

Midlevel Injectable Practice Patterns in Dermatology and Plastic Surgery Offices

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BACKGROUND There is limited knowledge on the extent physicians delegate cosmetic procedures to midlevel providers.

OBJECTIVE To assess dermatology and plastic surgery practice patterns for the injections of neurotoxins and dermal fillers.

MATERIALS AND METHODS Four hundred ninety-two dermatology and plastic surgery practices were identified from 10 major US metropolitan areas. These practices were contacted, and staff were asked a series of questions to best characterize the practice patterns in regard to who performs the injectables in the office.

RESULTS Although most dermatology and plastic surgery practices had physicians as the only provider who gives injectables, 18.35% of dermatology and 25.4% of plastic surgery practices had nurse practitioners and physician assistants giving injectables both with and without oversight of the supervising physician onsite.

CONCLUSION In a large majority of both plastic surgery and dermatology practices, physicians exclusively perform injections of neurotoxins and fillers. For practices that allow midlevel providers to perform injectables, the level of physician supervision is variable. In a small percentage of plastic surgery practices, surveyed midlevel providers exclusively performed injectables.

In recent decades, the use of cosmetic soft tissue injectables and neurotoxins has risen dramatically, with more than 15 million minimally invasive procedures performed in 2018.¹ The increased popularity of injectables is due to excellent and reproducible aesthetic results with limited-to-no recovery time. Although these procedures have an excellent safety profile, they are not risk free. The use of soft tissue modulators has a small but significant risk of cutaneous necrosis and permanent blindness, whereas neuromodulators placed incorrectly can result in ptosis, asymmetry, and functional defects of the eyelid lasting for months.² It is imperative that injectors understand the different characteristics of each type of filler, risks of complications, injection techniques, and management of patients who experience adverse events.³ Urgent interventions by knowledgeable providers can restore blood flow after vascular compromise due to filler injection. Relief of ischemia due to retinal artery occlusion may require advanced techniques, such as retrobulbar injection of hyaluronidase by physicians.²

Previous studies have shown that midlevel providers are being increasingly used in the delivery of dermatologic care. The term “midlevel practitioners” is defined by the US Drug Enforcement Administration as an “individual practitioner,

other than a physician, dentist, veterinarian, or podiatrist, who is licensed, registered, or otherwise permitted by the United States or the jurisdiction in which he/she practices, to dispense a controlled substance in the course of professional practice. Examples of midlevel practitioners include, but are not limited to, health care providers such as nurse practitioners, nurse midwives, nurse anesthetists, clinical nurse specialists, and physician assistants who are authorized to dispense controlled substances by the state in which they practice.”⁴ Although nurse practitioner (NP) and physician’s assistant (PA) roles evolved at first to meet the rising needs in primary care, they later expanded to specialties in medicine, including dermatology.⁵ The number of individuals becoming NPs and PAs is rising each year; the US Bureau of Labor Statistics predicts a 37% increase in employment for PAs and a 31% increase in employment for NPs from 2016 to 2026.^{6,7} They provide a cost-efficient supply of hands-on care previously provided by physicians.⁴ Although PAs, NPs, and board-certified physicians all perform cosmetic procedures, there is a discrepancy between the length of education training and hours of training. Board-certified dermatologists have a minimum of 8 years of graduate medical education and between 12,000 to 16,000 hours of patient care. Physician’s assistants have 2 to 3 years of graduate education with 2000 required hours of patient care. Finally, NPs have 2 to 4 years of graduate education, depending on if they get a masters or doctoral degree with 500 to 720 hours requirements.⁸ Because of the discrepancy in the length of training and rigor of didactics, medical practices traditionally have physician-led, team-based care. Physicians maintain authority for patient care in this team-based approach to guarantee patient safety and quality of care.

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Although advanced practice nurses (APNs) and PAs are certified nationally, state laws actually determine the specific level of care allowed by midlevel providers.⁹ Specifically, they determine the level of education needed, the amount of prescriptive authority allowed, and the amount of physician involvement required. Although some states have detailed legislation, many states have open-ended and ambiguous legislation.¹⁰ The state scope-of-practice laws place limits on the clinical boundaries advanced practitioners must abide by.¹⁰ The American Medical Association (AMA) strongly supports these scope-of-practice laws as necessary to ensure patient safety and best practice.¹⁰ Legally, NPs and PAs are allowed to give injectables, with physician oversight. The interpretation of what “physician oversight” entails and whether physicians need to be physically on the premises is not detailed in federal laws. As a result, the level of care allowed by midlevel providers is open to the interpretation of each supervising physician.

Although it is known that some physicians delegate cosmetic procedures to midlevel providers, no studies exist to determine current practice patterns. In this study, we sought to identify the individual practice patterns for the injections of neurotoxins and fillers for dermatologist and plastic surgeons. Specifically, we wanted to identify which provider within these practices is performing these treatments (midlevel providers vs dermatologists/plastic surgeons). We hypothesize that although most dermatologists and plastic surgeons perform injections themselves, there is still a minority delegating these procedures to midlevel providers. This will allow for an improved understanding of how cosmetic procedures are delegated and help providers determine practice standards when deciding who in their office should perform cosmetic procedures.

Materials and Methods

Study Design

Our study design centered on telephone calls to offices of dermatologists and plastic surgeons in the largest US metropolitan areas. Calls involved a series of questions to determine if cosmetic injectable procedures were offered for patients and if offered, who performed the procedure (MD, NP, PA, or others).

Each practice was assigned a number, and the answers to the above questions were recorded. Neither the names of the practices nor the practicing physicians were recorded. The answers to the questions and the type of practice were recorded.

A different researcher then analyzed the data, with all practices and physician’s deidentified, to determine the percentage of offices that offer injectable procedures and have injectable procedures performed by physicians versus nonphysician providers.

Number of Subjects

In this study, we identified dermatology and plastic surgery practices located within 11 major US metropolitan areas

using the American Academy of Dermatology and American Society of Plastic Surgeons Web sites. The cities included were New York, Chicago, Boston, Philadelphia, Washington D.C., Atlanta, Dallas, Houston, Los Angeles, San Francisco, and Miami. In total, 492 dermatology and plastic surgeon practices were queried. Practices located outside of major city limits were excluded. In addition, several practices were excluded because of incorrectly listed phone numbers and front desk staff who were unable to answer questions.

Procedure

A trained member of our staff called the offices using contact information provided on the professional organization Web sites (American Academy of Dermatology and American Society of Plastic Surgeons) and asked a series of questions: (1) Does their practice offer injectables? (2) Are the injections performed by an MD, PA, NP, or other providers? (3) If a nonphysician typically performs the injections, is an MD available to inject on request? (4) If an MD performs the initial injection, will they also perform the injections at follow-up visits? and (5) If a nonphysician performs injections, is a physician on-site? The answers were then recorded on a data recording sheet with no identifiable information to prevent any association of answers with the practices that gave them. The list of practices (identified through professional organizations) was also kept separate from the data recording sheet (See **Supplemental Digital Content 1**, Table S1, <http://links.lww.com/DSS/A658>).

Statistical Analysis

The data were analyzed by a physician investigator who did not perform the initial data collection to determine the percent of practices in which MDs or other providers perform injectables in these scenarios. Data analysis was performed using Microsoft Excel (Microsoft Corporation, Redmond, WA).

Results

Of the 250 dermatology and 582 plastic surgery practices identified, 117 dermatology and 373 plastic surgery practices met inclusion criteria. Of those, an additional 8 dermatology practices were excluded, and 23 plastic surgery practices were excluded because these practices did not offer injections of neurotoxins or dermal fillers. Of the dermatology practices identified, 81.7% reported that the physician was the only individual to perform the injections, whereas 74.6% of plastic surgery offices reported that the physician was the only individual to perform the injections (Table 1). Consequently, 18.4% of dermatology practices offering injectables answered to having midlevels performing injectables and 20.3% of plastic surgery offices have midlevels performing injectables. Of the practices surveyed, 0% dermatology practices and 5.1% of plastic surgeons had no MD oversight, with only midlevels performing injections.

TABLE 1. Survey Results		
Dermatology Practices	Response Number	Percent
Doctor only	89	81.65
Multiple providers	20	18.35
No injections offered	8	
Plastic Surgery Practices	Response Number	Percent
Doctor only	261	73.6
Multiple providers	71	20.3
No injections offered	23	
No physician at practice	18	5.1

Of the 20 dermatology practices with midlevel injectors, 2 practices confirmed that a physician was onsite at all times, whereas of the 71 total plastic surgery offices with midlevel injectors, 26 confirmed that a physician was onsite at all times. The other midlevel injectable practices had varying responses that included: never, not always, or did not know the office policy on midlevel injectable physician supervision. Many offices also responded that the supervising physicians were in a separate building or separate floor.

Discussion

The role of midlevel practitioners in dermatology and plastic surgery practices is controversial and highly debated. However, studies have shown that midlevel providers are being increasingly used in the delivery of dermatological care. Little knowledge exists on what the breakdown is for types of health care professionals delivering cosmetic procedures in the United States. There are no current studies identifying practice patterns.

This study identified practice patterns and norms, which is informative to both patients seeking cosmetic treatments as well as physicians delegating procedures within their offices. A large majority of both dermatology practices (81.7%) and plastic surgery practices (74.6%) use only physicians in the delivery of cosmetic injectables. Although most of both dermatologists and plastic surgeons are still the main provider of injectables in their respective practices, approximately 20% of both dermatology and plastic surgery practices also used midlevel providers for injectable neurotoxins and fillers. 5.1% of surveyed plastic surgery practices used midlevel providers exclusively for injectables. This evidence suggests that there is an expanded role of midlevel providers on a national level.

As NPs and PAs define their role in this shifting environment, concerns about their effectiveness and use are often brought up. A 2015 study by Nault and colleagues showed that the number of biopsies required to find a malignancy was twice as high for advanced practice professionals (APPs) as compared to dermatologists. Consequently, this study concluded that the use of APPs increased morbidity and cost of care compared with a board-certified dermatologist.¹¹ By contrast, a study in JAMA from 2000 found no significant difference in primary care outcomes primary care physicians and NPs.¹² Evidence from other studies confirm primary care services such as the management of uncomplicated illness and chronic disease can be provided by NPs at least as effectively as physicians.¹³

The utility of midlevels in a primary care capacity has been widely accepted; however, the capacity in which they practice is widely variable. The scope-of-practice laws are state-specific restrictions that determine what tasks midlevel practitioners may undertake while treating patients. Each state has different regulations for the scope-of-practice of NPs and PAs.¹⁴ There is variation in prescribing privileges, oversight and chart reviews, and the maximum “collaboration ratios” for NPs working with physicians.¹³ Sixteen states and the District of Columbia had standardized their scope-of-practice regulations and allow NPs to practice and prescribe independently.¹³

With the growing use of nonsurgical aesthetic procedures across the country, practices have adapted to meet this growing demand from consumers.¹ Physicians continue to delegate these procedures to nonphysician providers with supervision, depending on their individual state’s scope-of-practice.¹⁵ Presently, there are no specialty boards that regulate the practice of these providers.¹⁵ One of the key concerns is the lack of a common method taught to these midlevel providers guiding midlevel practitioners on the use of dermal fillers and injectables. A study in Plastic Surgery Nursing surveyed 103 nursing providers and found that there were common core deficits in respondents’ knowledge of contradictions for the use of injectables and management of postprocedure complications.¹⁵ Most respondents of this survey performing a minimum of 10 procedures under physician supervision before practicing independently, whereas 12.5% of the respondents reported more than 20. It is essential that competencies are developed to assess and evaluate the quality of current practice to ensure safe treatments.

We were surprised to see that a significant number of practices that use midlevel injectors could not verify on-site supervision at all times. As described above, there are risks of temporary and permanent side effects from improper techniques. Different injectables have a wide range of properties and associated adverse events. The injector needs to be sufficiently experienced with the products being used, maintain a detailed understanding of facial anatomy, and be prepared to provide appropriate treatment in the case of adverse events. The ultimate responsibility for each patient’s outcome rests on solely on the supervising physician. For

optimal results, physician oversight is essential to providing high-quality injectables.

This study had several limitations. First, individual practice information was restricted to the knowledge of the office staff who provided the responses that would limit the accuracy of responses. Responses may also be biased with staff more likely to overstate the degree to which physicians perform injections and deemphasize the amount of injections delegated to nonphysicians. In addition, the sequence of questions asked may lead to skewed responses for respondents. Many physicians have multiple offices with various ways that injections are performed which may not be accurately assessed by our survey, although it was requested for respondents to include answers for their offices. Another limitation is that this study only examined practices within the 10 major cities. The generalizability of our results is limited to practices that fall within metropolitan areas. It is possible that there is a difference between practice patterns between suburban and rural groups. Future studies may examine if there is a difference between these environments.

One of the national concerns has been the change in practice model created by the introduction of private equity backed conglomerate practices. These business investments made by private equity groups have a profit-centered focus. Financial analysts and businessmen are dictating how doctors practice to make the highest profit. The use of midlevels rather than board-certified physicians saves costs leading to higher profits. Private equity groups made up 30% of the dermatology practices using midlevel providers ($n = 6$), whereas nationally, only 16% of dermatology practices belong to private equity groups.¹⁶ Because of the low sample size, these data were not included in our initial analysis. Future studies might further examine the private equity group use of midlevel injectors on a national level compared with academic institutions.

References

1. Statistics ANCoPSP. *2018 Plastic Surgery Statistics Report*. 2018.
2. Carruthers JC. *Soft Tissue Augmentation*. Alam JD, editor. Amsterdam, the Netherlands: Elsevier; 2018; pp. 236.
3. Funt D, Pavicic T. Dermal fillers in aesthetics: an overview of adverse events and treatment approaches. *Clin Cosmet Investig Dermatol* 2013;6:295.
4. Administration DE. *Mid-Level Practitioner Authorization by State: Department of Justice*. 1993. Available from: https://www.deadiversion.usdoj.gov/drugreg/practioners/mlp_by_state.pdf.
5. Cooper RA. New directions for nurse practitioners and physician assistants in the era of physician shortages. *Acad Med* 2007;82:827–8.
6. United States Department of Labor BoLS. *Occupational Outlook Handbook, Nurse Anesthetists, Nurse Midwives, and Nurse Practitioners*. Available from: <https://www.bls.gov/ooh/healthcare/nurse-anesthetists-nurse-midwives-and-nurse-practitioners.htm>.
7. United States Department of Labor BoLS. *Occupational Outlook Handbook, Healthcare, Physician Assistants*. Available from: <https://www.bls.gov/ooh/healthcare/physician-assistants.htm>. Accessed June 18, 2019.
8. Dermatology AAo. Why see a board certified dermatologist? American Academy of Dermatology. 2019. Available from: <https://www.aad.org/public/diseases/why-see-a-board-certified-dermatologist#texteducation>.
9. Gadbois EA, Miller EA, Tyler D, Intrator O. Trends in state regulation of nurse practitioners and physician assistants, 2001 to 2010. *Med Care Res Rev* 2015;72:200–19.
10. Cooper RA. Health care workforce for the twenty-first century: the impact of nonphysician clinicians. *Annu Rev Med* 2001;52:51–61.
11. Nault A, Zhang C, Kim K, Saha S, et al. Biopsy use in skin cancer diagnosis: comparing dermatology physicians and advanced practice professionals. *JAMA Dermatol* 2015;151:899–902.
12. Munding MO, Kane RL, Lenz ER, Totten AM, et al. Primary care outcomes in patients treated by nurse practitioners or physicians: a randomized trial. *JAMA* 2000;283:59–68.
13. Fairman JA, Rowe JW, Hassmiller S, Shalala DE. Broadening the scope of nursing practice. *J Dermatol Nurses Assoc* 2011;3:88–90.
14. Timmons EJ. The effects of expanded nurse practitioner and physician assistant scope of practice on the cost of Medicaid patient care. *Health Policy* 2017;121:189–96.
15. What are the necessary practice competencies for two providers: dermal fillers and botulism toxin type a injections. *Plast Surg Nurs* 2010;30:226–46.
16. Association AAoD. *Pulling Back the Curtain on Private Equity*. Vol 28. Des Plaines, IL: Dermatology World; 2018.