%), hair

130 removal (78.9%), fractional (74.6%), non-ablative (70.4%), ablative (67.6%), or Q-switched (54.9%)
131 lasers.

132

133 Across programs, 82.1% (range 10-100%) of observed procedures occurred at the academic institution,
134 versus 15.7% (0-90%) at local private practices. Most (87.1%, range 5-100%) hands-on procedures also
135 were at the academic institution, versus 12% (0-95%) at private practices. At 38% and 56% of programs,
136 respectively, all observed and hands-on procedures occurred at the academic institution. At most (85.9%)
137 programs, hands-on training was during faculty-supervised cosmetic teaching workshops with patients
138 receiving free treatment (**Table 1**).

139

140 Limitations included that only programs with an AACD member were surveyed and data were estimates
141 provided by faculty respondents. Still, most programs were represented, many more than in prior
142 studies.^{1,2,4,5} Programs without cosmetic directors may rely more on resident electives, or visits to private
143 practices, which may require letters of agreement and malpractice coverage. Future research might study
144 case log data to better characterize the level of competence achieved during residency, compare senior
145 resident versus cosmetic director responses, and assess the impact of residency training on resident
146 confidence and likelihood to pursue cosmetic fellowship.

147

148 Most dermatology residents appear to have some access to hands-on laser training, though programs vary.
149 During residency, clinical cosmetic and laser experiences typically take place at the academic institution.
150 Hands-on training is usually during faculty-supervised workshops with volunteer patients.

151

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171

172

173 **FIGURE LEGEND**

174

175 **Figure 1:** Availability of energy-based devices across surveyed ACGME-accredited dermatology
176 residency programs (N=71).

177

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180 **TABLES**

181

182 **Table 1:** Clinical settings in which residents provided hands-on cosmetic care to patients across surveyed
 183 ACGME-accredited dermatology residency programs (N=71). Respondents were able to select more than
 184 one answer.

185

Type of Faculty Supervision and Cost to Patients	Programs with Hands-on Cosmetic Training, N (%)
Faculty supervised cosmetic teaching workshop with volunteer patients (<u>free treatment</u>).	61 (85.9%)
Faculty supervised cosmetic teaching workshop with patients paying <u>discounted cosmetic prices</u> .	25 (35.2%)
Faculty supervised cosmetic teaching workshop with patients paying <u>regular cosmetic prices</u> .	3 (4.2%)
Faculty supervised resident-appointed continuity clinics with volunteer patients (<u>free treatment</u>).	23 (32.4%)
Faculty supervised resident-appointed continuity clinics with patients paying <u>discounted cosmetic prices</u> .	27 (38%)
Faculty supervised resident-appointed continuity clinics with patients paying <u>regular cosmetic prices</u> .	10 (14.1%)
Faculty-appointed clinics with residents assigned and volunteer patients (<u>free treatment</u>).	15 (21.1%)
Faculty-appointed clinics with residents assigned and patients paying <u>discounted cosmetic prices</u> .	19 (26.8%)
Faculty-appointed clinics with residents assigned and patients paying <u>regular cosmetic prices</u> .	18 (25.4%)

186

