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Future considerations for clinical dermatology in the setting of 21st century American policy reform: corporatization and the rise of private equity in dermatology

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1 **Future considerations for clinical dermatology in the setting of 21st century**
2 **American policy reform: corporatization and the rise of private equity in**
3 **dermatology**

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25 **Abstract**

26 Within the last two decades, for-profit financial groups have become increasingly
27 involved in health care. Outlier dermatology practices with high volumes of well-
28 reimbursed procedures are attractive to consolidation backed by private equity. With
29 fewer choices for independent or group private practice, junior dermatologists are
30 increasingly seeking employment without ownership in private equity-backed corporate
31 groups, whose primary fiscal responsibility lies with investors. Medicare's response to
32 corporatization and consolidation has already changed the practice of
33 dermatopathology. Dermatologists should be aware of this history, given the ability of
34 corporations and private equity groups to shape the present and future of our field.

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44 **Introduction**

45 During the last decade, venture capital (VC) and private equity (PE) have fueled the
46 consolidation and corporatization of dermatology. PE is composed of pooled funds from
47 investors that directly invest in established private companies or that engage in buyouts
48 of public companies. VC is a subset of PE that invests in start-ups with strong growth
49 potential. PE is attracted to dermatology because of an aging population, expanded
50 insurance coverage, dermatologist scarcity, and profitable medical, surgical, and
51 cosmetic procedures. ¹ Dermatology generated \$12.7 billion in revenue in 2015 and is
52 projected to generate \$16.3 billion by 2020. ² Furthermore, the dermatology market is
53 highly fragmented, which has attracted some dermatologists to team up with PE as
54 consolidators. This relationship may be inherently challenging given that PE's primary
55 accountability is to investors.

56

57 **The dermatology-industrial complex**

58 The American Medical Association (AMA) created the Corporate Practice of Medicine
59 Doctrine (CPOM Doctrine) in 1847, which "prohibits corporations from practicing
60 medicine or employing a physician to provide professional medical services." The
61 CPOM Doctrine was created due to: 1) commercialization of the practice of medicine, 2)
62 difficulty aligning a corporation's obligation to its shareholders and an employed
63 physician's obligation to his or her patients, and 3) the possibility of a corporation
64 interfering with an employed physician's independent medical judgement. ³ While many
65 states followed suit and enacted laws prohibiting CPOM ⁴, there are broad exceptions.
66 This has allowed some to successfully navigate around CPOM laws and structure

67 relationships with physicians through employment, ownership, or practice management
68 agreements. Over three decades ago, Relman, a longtime editor of the New England
69 Journal of Medicine and health system critic, warned of a “new-medical-industrial
70 complex” and a “large and growing network of private corporations engaged in the
71 business of supplying health care services to patients for a profit,” which lends to the
72 phenomenon of “cream-skimming,” which is the over-provision of services to low
73 severity patients.⁵⁻⁷ While many facets of medicine have undergone consolidation and
74 corporatization, dermatology remained below the radar of investors and relatively
75 independent until the end of the twentieth century.

76

77 **Changing landscape of dermatology**

78 Generational differences in the practice of medicine and economic pressures may have
79 helped fuel consolidation. Baby Boomers who *lived to work* were worrying about
80 retirement while Generation X'ers *work to live* and Generation Y/Millennials desired a
81 *work-life blend*.⁸ Ehrlich and colleagues found 44% of dermatologists were in solo
82 practice in 2005 compared to 35% in 2014. Solo practice dermatologists were likely 50
83 years of age or older and dermatology group, multispecialty group, or academic
84 dermatologists were likely 49 years of age or younger.⁹ This dichotomy enabled the
85 corporate structure to insert itself between the generations. Company models revolved
86 around acquiring independent dermatology practices and pathology laboratories of
87 retiring physicians or opening new offices. Many were given equity in the larger
88 company. Recent dermatology graduates, many with accrued student loans desiring a

89 stable salary, were hired to replace acquired, retiring dermatologists and secure
90 longevity of these companies. Younger recruits may also be enticed with shares of
91 equity (albeit smaller) at the time of signing or after working for the company for a set
92 number of years. Employment of physician extenders in dermatology also steadily
93 increased across all practice models from 28% in 2005 to 46% in 2014 with 34% of solo
94 practitioners employing a physician assistant compared to 54% of dermatologists in
95 group practices.⁹

96

97 **Economies of scale in dermatology**

98 Consolidation into large groups can theoretically take advantage of economies of scale
99 by centralizing services, such as billing, marketing, information technology, scheduling
100 and call centers, regional managers for multiple offices, electronic health records, and
101 Mohs and dermatopathology. The in-house exemption to the Stark law allows
102 physicians to legally self-refer to an entity where the physician has a financial
103 relationship. While this exemption was initially envisioned to enhance collaboration and
104 patient convenience, many dermatology practice models, including corporate
105 dermatology groups, take advantage of this loophole which allows them to legally refer
106 all biopsy specimens and Mohs cases to themselves. This potentially encourages
107 overutilization of these referral services to generate more revenue.¹⁰ Large groups can
108 take advantage of group purchasing contracts and are able to negotiate better
109 insurance reimbursements. Some groups have even negotiated for all the patients
110 seeking dermatology services from managed care companies for lower than market

111 rates in exchange for relative exclusivity.¹¹ Over time, some consolidators realized they
112 could expand more quickly and maximize profits by partnering with PE.

113

114 **The rise of private equity in dermatology**

115 PE did not become mainstream until the leveraged buyout boom of financially troubled
116 companies in the 1980s.¹² This was followed by the cyclical nature of the leveraged
117 buyout bust of 1990-1992, boom in the late 1990s, crash in the early 2000s, boom of
118 2003-2007, and another bust in 2008. Physician practice management groups including
119 PhyCor, Innovative Clinical Solutions (previously called PhyMatrix), and ProMedCo also
120 suffered financially and filed chapter 11 bankruptcies during the early 2000s.¹³⁻¹⁶

121 Presently, PE has attracted capital from high-net worth individuals because the stock
122 market may be overvalued, hedge-funds are offering mixed results, and interest rates
123 are near all-time lows. PE has steep fees – they take up to 1.5-2% of the assets under
124 management and 20% of profits above a certain threshold known as the “hurdle rate,”
125 which is the expected return for their investors.¹⁷ Bain & Company summarized the
126 ultimate goal of PE: “All PE firms want to create value as quickly as possible – to grow
127 revenue and take out cost – and a strong playbook helps to accomplish that.”¹⁸ Value is
128 increased by purchasing businesses, adding debt, minimizing taxes, and cutting costs
129 with an end game of extracting large fees.¹⁹ Historically, PE has consolidated other
130 fields of medicine including, but not limited to, primary care, orthopedics,
131 ophthalmology, anesthesiology, emergency medicine, gastroenterology, urology,

132 obstetrics and gynecology, addiction treatment, pain management, nephrology, and
133 dentistry.^{20, 21}

134

135 The first known entry of PE in dermatology was Vicente Capital Partners, LLC, which
136 invested in US Dermatology Medical Management, Inc. (Arlington, TX) in October 2009;
137 the company became insolvent and sold its practices to independent dermatologists
138 near the end of 2011. Since then, there have been numerous other entries of PE in
139 dermatology with 32 known PE-backed dermatology groups, two of which are now
140 defunct (Supplemental Table 1; available at <http://www.jaad.org>). Twenty-four of these
141 32 PE-backed groups were newly formed or acquired in 2015 or thereafter. Models may
142 revolve around acquisition of “platform practices” followed by add-on acquisitions.²²
143 Late-career dermatologists may be enticed to sell to PE with compensation taxed at
144 capital gains rates. Upon acquisition, collections are typically split as 40% for the
145 employed dermatologist and 40% for overhead, leaving 20% as profit for the PE firm.¹¹

146

147 In their quest to increase productivity, some PE-backed groups enlist general
148 dermatologists and Mohs surgeons to work in more than one office and, on occasion, in
149 multiple distant states. Dermatopathology specimens may be referred to distant regional
150 laboratories that are owned by the entity, regardless of expert opinion, in order to
151 capture pathology fees.¹³ Companies may also employ non-dermatologist physicians to
152 deliver dermatologic care.²³⁻²⁵ This strategy is not consistent across or limited to PE
153 firms and has been seen in other practice settings. Ancillary revenue streams include

154 dermatologic procedures of questionable medical necessity performed on nursing home
155 patients as can be seen with Bedside Dermatology in Michigan, owned by Advanced
156 Dermatology and Cosmetic Surgery (ADCS) .^{26, 27} Physician extenders employed by
157 Bedside Dermatology performed intralesional injections with averages ranging from at
158 least 5.8 to 17.68 injections per Medicare patient in 2015 and 75% of treated patients
159 had a diagnosis of Alzheimer's disease (Table 2).^{28, 29}

160

161 PE-backed practices, similar to other dermatology practice models, may employ
162 physician extenders on a larger scale given their lower compensations compared to
163 dermatologists (Supplemental Table 1). Physician extenders may be leveraged to the
164 maximum extent allowable by state law with varying degrees of supervision. This
165 generates larger profits for the company with minimal financial gain and increased risk
166 for the employed supervising physician. Interestingly, physician extenders may be
167 conveniently listed under the physician category on a company's webpage, which
168 misleads prospective patients.^{23, 30, 31} PE-backed practices may also have their own
169 physician assistant and nurse practitioner "fellowship" training programs.^{28, 32} Even
170 though two separate studies have shown physician extenders have a significantly
171 higher number needed to biopsy (NNB) compared to dermatologists for skin cancers,
172 this may not be a concern for their employers as a higher NNB translates to greater
173 revenue.^{33, 34}

174

175 PE firms may also benefit financially by having residency or fellowship programs
176 associated with their offices (Supplemental Table 1).³⁵⁻⁴² ADCS has its own Orlando-
177 based ACGME dermatology residency program remotely affiliated with Kansas City
178 University of Medicine and Biosciences (Kansas City, MO).³⁵ Residents receive a
179 yearly salary of \$10,000 and a loan of \$30,000 per year, and in return have to work for
180 ADCS for three years after graduating or pay back their entire loan. If financially
181 strapped residents decide to sign a post-residency contract with a noncompete clause,
182 the residency program may be considered to have a restrictive covenant.⁴³ This
183 arrangement creates a continuous pipeline of new dermatologists working for ADCS.⁴⁴

184

185 Several influential dermatology leaders have also been recruited to work for and
186 promote these companies or may have an immediate family member that serves as a
187 director of an actively investing PE firm, creating potentially undisclosed conflicts of
188 interest on a regional or national scale (Supplemental Table 1).^{22, 32, 45-49} Interestingly,
189 the Dermatology Practice Support Alliance, Inc. (DPSA) was founded by the CEO of
190 West Dermatology as a corporation in May 2016 and represents a coalition of the
191 largest dermatology management companies, many of which are PE-backed (Table 3).
192^{50, 51} DPSA companies have acquired offices from each other to optimize consolidation
193 in their respective geographic markets (Supplemental Table 1). The CEO of West
194 Dermatology was previously CEO of Pacific Pulmonary Services, which agreed to pay
195 \$11.4 million to settle government allegations of violating the False Claims Act during
196 his leadership.⁵²

197

198 **Consolidation of outliers by private equity**

199 High outlier practice patterns may be harmful to patients and increase healthcare costs.
200 As discussed above, both individual and corporate dermatology practices have learned
201 to take advantage of exemptions to self-referral or Stark laws by opening labs to
202 process their own pathology specimens. Table 4 is derived from 2015 Medicare Part B
203 physician payment dataset and shows the link between biopsies, pathologic
204 examination of tissue, group size, and the presence of an employed pathologist in a
205 group.⁵³ Data is provided at the level of the provider and is sorted by mean number of
206 biopsies per patient.

207

208 The most striking finding in this analysis is that the majority of providers in the top 25
209 either billed 88305 themselves, or were part of a corporation that employed a
210 pathologist, or both (19/25). The driving force behind these practice patterns appears to
211 be the additional financial benefit to the individual or corporation from self-referred
212 pathology fees. The majority of providers in the top 25 (14/25) were also in groups of 1
213 or 2 providers. Although physicians in small groups can practice outside of the scrutiny
214 of their peers⁵⁴, 6 of these extreme outliers practiced in groups of 10 or more and 5 are
215 now in large PE-backed practices in 2018. The fact that 5 of the 29 currently PE-backed
216 practices are represented in the top 25 suggests that PE firms may overlook billing
217 practices and focus more on profitability rather than due diligence when consolidating
218 practices. Further research is needed to examine healthcare resource utilization by PE-

219 backed practices. Notably, one of the dermatologists on this list has been sentenced to
220 three years in prison after pleading guilty to Medicare fraud as part of a qui tam lawsuit
221 brought on by another dermatologist whose PE-backed practice also owns an outlier
222 practice on this list.⁵⁵⁻⁵⁷ While some outliers are sentenced to prison, others are
223 rewarded financially for their aberrant practice patterns (Table 2).

224

225 **The end game of private equity in dermatology**

226 Dermatology-specific models revolve around quickly acquiring or opening new practices
227 with the goal of selling to another entity in 3-7 years.⁵⁸ In 2015, the average PE holding
228 period for all North America- and Europe-based portfolio companies was 5.6 years.⁵⁹
229 For dermatology-specific PE investments, holding periods are shorter with some PE
230 firms exiting within 2-3 years (Supplemental Table 1). Purchase offers are typically 3-5
231 times earnings before interest, taxes, depreciation and amortization (EBITDA) for solo
232 practices, 5-7 times EBITDA for small dermatology groups, and over 13 times EBITDA
233 for large, integrated, multisite groups.⁵⁸ In February 2016, Forefront Dermatology
234 commanded over 13 times EBITDA with its \$450 million purchase by OMERS.⁶⁰
235 Presently, PE has one trillion dollars of committed capital awaiting deployment, which
236 may lead to overvaluations and diminishing returns for investors.^{61, 62}

237

238 The future of PE's relationship with dermatology depends upon reimbursement. In 2014,
239 the global payment for CPT code 88305 was cut by 33%; a 7% reduction followed in
240 2017.^{63, 64} Prior to the CMS cuts, Caris Life Sciences, Inc., sold its anatomic pathology

241 division to Miraca Life Holdings, Inc. for \$725 million in 2011.⁶⁵ Miraca Life Holdings,
242 Inc. sold this division to Avista Capital Partners in 2017 for \$175.6 million, 24.2% of its
243 initial purchase price (Table 5).^{66, 67} After “cream skimming” an annualized return on its
244 investment, a PE firm can still benefit if they have to sell the corporation at a loss by
245 offsetting capital gains from another investment. On the other hand, shares given to
246 dermatologists only translate to financial gains if they are liquidated at an opportune
247 time.

248

249 Ultimately, PE’s exit strategy involves selling its company to another private equity firm,
250 a larger healthcare conglomerate, the public via an initial public offering, or an insurance
251 company. If UnitedHealth Group’s Optum completes its acquisition of DaVita Medical
252 Group, which acquired some of its physicians from a PE firm (Summit Partners) in 2012,
253 there will be at least 42 board-certified dermatologists employed by a publicly traded
254 insurance company.⁶⁸⁻⁷⁰ Upon acquiring dermatologists, insurance companies may
255 attempt to further narrow their networks and restrict patient access to only their
256 employed dermatologists.⁷¹

257

258 **Conclusion**

259 Medicare has not been able to find a way to pay physicians based on the quality of care
260 they provide. The Medicare Payment Advisory Commission voted in January of 2018 to
261 dissolve the Merit Based Incentive Payments System program and replace it with yet
262 another alternative model.⁷² This leaves group size as the main way to negotiate better

263 reimbursements from insurers, especially cost-cutting Medicare Advantage plans. This
264 incentivizes consolidation, and over-leveraging of extenders; it may also provide shelter
265 for high-cost outliers and creative ways to subvert the Stark Law to further increase
266 profits. When PE is enlisted to participate in the complex relationship between
267 physicians and insurers, quality of care may suffer, and value-based care may be
268 destroyed.^{13, 28} In response to growing concerns from the medical community, the AMA
269 recently passed a resolution to examine the effects on the healthcare marketplace of
270 corporate investors, including PE firms, acquiring a majority and/or controlling interest in
271 entities that manage physician practices.^{73, 74} Ultimately, the solutions to PE exploration
272 of our field will be the elusive quality-based payments which do not incentivize
273 consolidation or large cuts in common dermatology procedure codes and subsequent
274 loss of interest by PE.

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603 **Abbreviations used:**

- 604 Advanced Dermatology and Cosmetic Surgery (ADCS)
- 605 Accreditation Council for Graduate Medical Education (ACGME)
- 606 American Medical Association (AMA)
- 607 Chief Executive Officer (CEO)
- 608 Corporate Practice of Medicine (CPOM)
- 609 CMS (Centers for Medicare and Medicaid Services)
- 610 CPT (Current Procedural Terminology)
- 611 Dermatology Practice Support Alliance, Inc. (DPSA)
- 612 Earnings before interest, taxes, depreciation and amortization (EBITDA)
- 613 Number Needed to Biopsy (NNB)
- 614 Ontario Municipal Employees Retirement System (OMERS)
- 615 Private equity (PE)
- 616 Venture capital (VC)

617 **Supplemental Table 1: Summary of Consolidation, Corporatization, and Venture Capital/Private Equity in Dermatology**
 618

| Group [Year Founded] ^a | Estimated Number of Offices ^b | Known Locations ^b | Estimated Number of Physicians ^{b,c} | Estimated Number of Physician Extenders ^b | Estimated Number of ACGME-Approved Trainees | PE + Comments ^{d,e,f} |
|--|--|--|---|--|---|--|
| Advanced Dermatology and Cosmetic Surgery (ADCS) [1989] | 193 | AZ, CO, FL, GA, MD, MI, NV, OH, PA, RI, SC, TX, VA, WY | 188 | 156 | 30 ^{35, 39, 41, 42} | <p>NXT Capital funded Audax Private Equity's acquisition (February 2012)</p> <p>Majority stake sold to Harvest Partners for \$600 million (May 2016)</p> <p>ADCS owns Bedside Dermatology²⁶, Ameriderm [2009], and Ameriderm Research [2009]; Ameriderm is a coding, collection, and billing service for dermatologists⁷⁵</p> <p>Estimated number of offices decreased from 203 in May 2018 to 193 in July 2018²³</p> |
| Adult & Pediatric Dermatology, PC (APDerm) [1992] | 10 | MA, NH | 19 | 9 | | Waud Capital Partners (October 2017) |
| Anne Arundel Dermatology [1980] | 34 | MD, TN, VA | 62 | 42 | | <p>New Mainstream Capital (June 2015)</p> <p>Sought new buyer (November 2017)</p> <p>New Mainstream Capital recapitalized; Pantheon acquired minority stake; New Mainstream Capital remains as lead and</p> |

| | | | | | | |
|--|-----|----------------|-----|-----|---------------------|--|
| | | | | | | control investor (January 2018) |
| California Skin Institute [2007] | 28 | CA | 43 | 14 | | Goldman Sachs (May 2017) |
| Dermatologists of Central States (DOCS) [2017] | 38 | IN, MI, OH | 35 | 21 | 6 ³⁶ | Sheridan Capital Partners (May 2017) CEO of DOCS is also CEO of DermPath Lab of Central States (DLCS) |
| Dermatology Medical Partners (DMP) [2015] | N/A | FL, GA, TX | N/A | N/A | | Tyree & D'Angelo Partners (December 2015) Acquired practices within DMP network retain their names |
| Dermatology Specialists [2006] Rebranded from Gulf Coast Dermatology Group | 24 | AL, FL, GA, MS | 12 | 17 | | Cressey & Company recapitalized in August 2013 and exited in May 2015 Dermatology Solutions Group is the management services organization of Dermatology Specialists FBI searched (December 2014) |
| DermCare Management [2016] | 15 | South FL | 22 | 10 | 22 ³⁸⁻⁴⁰ | Gemini Investors (July 2017) |
| DermOne Dermatology [1986] | 23 | NJ, NC, TX, VA | 24 | 15 | 6 ^{37, 76} | Westwind Investors (February 2012) Accredited Dermatology in NJ was acquired by DermOne Dermatology (2012) |

| | | | | | |
|---|-----|--|-----|----|--|
| | | | | | <p>DermOne Dermatology dissolved (2018)</p> <p>DermOne Dermatology transferred NJ locations to Schweiger Dermatology Group (March 2018) and Certified Dermatology (2018), VA location to Forefront Dermatology (2018), and patient medical records from TX locations to U.S. Dermatology Partners (March 2018)</p> |
| Epiphany Dermatology [2014] | 37 | AZ, CO, IA, MO, NM, OK, TX | 31 | 30 | CI Capital Partners (June 2016) |
| Forefront Dermatology [2001] Formerly Dermatology Associates of Manitowoc, Dermatology Associates of Wisconsin | 114 | AL, DC, FL, IL, IN, IA, KY, MD, MI, MN, MO, OH, PA, VA, WI | 124 | 74 | <p>Varsity Healthcare Partners (May 2014)</p> <p>Goldman Sachs (May 2014)</p> <p>OMERS Private Equity (Canadian pension fund for government employees) purchases for \$450 million; > 13x EBITDA (February 2016)</p> <p>BMO Harris Bank lent \$195 million in first lien credit (February 2016)</p> <p>Canadian PE firm Penfund invested \$47 million of second lien debt and equity February 2016)</p> <p>CEO of Forefront Dermatology is also an Operating Partner at Shore Capital Partners, a Chicago-based PE firm focused exclusively on microcap (publicly traded) healthcare investments</p> <p>Two offices in MO and WI offices have closed ⁷⁷</p> |

| | | | | | |
|---|------|---|-----|-----|---|
| Golden State Dermatology [2015] | 5 | CA | 8 | 9 | Pouschine Cook Capital Management + Yukon Partners (February 2015) |
| Integrated Dermatology Group (IDG) [2006] | ~100 | AZ, CA, CO, CT, DC, FL, ID, IL, IN, IA, LA, MD, MA, MI, NV, NJ, NM, NY, NC, OH, PA, TN, UT, VA, WA | ~64 | ~73 | No known PE (founders are two brothers) Some practices within IDG network retain their names Same founders started OnSite Dermatology [2005], US Path Labs [2004], and eDerm Systems [2006] ^{27, 78, 79} ; OnSite Dermatology has locations in thirteen states (CA, CO, DC, DE, FL, MD, NC, NH, NJ, PA, TX, VA, WA) and provides mobile dermatology care to seniors living in independent retirement, assisted, and skilled nursing communities Same founders previously resigned their positions as officers and directors of Response USA, Inc., a supplier of personal response systems and monitoring services, and filed for voluntary chapter 11 bankruptcy (August 2001) ⁸⁰⁻⁸² |
| NavaDerm [2018] | 5 | NJ, NY | 19 | 2 | BelHealth Investment Partners (July 2018) Executive Vice President of Business Development and Recruiting of NavaDerm is currently CEO of Dermatology Authority, which provides recruiting services for dermatology practices |
| Northeast Dermatology Associates (NEDA) [1999] | 19 | ME, MA, NH | 27 | 12 | NEDA explored sale (May 2017) Ontario Teacher's Pension Plan (September 2017) Century Equity Partners (September 2017) |

| | | | | | | |
|---|----|--------------------|----|----|--|--|
| | | | | | | <p>PhyNet Dermatology is the management services organization of NEDA</p> <p>Reportedly fetched ~13x EBITDA</p> <p>CEO of PhyNet Dermatology was previously President and CEO of OrthAlliance, Inc., a dental services organization acquired by publicly traded Orthodontic Centers of America, Inc. (OCA) in 2001; Dallas federal court ruled OrthAlliance, Inc. was practicing dentistry without a license and declared management contracts “illegal in their entirety” (March 2003); OCA filed for chapter 11 bankruptcy protection (March 2006) and exited chapter 11 bankruptcy (January 2007)⁸³⁻⁸⁵</p> |
| Pinnacle Dermatology [2004] | 23 | IL, IN, MI | 24 | 22 | | Chicago Pacific Founders (March 2017) |
| Platinum Dermatology Partners [2016] | 31 | AZ, TX | 47 | 24 | | Sterling Partners (May 2016) |
| QualDerm Partners (QDP) [2014] | 21 | NC, OH, SC, TN, VA | 36 | 24 | | <p>Raised \$31.88 million in capital from investors including funds from Cressey & Company + Apple Tree Partners (February 2016)</p> <p>Granite Growth Health Partners (date unknown)</p> <p>ACMS Presidents (2015-2016 + 2018-2019) are “platform practice” for QDP</p> |
| Riverchase | 37 | FL | 40 | 32 | | Prairie Capital (December 2012) |

| | | | | | | |
|--|----|--------|----|----|--|---|
| Dermatology and Cosmetic Surgery [2000] | | | | | | GTCR (October 2016) |
| Sanova Dermatology [2012] | 9 | LA, TX | 15 | 6 | | Ampersand Capital (2017) AAD Board Member is employed by Sanova Dermatology |
| Select Dermatology [2017] | 1 | TX | 1 | 2 | | Welsh, Carson, Anderson & Stowe (2017) Riata Capital Group (2017) |
| Schweiger Dermatology Group [2010] | 42 | NJ, NY | 61 | 60 | | SV Life Sciences led \$12.4 million Series A financing (January 2015) Square 1 Bank provided \$8 million in debt financing (December 2015) LLR Partners led \$35 million investment (April 2016) Triangle Capital closed \$20 million unitranche debt investment (June 2017) LNK Partners invests \$100 million (May 2018) Past President of AAD (1999-2000) and ASDS (2007-2008) previously served as Medical Director for and currently employed by Schweiger Dermatology Group |
| Skin & Beauty Center [2006] | 6 | CA | 10 | 3 | | Gemini Investors (March 2017) |

| | | | | | | |
|--|----|--------------------|----|--------------------|--------------------------|--|
| Skin and Cancer Associates (SCA) and Center for Cosmetic Enhancement (CCE) [1970] | 28 | FL | 40 | N/A – see comments | 21 ^{38, 39, 41} | <p>Susquehanna Private Capital (April 2018)</p> <p>Advanced Dermatology Management is the management services organization of SCA</p> <p>SCA/CCE is comprised of 80 dermatologists, nurse practitioners, and physician assistants</p> <p>CEO of SCA is board-certified radiologist and was previously Vice President of PE-backed Sheridan Healthcare Radiology Services</p> <p>Director of Susquehanna Private Capital is brother of two influential dermatologists at Penn State University and University of Pennsylvania</p> <p>Susquehanna Growth Equity, LLC is lead investor of HMP Global, which produces The Dermatologist magazine⁸⁶</p> |
| Sona Dermatology Med Spa [1997] | 18 | AR, NC, TN, TX, VA | 2 | 1 | | <p>Initially owned by Carousel Capital Partners along with current CEO and Chief Financial Officer</p> <p>Pharos Capital Group, LLC (January 2016)</p> <p>Currently assembling medical dermatology teams</p> |
| Summit Dermatology Partners [2018] | 4 | IN | 3 | 4 | | <p>Alpine Investors (2018)</p> |
| The Dermatology Group (TDG) [1992] | 24 | CT, NJ, NY, PA | 39 | 13 | | <p>The Riverside Company (January 2016)</p> <p>Tricenna is the management services organization of TDG; some practices within TDG network retain their names</p> |

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|---|-----|-------------------------|------|-----|--|---|
| | | | | | | <p>AAD Board Member is Chief Medical Officer at Tricenna</p> <p>CEO of TDG is also CEO of Illinois Dermatology Institute (currently independent with 16 offices, 20 MDs/DOs, and 10 physician extenders); CEO of TDG is also President of Grand Cru Physician Advisors, which consults in healthcare finance, management, mergers and acquisitions, and practice management</p> |
| United Derm Partners [2016] | 20 | CA, ID, NV, OR, TX | 33 | 20 | | <p>Frazier Healthcare Partners (December 2016)</p> <p>CEO of United Derm Partners was previously Executive Vice President and Chief Operating Officer of PE-backed DSI Renal, which filed for voluntary Chapter 7 bankruptcy and sold to DaVita, Inc. (February 2011)⁸⁷</p> |
| United Skin Specialists [2015] | 9 | IL, MN, MO | 15 | 7 | | <p>Tonka Bay Equity Partners (September 2015)</p> <p>Clearwater Equity Group (2015)</p> <p>AAD President (2019-2020) serves on board of directors of United Skin Specialists</p> |
| U.S. Dermatology Medical Management, Inc. [2009] | ~6 | CA, HI, TX | N/A | N/A | | <p>Vicente Capital Partners, LLC (October 2009)</p> <p>U.S. Dermatology Medical Management, Inc. became insolvent and sold its practices to independent dermatologists near the end of 2011</p> |
| U.S. Dermatology Partners (USDP) | ~90 | AZ, CO, KS, LA, MD, MO, | ~175 | ~61 | | <p>Candescent Partners, Eagle Private Capital, and Harbert Mezzanine Partners (January 2013)</p> |

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|---|----|---------------|----|----|--|--|
| [1996] Formerly Dermatology Associates, Dermatology Associates of Tyler | | OK, TX, VA | | | | Brookside Mezzanine Partners (May 2014) ARBY Partners secures majority stake for > \$300 million (May 2016) USDPA doing business as Oliver Street Dermatology Holdings, LLC ⁸⁸ ; Oliver Street Dermatology Holdings, LLC 5.01(a) is registered with the Texas Medical Board as a non-profit health organization |
| Water's Edge Dermatology [1998] | 34 | FL | 32 | 26 | | Considering a sale (February 2018) ⁸⁹ Sold to Gryphon Investors (June 2018) |
| West Dermatology [1962] | 35 | AZ, CA, NV | 41 | 40 | | Enhanced Equity Funds (December 2014) Past President of ASDS serves as California Medical Director for West Dermatology AAD and ASDS Board Members employed by West Dermatology CEO of West Dermatology was previously CEO of Pacific Pulmonary Services (PPS) and established a CEO-led industry coalition, the Council for Quality Respiratory Care, which lobbied for their interests; FBI raided PPS (February 2012); PPS agreed to pay \$11.4 million to resolve allegations of violating the False Claims Act and for a cross-referral kickback scheme (April 2017); PPS laid off 170 employees (May 2017) ^{50-52, 90-95} |

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620 ^a Estimates acquired from publicly available practice websites, state corporations divisions, Bloomberg⁹⁶, and Crunchbase⁹⁷621 ^b Estimates acquired from publicly available practice websites, Dermatology World January 2018¹, and Physician Compare accessed August 2018

622 ⁹⁸

623 ^c Includes primarily dermatologists – both ABD and non-ABD – as of August 2018

624 ^d PE partnerships from publicly available practice websites, The PE Hub Network ⁹⁹, Becker's Hospital Review ¹⁰⁰, Bloomberg ⁹⁶, and Internet
625 search queries

626 ^e PE deals in dermatology may include secondary buyouts, recapitalizations, management buyouts, corporate divestitures, platform practices
627 with add-on acquisitions, and/or leveraged buyouts

628 ^f AAD, American Academy of Dermatology; ACMS, American College of Mohs Surgery; ASDS, American Society of Dermatologic Surgery; CEO,
629 Chief Executive Officer

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643 **Table 2: High Outliers in Intralesional Injections per Traditional Medicare Patient in 2015^a**

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| Title | City | State | Provider Type | Total Medicare Payment in 2015 | Percentage of patients with Alzheimer's Disease | Mean Intralesional injections per patient in 2015 ^b | # of Standard Deviations from the Mean ^c |
|-------------------|------------------|-------|---------------------|--------------------------------|---|--|---|
| MD | FARMINGTON HILLS | MI | Dermatology | \$26,884 | N/A ^d | 18.1 | 20.1 |
| NP ^e | WYANDOTTE | MI | Nurse Practitioner | \$210,628 | 75 | 17.7 | 19.7 |
| MD | BRONX | NY | Dermatology | \$127,950 | 5 | 14.5 | 16.1 |
| PA-C ^e | WARREN | MI | Physician Assistant | \$270,023 | 75 | 13.6 | 15.1 |
| NP | NEW YORK | NY | Nurse Practitioner | \$29,019 | 4 | 13.1 | 14.5 |
| PA-C ^e | CLINTON TOWNSHIP | MI | Physician Assistant | \$290,660 | 75 | 13.0 | 14.4 |
| MD | TROY | MI | Dermatology | \$97,839 | 9 | 12.5 | 13.8 |
| MD | NEW YORK | NY | Dermatology | \$51,665 | N/A ^d | 11.2 | 12.4 |
| PA-C | WEST BLOOMFIELD | MI | Physician Assistant | \$30,864 | 10 | 11.2 | 12.4 |
| PA-C | DETROIT | MI | Physician Assistant | \$23,601 | N/A ^d | 10.6 | 11.7 |
| MD | BALTIMORE | MD | Dermatology | \$156,998 | 3 | 10.1 | 11.1 |

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|-------------------|--------------|----|---------------------|-----------|------------------|------|------|
| MD | DETROIT | MI | Dermatology | \$313,055 | 10 | 10.0 | 11 |
| MD | SOUTHFIELD | MI | Dermatology | \$65,413 | 8 | 9.3 | 10.2 |
| DO | FLINT | MI | Dermatology | \$92,856 | 8 | 9.1 | 10 |
| DO | HOWELL | MI | Dermatology | \$197,881 | 7 | 8.5 | 9.3 |
| MD | CAROLINA | PR | Dermatology | \$181,369 | 14 | 7.7 | 8.4 |
| MD | NEW YORK | NY | Dermatology | \$45,191 | N/A ^d | 7.6 | 8.3 |
| MD | GREENVILLE | MS | Dermatology | \$816,554 | 7 | 7.2 | 7.9 |
| MD | NEW YORK | NY | Dermatology | \$34,973 | 5 | 7.1 | 7.8 |
| MD | PHILADELPHIA | PA | Dermatology | \$3,233 | 0 | 7.1 | 7.8 |
| PA-C | HOWELL | MI | Physician Assistant | \$122,605 | 7 | 6.5 | 7.1 |
| MD | NEW YORK | NY | Dermatology | \$29,107 | 5 | 5.9 | 6.4 |
| PA-C ^e | WAYNE | MI | Physician Assistant | \$84,635 | 75 | 5.8 | 6.3 |
| MD | DELRAY BEACH | FL | Dermatology | \$229,306 | 12 | 5.6 | 6.1 |
| FNP | KENNER | LA | Nurse Practitioner | \$32,141 | N/A ^d | 5.0 | 5.4 |

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646 ^a Derived from Physician Compare accessed November 2015 and January 2018⁹⁸ and 2015 Medicare Part B physician payment data PUF⁵³647 ^b CPT Codes (11900 + (11901*8)) divided by the total number of unique Medicare Part B beneficiaries seen in 2015; calculation is an
648 underestimate as it assumes CPT 11900 is injection of only one lesion and CPT 11901 is injection of only eight lesions; actual number of lesions
649 injected may be higher650 ^c mean=0.19, median=0.04, stDev=0.89, n=4138

651 ^d Data not available from CMS

652 ^e PE-backed physician extender billing independently for intralesional injections where 75% of Medicare patients have diagnosis of Alzheimer's
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671 **Table 3: Corporate Dermatology Groups in the Dermatology Practice Support Alliance^{a,b,c}**
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| Board of Directors and Officers |
| Advanced Dermatology and Cosmetic Surgery |
| Anne Arundel Dermatology |
| DermOne Dermatology (dissolved in 2018) |
| Forefront Dermatology |
| Integrated Dermatology Group |
| Riverchase Dermatology and Cosmetic Surgery |
| Schweiger Dermatology Group |
| Skin and Cancer Associates and Center for Cosmetic Enhancement |
| The Dermatology Group |
| U.S. Dermatology Partners |
| West Dermatology |

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674 ^a Annual Franchise Tax Report requested from State of Delaware Division of Corporations, which includes a publicly available document of
 675 directors and officers of which a majority are non-physicians; members may include other corporate dermatology groups ⁵⁰

676 ^b Incorporated on May 9, 2016 and report filed on April 14, 2017 by CEO of West Dermatology ⁵⁰

677 ^c Principal place of business: 18831 Von Karman Avenue, Suite 300, Irvine, CA 92612 ⁵⁰

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679 **Table 4: High Outliers in Skin Biopsies per Traditional Medicare Patient in 2015^a**

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| Title | City | State | Provider Type | Total Medicare Payment in 2015 | Mean biopsies per patient in 2015 ^b | # of Standard Deviations from the Mean ^c | Pathologic Examination of Tissue (88305) ^d | # of group practice members in 2015 | Entity had other Pathologist in 2015? |
|-----------------|---------------|-------|---------------|--------------------------------|--|---|---|-------------------------------------|---------------------------------------|
| DO | BOYNTON BEACH | FL | Dermatology | \$902,150 | 11.4 | 22.8 | 7839 | 1 | NO |
| MD ^e | NEWPORT BEACH | CA | Dermatology | \$495,601 | 10.3 | 20.5 | 91 | 25 | YES |
| MD | CHESTER | NJ | Dermatology | \$1,262,309 | 9.1 | 18 | 8071 | 1 | NO |
| MD | CORAL GABLES | FL | Dermatology | \$815,483 | 8.3 | 16.3 | 4322 | 1 | NO |
| MD | DENVER | CO | Dermatology | \$965,323 | 7.5 | 14.6 | 3483 | 1 | NO |
| MD | PHILADELPHIA | PA | Dermatology | \$403,030 | 7.4 | 14.4 | 0 | 3 | YES |
| MD | BEVERLY HILLS | CA | Dermatology | \$445,124 | 6.9 | 13.4 | 1696 | 1 | NO |
| MD ^e | LAKE WORTH | FL | Dermatology | \$1,046,053 | 6.5 | 12.5 | 0 | 15 | YES |
| MD | HOLLIS HILLS | NY | Dermatology | \$534,016 | 6.1 | 11.7 | 0 | 2 | NO |
| MD | GLENDORA | CA | Dermatology | \$1,225,860 | 5.6 | 10.7 | 4158 | 1 | NA |

| | | | | | | | | | |
|-----------------|------------------|----|---------------------|-------------|-----|------|-------|-----|-----|
| PA-C | PORT RICHEY | FL | Physician Assistant | \$533,273 | 5.5 | 10.5 | 0 | 2 | NO |
| MD ^e | DELRAY BEACH | FL | Dermatology | \$1,858,077 | 5.5 | 10.5 | 10006 | 123 | YES |
| MD | MEMPHIS | TN | General Practice | \$689,819 | 5.5 | 10.5 | 0 | 1 | NO |
| MD | WEST LONG BRANCH | NJ | Dermatology | \$1,093,604 | 5.3 | 10 | 4288 | 1 | NO |
| DO ^f | PORT SAINT LUCIE | FL | Radiation Oncology | \$1,263,047 | 5.1 | 9.6 | 3159 | 1 | NO |
| DO | GREAT BARRINGTON | MA | Dermatology | \$1,145,777 | 5.1 | 9.6 | 0 | 1 | NO |
| MD | FLORHAM PARK | NJ | Dermatology | \$2,517,455 | 4.8 | 9 | 4138 | 4 | YES |
| MD | VICTORVILLE | CA | Dermatology | \$995,327 | 4.7 | 8.8 | 5101 | 3 | NO |
| MD | HUNTINGTON BEACH | CA | Dermatology | \$1,128,493 | 4.6 | 8.6 | 5194 | 5 | NO |
| MD | WAYNE | PA | Dermatology | \$353,526 | 4.4 | 8.2 | 0 | 7 | NO |
| MD | TALLAHASSEE | FL | Dermatology | \$551,207 | 4.3 | 8 | 0 | 11 | YES |
| MD ^e | BOCA RATON | FL | Dermatology | \$262,980 | 4.2 | 7.8 | 0 | 1 | NO |

| | | | | | | | | | |
|-----------------|------------|----|-------------|-----------|-----|-----|------|----|-----|
| MD | BOCA RATON | FL | Dermatology | \$358,028 | 4.1 | 7.5 | 0 | 18 | YES |
| MD | MEDIA | PA | Dermatology | \$493,595 | 4.0 | 7.3 | 1183 | 2 | NO |
| MD ^e | AVENTURA | FL | Dermatology | \$304,176 | 4.0 | 7.3 | 0 | 50 | YES |

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682 ^a Derived from Physician Compare accessed November 2015 and January 2018⁹⁸ and 2015 Medicare Part B physician payment data PUF⁵³
683 limited to providers seeing at least 100 unique patients in 2015

684 ^b CPT Codes (11100, 11101, 11300-11313, 11755 (nail), 40490 (lip), 67810 (eyelid), 69100 (ear)) divided by the total number of unique Medicare
685 Part B beneficiaries seen in 2015

686 ^c mean=0.48, median=0.39, stDev=0.48, n=16024

687 ^d Number of times provider billed 88305 in 2015. This may reflect a charge for the professional or technical component, or the global fee

688 ^e Provider in a PE-backed dermatology practice in 2018

689 ^f Plead guilty to federal charges of health care fraud and obstruction of a criminal health care investigation⁵⁵⁻⁵⁷

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699 **Table 5: Major corporate laboratories with dermatopathology services^a**

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| Laboratory ^b | Estimated Number of Offices ^b | Locations ^b | Estimated Number of Dermatopathologists ^b | PE + Comments ^{b,c} |
|--|--|--|--|--|
| Aurora Diagnostics (Founded in 2006 by GSO Capital Partners and Summit Partners) | 17 | AL, AZ, FL, MA, MI, MN, NV, NJ, NY, NC, OH, OR, RI, SC, TX, VA | 55 | Explored sale (August 2016) and reexploring sale (August 2018) Entered into five-year credit facility of \$220 million with Cerberus Business Finance (July 2014) and added \$40 million delayed draw term loan (April 2015) to fund lab acquisitions Withdrew plans for initial public offering (June 2012) Filed for \$150 million initial public offering (April 2010) KRG Capital Partners (2009 – current) Summit Partners (2006 – current) GSO Capital Partners (hedge fund, 2006 – 2009) |
| Dermpath Lab of Central States (DLCS) (Founded in 1984; part of large | 2 | MI, OH | 7 | Sheridan Capital Partners (May 2017) |

| | | | | |
|--|----|--|----|---|
| dermatology entity called DOCS ¹⁰¹) | | | | |
| Inform Diagnostics (Miraca Life Sciences 2012 – 2017) (Caris Diagnostics 2006-2012) (Pathology Partners 1996-2006) | 3 | AZ, MA, TX | 28 | Avista Capital Partners (2017) |
| Laboratory Corporation of America Holdings (LabCorp; Dianon Pathology) (Founded in 1978 as National Health Laboratories, owned by Revlon Health Care Group; merged with Roche Biomedical Laboratories in 1995 to become LabCorp) | 5 | CA, CT, FL, NC, TX | 15 | Publicly trades on the New York Stock Exchange Shore Capital Partners invested in ClearPath Diagnostics (September 2011); sold to LabCorp (October 2016) |
| ProPath Services, LLC (Founded in 1966; became a corporation in 2002) | 1 | TX | 7 | No known PE |
| Quest Diagnostics (Ameripath; Derspath Diagnostics) (Founded in 1967 as Metropolitan Pathology Laboratory; became a corporation in 1996) | 14 | AZ, FL, GA, IN, KS, MA, NY, OH, PA, TX, WI | 71 | Publicly trades on the New York Stock Exchange Oroco Capital (date unknown) Ameripath formerly VC-backed by CHL Medical Partners (date unknown) and PE-backed by Welsh Carson Anderson & Stowe (2003-2007) ; sold to Quest |

| | | | | |
|--|--|--|--|---|
| | | | | Diagnostics in an all cash transaction at \$2 billion valuation (April 2007) ¹⁰² |
|--|--|--|--|---|

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702 ^a Does not include dermatopathology services offered by corporations primarily focused on clinical dermatology703 ^b Estimates acquired from publicly available corporate laboratory websites – as of August 2018704 ^c PE partnerships from publicly available corporate laboratory websites, The PE Hub Network ⁹⁹, and Internet search queries