RESEARCH LETTER

Private Equity Acquisitions of Physician Medical Groups Across Specialties, 2013-2016

Acquisition of physician practices by private equity firms has accelerated,[1,2] with unknown implications for care delivery and patient outcomes. However, available data are limited to single specialties or come from industry reports or opinion articles. A dearth of evidence and the use of nondisclosure agreements at early stages of negotiation have constrained the ability to evaluate this phenomenon empirically.[3] In this study, we describe physician group practices acquired in 2013-2016 across specialties.

Methods | We identified US physician group practice acquisitions by private equity firms using the Irving Levin Associates Health Care M&A data set,[4] which includes manually collected and verified transactional information on a broad set of health care mergers and acquisitions. We excluded practices bought by entities not classified as private equity firms at the time of acquisition. We verified practice names, locations, specialties, and group practice status via Google searches.

We linked acquisitions to the SK&A data set, a commercial data set of verified physician- and practice-level characteristics (eg, specialty, credentials, practice ownership, size, and locations) for US office-based practices. Transactions that spanned multiple sites and distinct practice names were considered separate acquisitions. Otherwise, we aggregated all practice sites observed in the SK&A data set and matched these to 1 observation from the M&A data set.

Linkages involved (1) fuzzy matching for nonexact records of a practice name in the SK&A data set with reported acquisitions in the M&A data set and (2) manual searches for nonmatches to identify name changes using publicly available records and practice websites. Within practices, we excluded physicians with primary administrative roles.

Match rates between practices in the SK&A data set and the M&A data set were 87% in 2013, 82% in 2014, 90% in 2015, and 87% in 2016. We benchmarked estimates against industry reports to ascertain data quality and integrity, and described numbers of practices, sites, and physicians in acquired practices across specialties.

Results | Of approximately 18 000 unique group medical practices, there were 355 physician practice acquisitions (1426 sites and 5714 physicians) by private equity firms from 2013 to 2016, increasing from 59 practices in 2013 to 136 practices in 2016 (**Table 1**). Acquired practices had a mean of 4.0 sites, 16.3 physicians in each practice, and 6.2 physicians affiliated with each site. Overall, 81.4% of these medical practices reported accepting new patients, 83.4% accepted Medicare, and 60.3% accepted Medicaid. The majority of acquired practices were in the South (43.9%).

Table 1. Characteristics of Physician Medical Groups Acquired by Private Equity Groups, 2013-2016 (N = 355)

Characteristic	Total	Year of Acquisition			
		2013	2014	2015	2016
Acquired by private equity group					
No. of practices	355	59	72	88	136
No. of sites	1426	216	308	386	516
No. of physicians[a]	5714	843	1413	1576	1882
Physicians per practice, mean (SD) [median]	16.3 (26.3) [7]				
Sites per practice, mean (SD) [median]	4.0 (7.8) [1]				
Physicians per site, mean (SD) [median]	6.2 (12.7) [2]				
Practice accepts new patients, No. (%)	289 (81.4)				
Practice accepts Medicare, No. (%)	296 (83.4)				
Practice accepts Medicaid, No. (%)	214 (60.3)				
Location of practice by US region, No. (%)[b]					
South	184 (43.9)				
Midwest	90 (21.5)				
Northeast	69 (16.5)				
West	76 (18.1)				

[a] Each physician was associated with only 1 practice but may have been affiliated with multiple sites within a practice.

[b] Some acquisitions spanned multiple US regions and are counted more than once; therefore, the total is 419 for this characteristic instead of 355.

Table 2. Specialties of Medical Groups and Physicians Among Those Acquired by Private Equity Firms, 2013-2016

	Specialty Practices					Specialty Physicians				
		Year of Acquisition[b]					Year of Acquisition[b]			
Specialty (Specialist Description)	Total, No. (%)[a]	2013	2014	2015	2016	Total, No. (%)[a]	2013	2014	2015	2016
Total	355 (100)	59	72	88	136	5714 (100)	843	1413	1576	1882
Anesthesiology (anesthesiologist)	69 (19.4)	10	20	15	24	1894 (33.1)	246	593	458	597
EM (emergency physician)	43 (12.1)	10	6	10	17	901 (15.8)	150	184	148	419
Family practice (family practitioner)	39 (11.0)	7	9	6	17	515 (9.0)	90	123	164	138
Dermatology (dermatologist)	35 (9.9)	1	5	11	18	334 (5.8)	11	26	86	211
Pediatrics (pediatrician)	20 (5.6)	4	8	5	3	166 (2.9)	9	61	57	39
Internal medicine (internist)	12 (3.4)	2	5	2	3	365 (6.4)	64	183	79	39
Ophthalmology (ophthalmologist)	11 (3.1)	0	2	2	7	134 (2.3)	6	35	68	25
Radiology (radiologist)	8 (2.3)	0	0	2	6	252 (4.4)	4	13	159	76
Urology (urologist)	8 (2.3)	5	1	1	1	92 (1.6)	13	37	37	5
Gastroenterology (gastroenterologist)	8 (2.3)	0	0	6	2	82 (1.4)	4	4	48	26
Cardiology (cardiologist)	8 (2.3)	1	0	1	6	106 (1.9)	32	14	28	33
Obstetrics/gynecology (obstetrician/gynecologist)	7 (2.0)	0	0	2	5	83 (1.5)	8	14	28	33
Hematology/oncology (hematologist/oncologist)	5 (1.4)	2	1	2	0	86 (1.5)	29	9	44	4
Orthopedic surgery (orthopedic surgeon)	5 (1.4)	0	0	2	3	130 (2.3)	0	13	43	74
Otolaryngology (otolaryngologist)	3 (0.8)	0	0	1	2	13 (0.2)	0	0	4	9
Nephrology (nephrologist)	2 (0.5)	0	0	0	2	19 (0.3)	0	7	2	10
Neurology (neurologist)	1 (0.3)	0	0	0	1	55 (1.0)	11	19	5	20
Psychiatry (psychiatrist)	1 (0.3)	0	0	1	0	22 (0.4)	5	2	2	13
Pulmonology (pulmonologist)	1 (0.3)	1	0	0	0	31 (0.5)	13	6	5	7
Pathology (pathologist)	1 (0.3)	1	0	0	0	23 (0.4)	15	2	3	3
Multispecialty	68 (19.4)	15	15	19	19					
Other types of specialty physicians										
Urgent care specialist						124 (2.2)	41	16	32	35
Neonatologist						79 (1.4)	44	25	10	0
Physical medicine/rehabilitation specialist						30 (0.5)	10	6	7	7
General surgeon						36 (0.6)	9	4	6	17
Radiation oncologist						26 (0.5)	2	2	10	12
Endocrinologist						17 (0.3)	1	2	10	4
Allergist/immunologist						10 (0.2)	1	5	3	1
Rheumatologist						15 (0.3)	2	3	3	7
Other specialist						74 (1.3)	23	7	34	10

Abbreviation: EM, emergency medicine.

[a] The percentages represent the proportion of total acquisitions across all years.

[b] Data are expressed as total numbers for each year.

The most commonly represented medical groups included anesthesiology (19.4%), multispecialty (19.4%), emergency medicine (12.1%), family practice (11.0%), and dermatology (9.9%) (**Table 2**). From 2015 to 2016, there was also an increase in the number of acquired cardiology, ophthalmology, radiology, and obstetrics/gynecology practices.

Within acquired practices, anesthesiologists represented 33.1% of all physicians; emergency medicine specialists, 15.8%; family practitioners, 9.0%; and dermatologists, 5.8%.

Discussion | Private equity acquisitions of physician practices increased across specialties from 2013 to 2016 but still constituted a small proportion of group physician practices in the United States. Industry reports suggest further growth in 2017-2018 private equity acquisitions, particularly in ophthalmology, dermatology, urology, orthopedics, and gastroenterology.[5] These data, which show acquired practices to have several sites and many physicians, match private equity firms' typical investment strategy of acquiring "platform" practices with large community footprints and then growing value by recruiting additional physicians, acquiring smaller groups, and expanding market reach.

Research is needed to understand the effect of these acquisitions and to mitigate unintended consequences. Private

equity firms expect greater than 20% annual returns,[3] and these financial incentives may conflict with the need for longer-term investments in practice stability, physician recruitment, quality, and safety. There may be additional pressures to increase revenue streams (eg, elective procedures and ancillary services), direct more referrals internally, and rely on lower-cost clinicians.[6]

Key limitations include that the data are based on publicly announced transactions and therefore underestimate total acquisitions, particularly of smaller practices, and that available data lag behind the rapid pace of private equity acquisitions.

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COMMENT & RESPONSE

Unmeasured Confounding in Observational Studies of Management of Cerebellar Intracranial Hemorrhage

To the Editor In a propensity score–matched cohort of 578 patients from 4 observational cohort studies, Dr Kuramatsu and colleagues showed that evacuation of medium-sized intracerebellar hematomas (approximate volume, 20 cm^3) was not associated with better functional outcome.[1] Assessing treatment effectiveness in observational data is challenging because treatment decisions are based on patient characteristics that also are typically predictive of outcome, causing confounding by indication. Although the authors addressed this potential bias with propensity scores, we would like to emphasize the possibility of residual confounding.

In their study, surgically treated patients were younger, had worse Glasgow Coma Scale scores at presentation, had larger hematomas, and more often had intraventricular hemorrhage. In matching patients with the same risk of undergoing a surgical evacuation (the propensity), the authors suggested that treatment groups with similar prognosis were created. However, while measured confounding seems to have been properly addressed, unmeasured confounding may still be a problem. Many factors may influence decision-making in these patients, including frailty and preexisting conditions that could be contraindications for surgery. Contexts with strong measured confounding are also likely to show substantial unmeasured confounding. Propensity score matching is a statistically efficient alternative for regression-based covariate adjustment but still relies on the assumption that no unmeasured treatment preferences strongly relate to prognosis.[2,3]

A methodological study on comparable treatment considerations found that unmeasured confounding is not merely a theoretical problem.[3] In post hoc analyses of traumatic brain injury cohorts, analytical methods for surgery in traumatic intracranial hematomas and intracranial pressure-guided treatment were compared; propensity score matching was unable to account for unmeasured imbalances between treatment groups. A simulation study confirmed that propensity score matching resulted in an invalid estimate of the treatment effect in the case of unmeasured confounding,[3] which also was shown in other fields.[4]

Our view is that unmeasured confounding is an insurmountable problem in observational studies of acute neurosurgical decisions. A promising alternative for effect estimation is instrumental variable analysis. Although this method has its own difficulties, such as defining appropriate instruments and the necessity of large samples, it is not biased by unmeasured confounding.[3,5] Since the cohort in the study by Kuramatsu and colleagues came from 64 centers with likely differing practice culture among institutions, have the authors considered a regional comparison of treatment strategies?

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