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HEALTHCARE

A QUALITY AND COST COMPARISON OF ACADEMIC AND NON-ACADEMIC HOSPITALS

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SUMMARY

Historically, academic medical centers (AMCs) have earned strong reputations due to clinical breakthroughs, highly publicized research, and prominent health-related training programs. But as cost and quality outcomes are further emphasized across the industry, AMCs must ensure that their clinical performance is on par with or better than their large non-AMC counterparts.

AMCs and large non-AMCs have historically competed for tertiary and quaternary clinical business. As payers, patients, employers, and other potential partners gain access to data through increased transparency, performance on these indicators may significantly impact the market position of AMCs and non-AMCs, especially those with lower outcomes. Yet, little current research exists that analyzes and compares AMC and non-AMC performance on quality and cost outcomes at a national level. How do AMCs compare with non-AMCs on contributing value, and what can they do to improve the value of their clinical service offerings?

INTRODUCTION

AMCs are a vital component of care delivery in the U.S., often offering services unmatched by their non-AMC competitors, such as:[1]

- Providing 37% of all charity care, 26% of all Medicaid hospitalizations, and a disproportionate share of many other community services.
- Sponsoring and subsidizing the lion's share of National Institutes of Health-funded research, amounting to hundreds of millions of dollars a year.
- Receiving 38% of transfers from other hospitals for patients with complex needs[2] and operating the majority of regional standby services, including 80% or more of Level I trauma and burn centers.
- Sponsoring and subsidizing a variety of graduate medical education programs.

These contributions require AMCs to make ongoing investments in specialized facilities, equipment, and personnel, including physicians and residents in multiple specialties.

1. Atul Grover, Peter L. Slavin, and Peters Willson, "The Economics of Academic Medical Centers," The New England Journal of Medicine, June 19, 2014, http://www.nejm.org/doi/full/10.1056/NEJMp1403609.
2. Association of American Medical Colleges, "Medicare Patient Hospital Transfers in the Era of Health Care Reform," April 2013, https://www.aamc.org/download/333654/data/april2013analysisinbrief-medicarepatienthospitaltransfersinthee.pdf.

While AMCs are generally associated with cutting-edge and specialty care, Navigant's review of several facilities has found that as many as 90% of admissions and procedures performed at AMCs could be performed at community (non-AMC) hospitals. The large volume of care able to be provided at community hospitals, combined with the growing presence of value-based payment models, is putting pressure on AMC reimbursement rates and operating margins, as well as their ability to continue to support their missions. This current scenario reinforces the need for AMC quality and cost performance to be in line with non-AMCs.

METHODOLOGY

To examine the quality and cost outcomes of AMCs and non-AMCs, we analyzed the most recently available data from all 387 U.S. hospitals (175 AMCs, 212 non-AMCs) with more than $500 million in annual net patient revenue and 10,000 annual discharges. Facilities that didn't report financial data in 2016 and Centers for Medicare & Medicaid Services (CMS) value-based program[3] scores for FY2018 were excluded from the analysis. Wage- and case mix index (CMI)-adjusted cost per case was calculated using MedPAR FY2017 reported charges and cost-to-charge ratios. Cost calculation excludes non-prospective payment system, expired, and cost outlier cases. Navigant's weighted quality score is based on CMS Hospital-Acquired Condition (HAC) Reduction Program,[4] Hospital Value-Based Purchasing (HVBP) Program,[5] and Hospital Readmissions Reduction Program (HRRP)[6] percentile scores for FY2018 CMS penalties. For each value-based program, CMS assigns a percentile score from 1 to 99 to force-rank each facility relative to the entire group, with 99 indicating the strongest performance. Navigant's analysis is not inclusive of all force-ranked facilities; therefore, median percentile for all facilities included in the analysis does not equal 50. Most recently reported net patient revenue and annual discharges were retrieved from Definitive Healthcare.

RESULTS

A. Wage- and CMI-adjusted Cost per Case, AMCs vs. non-AMCs

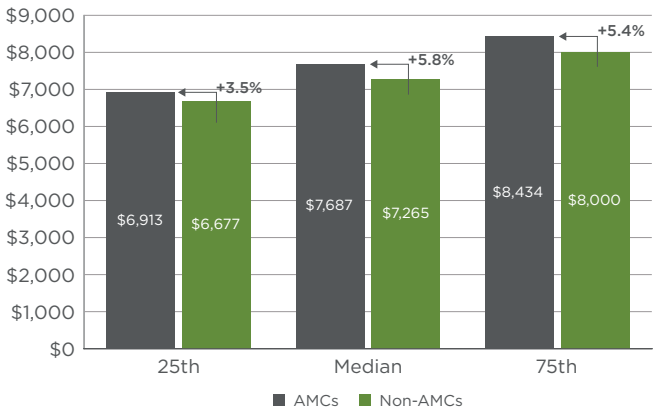
AMCs generally cost more than non-AMCs: AMCs are experiencing higher operating costs than non-AMCs at the 25th percentile, median, and 75th percentile, as measured by wage- and CMI-adjusted cost per case (Figure 1):

- Top performers (25th percentile): AMC costs are 3.5% higher than non-AMC.
- Median: AMC costs are 5.8% higher than non-AMC.
- Low performers (75th percentile): AMC costs are 5.4% higher than non-AMC.

Assuming the median number of annual original Medicare discharges for all facilities analyzed (7362 discharges), the difference in AMC and non-AMC median cost per case would amount to approximately $11.6 million in additional operating expenses annually per facility.[7]

However, both AMCs and non-AMCs showed similar results when comparing top performers (25th percentile) to low performers (75th percentile). The additional operating expense for low performers would amount to approximately $9.2 million[8] for non-AMCs and $12 million[9] for AMCs, compared to top performers.

Figure 1: Wage- and CMI-adjusted Cost per Case, AMCs vs. non-AMCs*



**Wage- and CMI-adjusted cost per case calculated using MedPAR FY2017 reported charges and cost-to-charge ratios. Cost calculation excludes non-prospective payment system, expired, and cost outlier cases.*

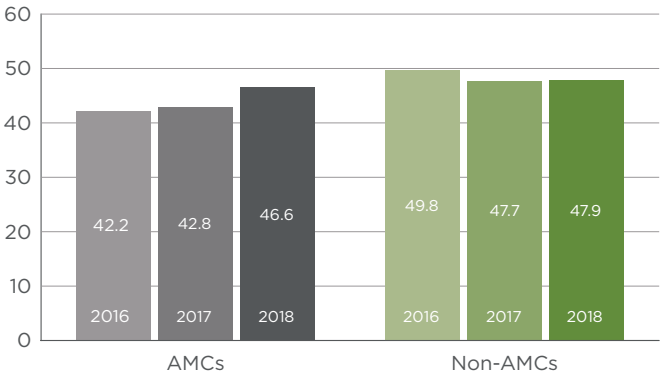
B. Weighted Navigant Analysis of CMS Value-based Program Quality Scores, AMCs vs. non-AMCs

AMCs improve while non-AMCs stagnant on quality: Despite lower initial outcomes on some CMS value-based programs, AMCs analyzed saw a significant improvement in overall weighted performance on CMS value-based program scores from 2016 to 2018, with AMC results approaching those of non-AMCs (Figure 2):

3. Centers for Medicare & Medicaid Services, "CMS' Value-Based Programs," November, 2017, https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/Value-Based-Programs.html.
4. Centers for Medicare & Medicaid Services, "Hospital-Acquired Condition (HAC) Reduction Program," November, 2015, https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/HAC/Hospital-Acquired-Conditions.html.
5. QualityNet, "Fiscal Years 2018-2023 Measures, Hospital Value-Based Purchasing," https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier3&cid=1228775522697.
6. Centers for Medicare & Medicaid Services, "Hospital Readmissions Reduction Program (HRRP)," March 26, 2018, https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/HRRP/Hospital-Readmission-Reduction-Program.html.
7. Total number of Medicare discharges is based on original Medicare claims only. Data excludes non-prospective payment system, expired, and cost outlier cases.
8. Bottom line impact to Medicare financial performance based on non-AMC annual median discharges of 6,935.
9. Bottom line impact to Medicare financial performance based on AMC annual median discharges of 7,909.

- AMC quality scores increased 10.4%, compared to a 4.0% decrease for non-AMCs.
- Compared to AMCs, non-AMC quality scores were 1.3 points higher for 2018, compared to 4.8 points higher in 2017 and 7.6 points higher in 2016.

Figure 2: Weighted Navigant Analysis of CMS Value-based Program Quality Scores, AMCs vs. non-AMCs*



**Weighted quality score based on FY18 quality score percentiles for HRRP, HAC, and HVBP.*

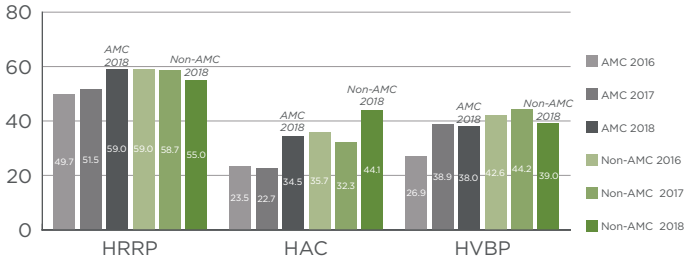
C. Individual Value-based Program Quality Scores, AMCs vs. non-AMCs

AMC readmission scores surpass non-AMCs: AMC median readmission percentile ranking improved from 49.7 to 59.0 in the HRRP, surpassing the non-AMC ranking, which decreased from 59.0 to 55.0 (Figure 3). In addition, non-AMCs saw a 75.0% increase in median readmission penalties from 2016 to 2018, while AMC penalties decreased 14.8%. As a result, AMCs' fiscal year 2018 HRRP median penalty is 17.9% lower than non-AMCs' median penalty (Figure 4).

AMC HAC scores improve, but gap remains vs. non-AMCs: The percentage of AMCs analyzed that received a 1% HAC penalty from CMS decreased from 50.9% in 2016 to 34.3% in 2018. Non-AMCs also improved, with 21.2% receiving penalties, down from 31.1% in 2016. Though the gap closed, the percentage of AMCs receiving HAC penalties is 61.5% higher than non-AMCs in 2018 (Figure 4). Furthermore, AMC HAC percentile scores remain 9.6 points below non-AMCs for 2018 (Figure 3).

AMC HVBP scores are in line with non-AMCs: While there was no notable difference between AMC and non-AMC HVBP scores and penalties for the hospitals analyzed, both experienced a drop in average performance relative to all facilities from their peaks in 2017. AMC HVBP percentile scores decreased from 38.9 in 2017 to 38.0 for 2018, while non-AMC percentile scores decreased from 44.2 to 39.0 (Figure 3). Despite the decrease in scores, penalties also decreased for both AMCs and non-AMCs (Figure 4).[10]

Figure 3: CMS Value-based Program Median Percentile Score, AMCs vs. non-AMCs*



**FY16, FY17 and FY18 HAC, HRRP, and HVBP scores.*

Figure 4: CMS Value-based Program Year-Over-Year Penalty Comparison, AMCs vs. non-AMCs*

	AMCs			NON-AMCs			COMPARISON		
	2016	2017	2018	2016	2017	2018	AMC Change	Non-AMC Change*	AMC vs. Non-AMC (2018)
% Receiving HAC Penalty	50.9%	56.0%	34.3%	31.1%	35.4%	21.2%	-32.6%	-31.8%	61.5%
Median Readmission Penalty	-0.0027	-0.0029	-0.0023	-0.0016	-0.0025	-0.0028	-14.8%	75.0%	-17.9%
Median HVBP Adjustment	-0.0018	-0.0016	-0.0008	0.0000	-0.0008	-0.00065	-55.6%	-18.8%	23.1%

**Non-AMC change for median HVBP adjustment shown as change from 2017 to 2018.*

10. From 2017 to 2018, the number of facilities participating in the HVBP program decreased, but the available incentive funds increased from $1.8 billion to $1.9 billion and the number of facilities receiving positive adjustments remained similar at close to 1,600 facilities. Additionally, the maximum penalty received decreased from 2017 to 2018 from 1.83% to 1.65%. These factors combined may account for the reduction in penalties despite a simultaneous reduction in scores.

D. Quality and Wage-/CMI-adjusted Cost Per Case Outcomes, AMCs and non-AMCs

No relationship between performance on quality measures and cost: As alternative payment models become more prevalent, the assumption that higher-cost facilities provide higher quality care has come into question. Analyzing the most recently available CMS quality measures with wage- and CMI-adjusted cost per case data shows both AMCs and non-AMCs that provide care at a higher cost do not significantly outperform lower-cost facilities on quality measures.

Dividing all analyzed facilities into four quartiles based on cost, the greatest cost quartile had a median weighted quality score of 48.9, which is 4.4% greater than the bottom cost quartile median quality score of 46.9 (Figure 5).

Figure 5: Weighted Quality Score by Wage-/CMI-adjusted Cost per Case Quartile*

**Weighted quality score based on FY18 quality score percentiles for HRRP, HAC, and HVBP. Wage- and CMI-adjusted cost per case calculated using MedPAR FY2017 reported charges and cost-to-charge ratios.*

Viewing where facilities fell across the cost/quality continuum further illustrates the significant standard deviation in quality and value performance across both AMCs and non-AMCs, regardless of cost performance (Figure 6).

Figure 6: Weighted CMS Quality Score and Wage-/CMI-adjusted Cost per Case Matrix, AMCs vs. non-AMCs*

**Facilities with over $15,000 in wage- and CMI-adjusted cost per case not shown.*

DISCUSSION

Improvements Encouraging, But Many AMCs Struggling to Deliver Value

For AMCs, improvements in CMS value-based program scores is clearly a positive trend, indicating that many have taken important steps to enhance quality — in some cases in line with or exceeding their non-AMC counterparts.

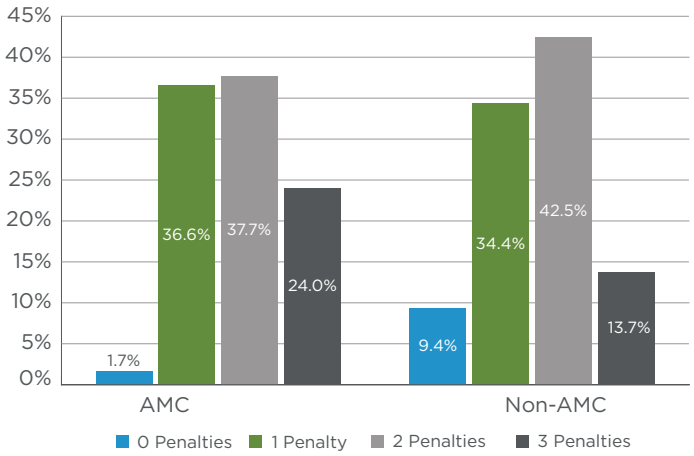
CMS' value-based program scores are designed to assess a facility's overall ability, but, in aggregate, can be used to predict a facility's overall ability to succeed under other value-based arrangements. Assessing the number of facilities that received all possible value-based program penalties (i.e., HAC, HRRP, and HVBP) both for 2018 and over the past three years indicates that a greater portion of AMCs are struggling with value-based payment opportunities.

For FY2018 penalties (Figure 7):

- 24.0% of AMCs received a negative adjustment on all three penalties, compared to 13.7% of non-AMCs.
- 9.4% of non-AMCs received no penalty, compared to just 1.7% of AMCs.

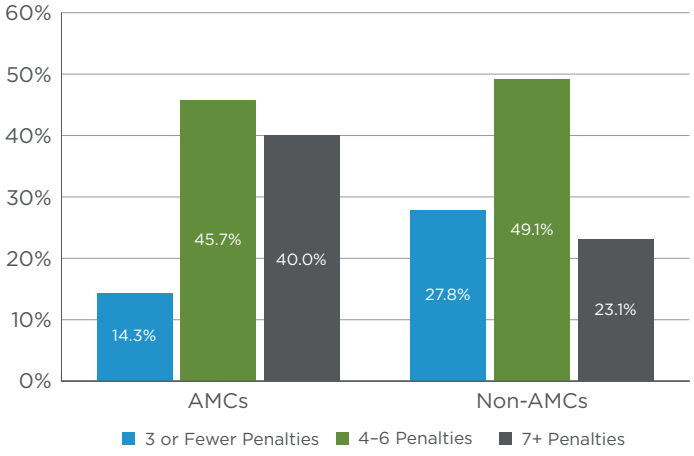
From 2016-2018, 40.0% of AMCs received a negative adjustment for seven or more of the possible nine penalties, compared to 23.1% of non-AMCs (Figure 8).

Figure 7: 2018 CMS Value-based Program Penalty Profile, AMCs vs. non-AMCs*



Based on FY18 HAC, HRRP, and HVBP scores

Figure 8: CMS Value-based Program Penalty Profile, 2016-2018, AMCs vs. non-AMCs*



Based on FY16, FY17 and FY18 HAC, HRRP, and HVBP scores.

IMPLICATIONS

Improved performance on quality outcome measures reflects AMC leadership, focus, and ongoing dedication to individual patients and their communities. However, the financial health of the institutions they lead will be dependent on further improvement in their quality measures and cost structure. Facilities consistently performing poorly on CMS value-based programs stand to face increasing financial pressures from future payment models emphasizing value.

Greater transparency and improved access to cost and quality outcome data may lead to new market dynamics or further emphasize emphasize recent trends, including:

Quality Indicators Driving Patient-care Decisions

Medicare value-based program indicators are increasingly utilized by the public and payers to signal high-quality services, and poor performance on these indicators may cause a decrease in patient volumes due to consumer choice. In addition, AMCs take great pride in their reputations and brands, with many promoting their care expertise nationally or internationally. Patients most likely to travel for care are traditionally higher-income, commercially insured and more likely to access and utilize quality indicators in their decisions on where to seek care. As such, a decline in patient volumes at AMCs may be largely composed of better-reimbursing patients, causing a greater impact to facility financial health.

Growing Revenue At-risk Through Alternative Payment Models

While a limited amount of revenue is currently at stake through CMS and similar value-based programs, the percentage of revenue at-risk under other alternative payment models (APMs) is expected to increase. Furthermore, AMCs have proved to be active participants in such models, including bundled payments and accountable care organizations (ACOs). This is occurring through Medicare, as well as the private sector where the nation's largest commercial payers now pay out approximately half of their reimbursements via value-based models.[11] The result could be continued downward pressure on commercial reimbursement rates and even larger margins for government payer business. Thus, the ability of AMCs to perform well on specific indicators will be increasingly important to top-line revenue, and bottom-line profitability.

11. Bruce Japsen, "UnitedHealth, Aetna, Anthem Near 50% Value-Based Care Spending," *Forbes*, February 8, 2017, https://www.forbes.com/sites/brucejapsen/2017/02/02/unitedhealth-aetna-anthem-near-50-value-based-care-spending/#3e2ceb561d4e.

Partnerships Impacted by Performance

ACOs, payers, and other healthcare entities are looking to partner with hospitals and health systems that can effectively manage patient quality, cost, and satisfaction. As ACOs look to increase their influence on patient-care decisions and payers become more selective in contracting choices — including through increasingly popular Medicare Advantage plans — facilities with higher costs and poorer performance on quality indicators may find themselves cast aside by these influential partners that drive patient volumes.

We acknowledge that certain factors, including patient socio-economic mix and the need to invest in added infrastructure to support specialized care, research, and medical education, may impact AMC quality and costs; however, our analysis clearly shows many AMCs achieving high-level outcomes while maintaining high performance with these factors.

SOLUTIONS

To create greater value through quality and cost improvements, AMCs should consider implementing the following:

- **Benchmarking performance** — As the saying goes, "To be the best, you have to beat the best." Providers should leverage industrywide benchmarking data that compares their performance against their peers to obtain a true profile of their outcomes and improvement potential. Acceptance of benchmarking tools is dependent on appropriate strategies for setting short-term and long-term targets, as well as comparison groups.
- **Empowering care teams** — It's essential to engage leadership, physicians, faculty, and staff to enhance performance. Providing a multiyear, value-based vision, and the role that employees have in the development and rollout, can have an empowering influence across the organization. This requires customizing the user data, protocols, and operating models to the individual institution.
- **Emphasize in-network customer retention** — Studies suggest a 5% increase in customer retention can increase an organization's profits by 25% to 95%. Providers should focus on retaining patients by building tight provider network relationships throughout the care continuum, a shared referral management infrastructure, and common standards for access, quality, and cost.
- **Leverage best practices and reduce unnecessary resource consumption** — Leading AMC leadership uses evidence-based clinical protocols and best practices to improve quality and reduce cost. The approach has been shown to improve value by optimizing patient throughput, care transitions, physician and clinical preference item selection, pharmaceutical prescribing approaches, ancillary care/imaging and laboratory utilization, and other factors.

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CONCLUSION

From training physicians and conducting groundbreaking research to providing a full spectrum of clinical care at a local and international level, our nation's healthcare system benefits greatly from — and depends heavily on — AMCs. In addition to these responsibilities, AMCs are increasingly facing cost and quality pressures related to successfully mastering new payment models.

Our analysis of quality and cost outcomes suggests that, while AMCs are improving in certain areas, they continue to trail their non-AMC counterparts in others. Comparing wage- and CMI-adjusted cost per case, and the most recently reported readmissions, HAC, and HVBP scores, disclose several trends specific to AMC cost and quality performance:

- Wage- and CMI-adjusted care delivery costs are higher at AMCs vs. non-AMCs. Higher costs per patient discharge could be troubling for AMCs as consumers and payers emphasize value.
- AMC readmission and HAC scores improved from 2017 to 2018, bringing AMCs in line with overall value-based program performance for 2018. This suggests strong improvement for AMCs overall, but a closer analysis of year-over-year penalties shows that some AMCs have struggled across all outcome indicators over the past three years. Such facilities are likely to struggle with other public and private APMs, compounding the financial stress felt by these institutions.
- Despite strong value-based program scores for 2018 compared to similar-sized non-AMCs, AMCs need to improve consumer-facing metrics to be at least competitive with non-AMC counterparts. As consumers look for more guidance when making care decisions, these metrics will become increasingly important, and poor performance could threaten patient populations for AMCs.

As transparency in healthcare increases, AMCs performing poorly on these measures of care may face lower patient volumes, a decrease in revenue through CMS quality penalties and/or financial pressures from other value-based models, and less favorable payer partnership opportunities. To minimize these negative implications, AMCs must deliver top-level performance in quality and cost outcomes.