

Hospital purchasing alliances: Ten years after

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Background: Most hospitals outsource supply procurement to purchasing alliances, or group purchasing organizations (GPOs). Despite their early 20th century origin, we lack both national and trend data on alliance utilization, services, and performance. The topic is important as alliances help hospitals control costs, enjoy tailwinds from affiliated regional/local alliances, and face headwinds from hospital self-contracting and criticism of certain business practices. **Purpose:** We compare the utilization, services, and performance of alliances in 2004 and 2014.

Approach: We analyze alliances using two comparable surveys of hospitals. We use significance tests to assess changes in alliance utilization, services, and performance (e.g., cost savings). We also assess the use of regional/local alliances affiliated with national GPOs.

Results: Purchasing through national alliances has somewhat diminished. Over 10 years, hospitals have diversified GPO memberships to include regional/local alliances (many affiliated with their national GPO) and engaged in self-contracting. At the same time, hospitals have increased purchases of many categories of supplies/services through national GPOs and endorsed their value-added functions and increasingly important role. Hospitals report greater satisfaction with several GPO functions; performance on most dimensions has not changed.

Conclusions: National alliances still play important roles that hospitals find valuable.

Practice Implications: Purchasing alliances continue to play an important role in helping hospitals with both cost savings and new services. Their growing complexity, along with growing use of self-contracting, poses managerial challenges for hospital purchasing staff that may require greater hospital investment.

Hospitals use purchasing alliances, or group purchasing organizations (GPOs), to outsource supply procurement (Roberts, Henderson, Olive, & Obaka, 2013). GPOs have historically helped hospitals to lower supply costs and improve efficiency; more recently, GPOs have offered other services to help hospitals meet

new demands (e.g., quality, safety, value). Nevertheless, alliance utilization, services, and performance are not well understood despite their long existence and continued hospital use. This article compares purchasing alliances on these dimensions at two points in time (2004 vs. 2014) using surveys of their hospital members.

Key words: GPOs, group purchasing organizations, hospitals, purchasing alliances

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This research was supported by a grant from The American Hospital Association.

Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this article on the journal's Web site (www.hcmrjournal.com).

The authors have disclosed that they have no significant relationship with, or financial interest in, any commercial companies pertaining to this article.

DOI: 10.1097/HMR.0000000000000215

Health Care Manage Rev, 2020 45(3), 186–195
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Background Overview of Purchasing Alliances

Alliances began operation in the early 20th century at the municipal level, developed more widely between 1960 and 1990 at a regional level (via state hospital associations, multistate buying groups, and nonprofit hospital systems), and consolidated into a handful of national GPOs in the 1990s (Burns, 2014). In the early 2000s, national GPOs returned to their roots. They developed parallel, affiliate organizations at regional/local levels to address problems generated by their larger scale and bureaucracy following consolidation, for example, loss of customer contact and intimacy, difficulty in obtaining committed purchasing across lots of dispersed hospitals, and inability to contract for supplies (e.g., perishable food, medical waste removal, medical gas) better negotiated locally (Rhea, 2009). Regional/local alliances served as a better vehicle to contract for supplies from regional/local vendors. Some hospitals also began to insource these functions via self-contracting (Abdulsalam, Gopalakrishnan, Maltz, & Schneller, 2015).

Alliances provide a “shared service,” combining the purchases of hospital members to achieve scale economies (higher sales volume for lower vendor prices). This is why they are referred to as “pooling alliances” (Zajac, D’Aunno, & Burns, 2018). Alliances have traditionally been evaluated on pricing; more recently, they have sought to offer nonprice benefits (e.g., clinical/safety improvement, predictive analytics, value analysis, and process efficiency) to help members deal with policy changes and reimbursement challenges.

Alliances have also been scrutinized by policy-makers regarding certain business practices (e.g., bundled contracts that exclude less diversified suppliers) and receipt of contract administration fees (CAFs) that some view as vendor kickbacks. Between 2002 and 2010, the U.S. Senate investigated alliances on possible antitrust violations for using exclusionary contracts with incumbent manufacturers that might inhibit market entry.

Importance of Alliances as Research Topic

Purchasing alliances represent an interesting topic given their historical persistence, recent sponsorship of affiliated regional/local alliances, potential impact on cost and quality, scrutinized business practices, and contrast with trading alliances (e.g., hospital partnerships with physicians or post-acute sites). Nevertheless, alliances have received little research attention. Most academic research on alliances has consisted of conceptual analyses, industry descriptions, theoretical modeling, and empirical simulations of GPO impact on hospital supply chains and health care costs (Blair & Durrance, 2013; Burns, 2002; Burns & Lee, 2008; Goldenberg & King, 2009; Hu & Schwarz, 2011; Nyaga, Young, & Zepeda, 2015; Schneller, 2000; Schneller & Smeltzer, 2006).

One reason for the inattention is the lack of national data. The American Hospital Association (AHA) only recently began tracking the national GPO affiliation of its hospital members; no data are collected on regional or local alliances. The national association for GPOs, the Healthcare Supply Chain Association (HSCA), was formed in 1990 and represents only 16 GPOs. According to the HSCA, there are 600+ GPOs, but there is no information on them.

Another reason is that research on alliance utilization, services, and performance may require data supplied by the hospital customers of these alliances—Vice-Presidents of Materials Management (VPMMs)—that have proven difficult to collect. Trade journals and consultants that periodically survey VPMMs typically obtain very low response rates (less than 5%) and small samples (less than 200 respondents) (L.E.K. Consulting, 2012; Modern Healthcare, 2012). This limits statistical power and generalizability. One VPMM professional body, the Association for Healthcare Resource and Materials Management (AHRMM) at the AHA, has not surveyed its own members but has collaborated with researchers and large GPOs in a national survey of VPMMs in 2004 that offered an early view of GPOs (Burns & Lee, 2008).

This article reports evidence gathered in a follow-up national survey conducted in 2014 for panel analysis; the earlier data are no longer available, preventing any hospital-level analysis. Like the 2004 survey, the 2014 survey was sponsored by AHRMM and relied on the participation of the largest national GPOs in operation; due to consolidation, the number of large GPOs shrunk from seven in 2004 to five in 2014. Because of the volume of survey information and the fact that such data are otherwise lacking, we limit this article to descriptive univariate and bivariate analyses. Other papers will use multivariate techniques to test hypotheses on the impact of hospital factors on alliance use and the impact of alliances on hospital costs.

This study draws on two comparable VPMM samples, survey instruments and items, and survey findings to analyze GPOs in 2004 versus 2014. Results address hospitals’ use of national GPOs, more recent use of regional/local GPOs (as well as self-contracting), GPOs’ ability to provide cost savings and value-added services, and VPMMs’ assessment of GPO business practices. These data gauge the trajectory of GPOs, provide new benchmarks for future work, and are the only national data on alliance utilization, services, and performance.

Conceptual Framework

GPOs represent “pooling alliances,” whereby hospitals collectively purchase supplies to gain bargaining strength over vendors and reduce unit costs (Zajac et al., 2018). Such alliances are less frequently studied than “trading alliances” in which members exchange complementary resources. GPOs also constitute value chain alliances

between hospitals and their buying hubs that mediate the hospital–vendor trading relationship (Burns, 2002). Consultants suggest that hospitals have made supply chain management and self-contracting a strategic priority, pressuring the national alliances to be more competitive (Cherry, 2017).

Supply expenses account for roughly 15% of total hospital costs; related supply chain expenses (costs of procurement, inventory, distribution, etc.) add another 15% (Abdulsalam & Schneller, 2017). Supply and supply chain costs thus account for nearly one third of hospital costs. GPOs assist hospitals in managing these costs via lower prices, conversion to GPO-negotiated contracts, development of affiliated regional/local alliances, negotiation of local customized contracts, management of the hospital's item master, benchmarking with peer hospitals, operational improvements, technology assessment, clinical and safety improvement initiatives, and consulting services. Schneller and Smeltzer (2006) refer to alliances as an underutilized strategy to contain costs and deal with payer pressures.

To evaluate this potential, we analyze survey data gathered at 2 points in time from the GPOs' customer: the hospital's VPMM. According to Peter Drucker, customer satisfaction is the best way to assess an organization's performance. Our research compares VPMM responses from a 2004 national study (Burns & Lee, 2008), with a more recent 2014 national survey that used the same sampling strategy and included many of the same items, survey administration, and sponsorship. The research design yields a cross-sectional panel that updates earlier findings and captures trends important to both hospitals and GPOs.

Prior Research

Literature reviews on hospital purchasing alliances reach remarkably consistent conclusions (cf. Burns, 2014; Dobson, Heath, Reuter, & DaVanzo, 2014; Scott, Voorhees, & Angel, 2014). These include the following: (a) GPO purchases (dollar spend) have grown at a healthy pace; (b) GPOs' mediation of hospital purchases has remained at a high level; (c) GPOs save their hospital members money via contracts and prices negotiated with vendors; (d) GPOs provide other efficiencies (e.g., labor staffing, rebates in the form of a percentage of the CAFs collected, and shareholder dividends); (e) CAFs received from suppliers range from 1.22% to 2.25%, much of which is shared by GPOs back with hospitals; (f) GPOs have expanded contracting beyond traditional products (e.g., commodities, physician preference items, and pharmaceuticals) to new areas such as capital equipment and purchased services; (g) GPOs have expanded services offered such as revenue cycle management, outcomes data, and analytics; (h) GPO services meet hospital customers' needs, as reflected in hospital satisfaction with and continued use of their GPOs; (i) GPO contracts for

product bundles, contracts with single vendors, and use of committed purchasing contracts are widely used and highly valued by many hospitals; (j) the GPO sector is becoming more fragmented, as hospitals have multiple options for group purchasing and contracting (e.g., regional and local alliances); and (k) there is no firm evidence that GPO contracting practices have foreclosed hospital markets for smaller vendors or reduced hospital and patient access to innovative technology.

Although consistent, the literature includes few empirical studies using large representative samples. None of the research is longitudinal. The literature also fails to address several important questions. *First*, what is the impact of hospitals supplementing their use of national GPOs with affiliated regional and local GPOs (parallel alliances at different geographic levels)? *Second*, to what degree do hospitals substitute their own self-contracting efforts for continued outsourcing to GPOs? There is some evidence that self-contracting can help a hospital become its own GPO (Abdulsalam et al., 2015). *Third*, how has the percentage of alliance-mediated hospital spending across different supply categories (e.g., drugs) changed over time? This is particularly important given the rise of expensive specialty pharmaceuticals. *Fourth*, what value have hospitals derived from the new services that GPOs have developed over the past decade (since the 2004 survey), such as revenue cycle management, data analytics, purchased services, and clinical outcomes data? The issue is important given changes in the payer environment confronting hospitals in 2014 (vs. 2004), such as pay for performance, accountable care, and value-based purchasing. *Finally*, how do hospitals view certain GPO business practices that have attracted a lot of public attention? These issues are addressed below.

Methods

Study Population

In 2014, there were five national GPOs (Amerinet, HealthTrust, MedAssets, Novation, and Premier), down from seven in the 2004 study. Consorta became an equity owner in HealthTrust Purchasing Group in 2007, with HealthTrust taking over Consorta's purchases; in 2010, MedAssets purchased Broadlane, nearly doubling its purchasing volume.

Hospitals can simultaneously (a) belong to one or more national GPOs, (b) belong to regional and/or local GPOs (often affiliated with their national alliances), and (c) contract on their own. Prior evidence revealed that hospitals routed the bulk of their purchases through one national GPO. For this reason, we utilized the membership in the five national GPOs as our population to study; there are no known databases of national, regional, or local alliances. We acknowledge that reliance on national GPO

membership introduces possible sampling bias as well as bias in performance measures reported (issues addressed below). We obtained the VPMM rosters for hospitals in each GPO and merged them. The total number of hospitals (for which we could locate the hospital in the AHA directory) was 2,897.

Survey Administration

The AHA and AHRMM contacted the VPMMs and encouraged them to complete a survey hosted on SurveyMonkey. After 6 weeks, AHA/AHRMM sent out another message to encourage nonresponders to complete the survey. The total number of individuals responding was 1,206. Not all responses were usable, however. Some respondents ($n = 58$) declined to fill out the survey; they were dropped. Some respondents ($n = 73$) were from nongeneral and/or non-community hospitals; they were also excluded. Several respondents ($n = 111$) did not report a national GPO affiliation and thus could not be used to assess the national alliances; however, they allowed us to assess sampling bias due to using national GPO rosters. Analyses reveal that the 111 hospitals are equally likely to be system members, less likely to be medical-surgical hospitals (82%), and more likely to be large nonprofits with teaching affiliations (39% vs. 18%). This suggests greater levels of self-contracting (rather than GPO contracting) among such hospitals. Only 3 of the 111 completed the survey, preventing us from assessing differences in alliance evaluations. Several VPMMs ($n = 66$) completed the survey twice (due to the two mailings); in these cases, we took the average response level from both responses. This left a total of 899 responses. We were able to match 677 (23%) of these respondents to the 2,897 hospitals in the AHA data; the remaining respondents reported on behalf of hospital systems.

Survey Nonresponse

The study achieved a 23% response rate, much higher than industry surveys and slightly higher than the 2004 survey. We employed multiple methods to assess and deal with nonresponse bias. We compared responders and nonresponders on key AHA hospital characteristics that could influence purchasing. There was no bias based on system membership ($p > .41$), service ($p > .96$), or system centralization ($p > .72$). There was potential bias based on higher response in some regions (Mid-Atlantic) and among hospitals with more beds, teaching affiliations, and nonprofit ownership ($p < .01$). We do not feel the sampling bias influences our results, because the survey measures are not correlated with AHA hospital variables (ranging from .02 to .06).

Nevertheless, we utilized the Heckman (1979) procedure to correct for any sample selection bias. We estimated survey response as a function of hospital characteristics

in a logistic regression, computed the inverse mills ratio from that regression, and then computed the least-square means for the survey variables reported in the tables below. Because the AHA data are hospital level, the nonresponse analysis and correction model excludes those VPMMs who reported their role as system level and where the system lacked a primary hospital. Their inclusion did not materially change the results.

We also investigated differences in participation between the first and second waves of survey administration. A comparison of variable means showed that the second wave of respondents reported significantly higher rates of satisfaction than the first. Nevertheless, when we accounted for such differences, the interpretation of the univariate summary statistics did not change, nor did the comparison with the 2004 means. A comparison of the variable means between the two waves for unique hospitals showed few significant differences.

Survey Measures: Alliance Membership, Utilization, Services, and Performance

The survey contained items from the 2004 survey to permit panel analysis, as well as several new items of interest to the AHRMM and AHA sponsors. The first section identified the hospital's *memberships* in national, regional, and local alliances. Hospitals also reported their tenure with each alliance, their shareholder status in the primary national alliance, and the rank order in importance that each alliance played in the health care supply chain. The survey also asked VPMMs to evaluate on a 5-point Likert scale (1 = *strongly disagree*, 3 = *neither disagree or agree*, 5 = *strongly agree*) the competitive effects exerted by regional/local alliances on the national alliances and whether their role/impact had changed over the past 5 years.

Another section asked about the hospital's *utilization* of purchasing alliances. VPMMs estimated the percentages of their total supply spending routed through national, regional, and local purchasing alliances, supplemented by self-negotiated contracts and off-contract purchases. They also estimated the percentage of purchases mediated through the primary national alliance in six categories: commodity items, physician preference items (PPIs), pharmaceuticals (both generic and brand), capital items, and purchased services.

A third section asked about the value derived from five *services* offered by alliances: revenue cycle management, purchased services, data analytics, benchmarking data, and clinical outcomes data. VPMMs indicated whether their national alliance offered (a) multivendor, multiproduct contracts and (b) single-vendor, multiproduct contracts and how frequently their hospital participated in them. Finally, VPMMs assessed the impact on their buying decisions exerted by CAFs distributed back by the alliance, ownership interest in the alliance, the perceived value of

product contracts, and supplier access made available by the alliance.

A fourth section asked VPMMs to evaluate their national alliance's *performance*. This encompassed the ability to generate economic savings on eight dimensions, their overall level of satisfaction with the national alliance, and satisfaction with 20 specific alliance functions. VPMMs also evaluated the alliance's success with contracting for PPIs and different types of contracting practices (e.g., single-vendor and multivendor bundled contracts).

Analytic Approach

We present the univariate statistics from the 2014 survey, compare them with the results obtained from 2004, and conduct *t* tests to detect significant differences and possible trends. We also conduct bivariate analyses between measures of GPO utilization and performance to detect any associations, as well as compare these results with those reported in 2004. The “services” measures were not included in the 2004 survey and thus lack any baseline data.

Given the large number of survey items, we used data reduction techniques—confirmatory factor analysis using orthogonal (varimax) rotation—to simplify the presentation. The factor analysis yielded five factors; for each factor, we created a summary scale (i.e., arithmetic average across the survey items) and calculated the scale's reliability using Cronbach's alpha. These scales include (a) all 20 satisfaction items (eigenvalue = 16.55, alpha = .95); (b) six items on the GPO's ability to provide cost savings (eigenvalue = 2.33, alpha = .88), (c) three items regarding the GPO's ability to achieve excellent pricing through standardization (eigenvalue = 2.29, alpha = .90), (d) four items regarding the role and impact of regional/local alliances (eigenvalue = 1.64, alpha = .90), and (e) two items relating to physicians' preferences for sole-source versus multisource contracts (eigenvalue = 1.08, alpha = .72).

Results

Alliance Participation 2004 Versus 2014

Table 1 presents univariate statistics on alliance participation for both years. The distribution of respondents across the national GPOs is somewhat comparable between the 2 years and roughly parallels the 2014 AHA data. Also comparable is the percentage of hospitals using only one national alliance (59% vs. 53%) and serving as alliance shareholders (43% vs. 38%).

One difference is the level of supply spending going through the national GPOs. In 2004, 71% of spending went through national alliances; the 2004 survey item that measured purchasing through regional alliances was rarely filled out by VPMMs, suggesting infrequent use (one third

of participants did not even report a regional alliance). In 2014, hospitals reported only 55% of purchases through the national alliances, routing some spending through their regional (10%) and local alliances (5%); overall, 70% of purchases went through GPOs in 2014. Survey data reveal most of the regional/local alliances used were affiliates of the national GPOs, accounting for over 7% of purchases. When we took this into account, 62% of 2014 purchases went through the national alliances and their affiliates; 5% and 3% went through nonaffiliated regional and local groups, respectively. Hospitals have thus diverted some purchases from the national alliances to affiliated regional/local groups. Hospitals made their remaining purchases (30%) directly on their own, most of which were under contract with the vendor (as opposed to off-contract, spot buying).

The average tenure with the national alliance has grown from roughly 9 to 11 years. Tenure with regional/local alliances is comparable (9+ years), suggesting the development of these options in the early 2000s and their national sponsorship. There is little change in alliances offering multivendor multiproduct contracts (79% vs. 74%) and single-vendor multiproduct contracts (81% vs. 80%) and the frequency with which hospitals utilize these types of bundled contracts.

Alliance Performance 2004 Versus 2014

The most widely followed metric is GPOs' ability to reduce costs. The survey suggests mixed evidence (see Table 2). On the one hand, although most VPMMs believe their national alliance achieves demonstrable cost savings and margin improvement (mean = 4.10 out of 5.00), the level of agreement has fallen slightly over time (4.19 in 2004, $p < .05$). Consistent with prior findings (Schneller, 2009), there is also significantly lower satisfaction with GPOs' ability to get excellent prices on PPIs, falling from 3.47 in 2004 to 3.33 in 2014. On the other hand, there is no significant change in VPMMs' (a) evaluation of their alliance's ability to obtain cost savings through lower prices overall (4.19 in 2004 vs. 4.14 in 2014), (b) satisfaction with price discounts (4.11 vs. 4.10), and (c) satisfaction with getting lowest price in GPO contracts (3.72 vs. 3.66). At the same time, there is a significant increase in GPOs' ability to achieve cost savings in three areas: CAFs shared with the hospital (from 3.57 to 3.71), information technology (from 3.26 to 3.67), and centralized staffing (from 2.74 to 3.60). This suggests a shift in cost savings from price to nonprice sources. The findings also reflect growing use of national GPO prices as market ceilings and use of regional/local alliances to leverage such contracts to extract more discounts.

There is no significant change in VPMMs' overall satisfaction with their national alliance (4.06 vs. 4.02). There are seven areas in which they express significantly greater satisfaction: clinical improvement (3.43 vs. 3.65), consulting

Table 1
Alliance participation

	2004		2014	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Primary national alliance				
Amerinet (%)	11		5	
Broadlane (%)	4		—	
Consorta (%)	7		—	
HealthTrust (%)	8		12	
MedAssets (%)	10		13	
Novation (%)	29		34	
Premier (%)	24		32	
Other (%)	7		3	
Use one national alliance (%)	59		53	
Shareholder of alliance (%)	43		38	
Supply spending via (%)				
National GPO alliance	71		55	
Regional GPO alliance	—		10	
Local GPO alliance	—		5	
Self-negotiated contracts	—		20	
Off-contract purchases	—		10	
Alliance offers multivendor multiproduct contracts (%)	79		74	
Alliance offers single vendor multiproduct contracts (%)	81		80	
Tenure with national alliance (no. of years)	8.87	4.91	11.27	7.64
Tenure with regional alliance (no. of years)			9.44	7.40
Tenure with local alliance (no. of years)			9.30	7.45
Frequency of contract participation in multivendor multiproduct contracts ^a	3.04	1.02	2.94	0.95
Frequency of contract participation in single vendor multiproduct contracts ^a	3.13	0.91	3.09	0.89

Note. 2004: *N* = 644, 2014: *N* = 899. GPO = group purchasing organization.

^a1 = never, 3 = sometimes, 5 = always.

services (3.46 vs. 3.58), clinical expertise and data support for value analysis (3.46 vs. 3.69), direct input into product and service selection (3.45 vs. 3.59), auditing for implant procurement (3.00 vs. 3.19), assisting with contract conversion for PPIs (3.01 vs. 3.21), and item master maintenance (2.88 vs. 3.08).

VPMMs express significantly lower satisfaction with three other areas, however: safety improvement initiatives (3.57 vs. 3.45), ability to bring innovative products to their attention (3.64 vs. 3.50), and impeded access to innovative devices and manufacturers (2.29 vs. 2.40). They also express lower satisfaction regarding multisource contracts for PPIs (3.86 vs. 3.70), but no difference in satisfaction regarding multisource contracts for commodities (3.96 vs. 3.88), no difference in the value of committed contracts for either multivendor multiproduct portfolios (3.74 vs. 3.69) or single-vendor multiproduct portfolios (3.51 vs. 3.50), no difference in their physicians' attitudes toward sole-source and multisource contracts for PPIs, and little change in the use of multisource contracts with either single or multiple vendors (see Table 1). For the

remaining 14 satisfaction items, there was no significant change.

Overall, greater satisfaction with several alliance services and lower satisfaction with few other services is consistent with our conclusion above regarding cost savings from nonprice services. VPMM satisfaction with the national alliance and its services has remained high.

Alliance Mediation of Supply Categories 2004 Versus 2014

GPOs purchase a variety of supplies and services on behalf of their members. Table 3 cross-tabulates the percentage of purchases made by hospitals (categorized by 0–24%, 25%–49%, 50%–74%, 75%–100%) for six categories of supplies studied in both years. The results show slight increases in GPOs' mediating purchases of capital items and PPIs and bigger increases in mediating purchases of commodities and purchased services. By contrast, the alliances show a slightly diminished role in pharmaceutical purchases.

Table 2
Alliance performance

Topic/Question	2004		2014		Pooled t test
	M	SD	M	SD	t Test
<i>Cost savings through alliances</i>					
GPO provides demonstrable cost savings and margin improvement	4.19	0.67	4.10	0.78	-2.45*
Savings flow from information technology	3.26	0.96	3.67	0.90	8.43**
Savings flow from shareholder dividends	3.22	1.06	3.25	0.90	0.66
Savings from lower prices	4.19	0.69	4.14	0.74	-1.34
Savings flow from administrative fees shared back with hospital	3.57	0.98	3.71	0.88	2.84**
Savings flow from GPOs providing the market price point	—	—	3.83	0.82	—
Savings flow from standardizing contracts	—	—	4.06	0.81	—
Savings flow from economies of centralized staffing	2.74	0.99	3.60	0.92	17.03**
Overall, I am satisfied with our primary national GPO	4.06	0.85	4.02	0.85	-0.84
<i>Level of satisfaction</i>					
Clinical improvement initiatives	3.43	0.95	3.65	0.95	4.42**
Consulting services	3.46	1.02	3.58	0.99	2.23**
Clinical expertise/data support for value analysis	3.46	1.06	3.69	1.04	4.03**
Direct input to product and service selection	3.45	1.14	3.59	0.99	2.45**
Group purchasing and price discounts	4.10	0.81	4.11	0.84	0.19
Implant procurement auditing of costs/units used	3.00	1.10	3.19	1.02	3.40**
Local input from clinicians for preference items	3.20	1.06	3.26	1.02	1.02
Multisource contracts for commodity items	3.96	0.85	3.88	0.90	-1.67
Operational improvements	3.43	0.96	3.37	0.94	-1.12
Technology assessment and advisory services	3.37	1.00	3.37	0.98	0.02
True strategic partnership with hospital	3.51	1.13	3.58	1.06	1.23
Services to support prevention, personalization of medicine	—	—	3.20	0.88	—
Predictive analytics to make better decisions around cost, quality, and outcomes	—	—	3.49	1.03	—
Multisource contracts for preference items	3.86	0.93	3.70	0.98	-3.07*
Member's control and input on alliance direction	3.50	1.09	3.42	1.00	-1.49
Item master maintenance	2.88	1.04	3.08	1.04	3.64**
Benchmark with peer hospitals and systems	3.56	1.10	3.55	1.06	-0.16
Bring innovative products to our attention	3.64	1.04	3.50	1.02	-2.55*
Safety improvement initiatives	3.57	0.88	3.45	0.95	-2.42*
Lowest price in GPO contracts	3.72	1.00	3.66	1.08	-1.05
<i>GPO contracts for physician preference items</i>					
GPO gets excellent prices overall	3.47	1.13	3.33	1.14	-2.26*
GPO gets excellent prices overall through standardization and compliance to dual-source contracts	—	—	3.42	1.09	—
GPO collects high admin fees on national contracts for these items	3.12	0.91	3.18	0.80	1.30
GPO has increased our knowledge of innovative medical devices and manufacturers	3.24	1.06	3.24	1.02	0.03
GPO actively involved in helping us convert to the contract for these items	3.01	1.14	3.21	1.11	3.33**
GPO gets excellent prices through standardization and compliance to sole-source contracts	—	—	3.49	1.11	—
My hospital/system can get better prices for preference items than those obtained through the GPO contract ^a	2.52	1.2	2.45	1.18	-1.07
GPO provides assistance negotiating local custom contracts	2.85	1.2	2.93	1.11	1.38
Our physicians dislike sole-source contracts for preference items	3.64	1.05	3.74	0.96	1.85
GPO committed contracts for multivendor multiproduct portfolios are valuable	3.74	0.94	3.69	0.86	-1.05
GPO has blocked access to innovative medical devices and manufacturers	2.29	1.03	2.40	0.94	2.12**
GPO committed contracts for single-vendor multiproduct portfolios are valuable	3.51	0.97	3.50	0.87	-0.21
Our physicians prefer dual/multisource contracts for these items	3.92	1.17	3.87	0.79	-0.92

Note. Scale on Satisfaction items is 1 = very dissatisfied to 5 = very satisfied; otherwise, scale is 1 = strongly disagree to 5 = strongly agree. 2004: N = 644, 2014: N = 899. GPO = group purchasing organization.

^aReverse scale (subtract 6 and take absolute value).

* $p < .05$. ** $p < .01$.

Table 3
Alliance mediation of purchases

Purchase category	% purchases mediated by alliance							
	2004 (N = 644)				2014 (N = 899)			
	0–24%	25%–49%	50%–74%	75%–100%	0–24%	25%–49%	50%–74%	75%–100%
Capital items ¹	42.91	22.84	23.20	11.05	42.20	21.71	22.52	13.57
Physician preference items ²	36.78	32.9	22.37	7.95	33.74	25.85	29.80	10.61
Pharmaceutical products	9.19	11.03	27.21	52.57	10.33	12.68	30.99	45.98
Commodity items ³	6.96	8.42	32.97	51.65	4.33	9.20	28.15	58.32
Purchased services ⁴	49.45	28.39	16.85	5.31	44.91	30.53	15.47	9.09

Tests of significance between 2004 and 2014 distributions:

¹ Chi-square = 0.54, $p < .46$. ² Chi-square = 8.15, $p < .01$. ³ Chi-square = 5.97, $p < .02$. ⁴ Chi-square = 3.54, $p < .06$.

2014 data = average of brand and generic pharmaceuticals (cannot compute Chi-square).

How do we reconcile these findings with the earlier result in Table 1 that supply spend routed through the national GPO has declined? One possibility is that rising expenditures on branded, specialty drugs are not mediated by national GPOs. Prior research shows that branded drugs made by only one manufacturer do not end up on purchasing contracts (Burns, 2002).

2014 Alliance Survey Measures

The 2014 Survey contained several items not found in the 2004 Survey (e.g., several recent nonprice services). The univariate statistics presented in Supplemental Digital Content 1 (<http://links.lww.com/HCMR/A41>) show that hospitals derive the most value from benchmark data (3.51 out of 5.00) and data analytics (3.39). Hospitals derive relatively less value from clinical outcomes data (3.16), purchased services (3.07), and revenue cycle management (2.85).

VPMMs also evaluated the impact of several factors on buying decisions using a 7-point Likert scale (1 = *least important*, 7 = *most important*). The most highly rated factor was the value of the product contract negotiated by the GPO (mean = 5.25). Least important items were being an alliance owner (2.62) and CAFs distributed by the GPO (3.17). Other items of intermediate importance included (in order) availability of stock locally to the organization and during emergencies (4.91 and 4.47, respectively) and access to suppliers (4.32).

VPMMs rank-ordered (1 = *highest*, 3 = *lowest*) the role played by the national alliances (1.33) above the other two (1.95 and 2.49, respectively). Among hospitals using all three alliances, the results were similar. VPMMs were more likely to agree that the role and impact of the national alliances has grown over the prior 5 years (3.65 out of 5.00) compared to the role of regional alliances (3.44) and local

alliances (3.18). They expressed neutral levels of agreement regarding the competitive impact of both regional and local alliances on the national alliances (3.36 and 3.16, respectively). This suggests that, despite the proliferation of alliances at different geographic levels and the rerouting of purchases from national to regional/local GPOs, the role and impact of the national GPOs has not diminished.

Alliance Business Practices and Competitive Issues

Alliances have been criticized for business practices, such as sole-source and multiproduct (bundled) contracts. Our results suggest there has been little change in (a) the use of these contracts, (b) satisfaction with these contracts, and (c) physician attitudes toward these contracts. That may explain why there is little change in the offering of such contracts by the alliances (see Table 1). There is also little evidence to support prior concerns about CAFs: VPMMs report they have little influence on their buying decisions. At the same time, VPMMs report that CAFs represent a more important source of hospital savings, perhaps because national alliances distribute a larger share of CAFs back to their members.

VPMMs express less concern over other contentious issues regarding vendor alliance contracting. They barely agree that gag clauses imposed by vendors in PPI contracts negatively impact the hospital's ability to align with its physicians on pricing (mean = 3.17 out of 5.0) and that vendor contracts with multiple price tiers create confusion in hospital purchasing (3.02). They are slightly more likely to agree that suppliers with limited market share will exit the market (3.28) and that such exits lead to price increases (3.40). There is thus greater concern about keeping supplier markets competitive—an issue that has grown in salience as suppliers have diversified through mergers and acquisitions.

Nevertheless, the use of regional/local GPOs to contract with regional/local vendors suggests greater competition at subnational levels.

Alliance Utilization and Performance: Bivariate Statistics

We also investigated the bivariate relationships between alliance utilization and performance. Alliance utilization (e.g., use only one national alliance, percent spend through alliances, tenure with the national alliance, rank order of national alliance's role, and participation in various contracts) reflect areas important to the GPOs; alliance performance measures (satisfaction, savings, pricing, etc.) reflects areas important to both GPOs and their members. Correlations thus reflect the degree to which national alliance penetration of hospital purchasing impacts alliance performance, as perceived by the VPMMs. These results are presented in Supplemental Digital Content 2 (<http://links.lww.com/HCMR/A42>).

The use of a single national alliance and percent spend through alliances are significantly associated with several factor scores of alliance performance and all five measures of valued services; tenure with the national alliance is not. The rank order importance of the national GPO, participation in multivendor bundled contracts, and (especially) participation in single-vendor bundled contracts are associated with higher alliance performance and valued services.

Discussion

Over time, national alliances account for a lower percentage of alliance purchases but enjoy higher perceived importance in customers' eyes. What explains this paradoxical result? One reason is that national alliances mediate higher levels of purchases for some items (commodities, PPIs, purchased services) and similar levels of purchases for other items (capital items). Another reason is that regional/local alliance effectiveness relies on the presence of the national alliances to establish price ceilings that can be leveraged for additional discounts. VPMMs acknowledge the importance of this in supplier negotiations (see Table 2).

National alliances appear to recognize this reality and have shifted their attention from price to nonprice services in order to remain competitive. As part of their customer service orientation, they helped establish alliances at regional/local levels, channeled some of their members' purchasing through them, and provided assistance in localized and customized contracting. This may explain why national alliances are increasingly recognized for their ability to offer value-adding services other than lowest price. VPMMs express greater satisfaction over time with such services, with relatively stable levels of satisfaction with most other services. Moreover, alliance utilization is correlated with alliance performance.

At the same time, national alliances account for lower levels of purchases for some important products. There are new categories of expensive purchases (e.g., specialty pharmaceuticals) that may not be amenable to alliance purchasing at any geographic level. Such products are typically available from only one manufacturer; in such situations, the manufacturers do not have to offer price discounts, leaving alliances out of the picture.

Finally, the survey data relieve some concerns about GPO business practices and the competitiveness of the marketplace. Although GPOs have consolidated at the national level, they have proliferated at regional and local levels and gained market share. Because competition is often tied to the sheer number of competitors, the proliferation and geographic diversification of alliances suggest a more competitive market. Despite this proliferation, the national GPOs still play the most important role and, perhaps, an increasingly important role. Not only does their presence facilitate the bargaining power of the regional and local alliances, but they are now also providing services such as data analytics that may help hospitals cope with value-based purchasing and alternative payment models. For example, the spread of bundled payment initiatives across payers and providers should foster greater sensitivity to supplies consumed during patient episodes of care, particularly PPIs.

Limitations of the Study

Our findings are subject to several limitations. First, we rely on survey responses rather than direct measurements of supply purchases and cost savings. Second, we include the perspective of VPMMs rather than the alliances themselves or vendors. Nevertheless, VPMMs constitute an important customer who is well positioned to address the issues discussed here. Third, due to the sensitivity of the issues queried, VPMMs may report more favorable views of GPO conduct, thereby introducing the possibility of social desirability bias. Fourth, reliance on national GPO membership may bias responses in favor of the national alliances. Fifth, the univariate and bivariate results may have common methods variance. Sixth, the survey achieved only a 23% response rate. However, the response is much higher than rates observed in prior surveys of VPMMs and does not seem to introduce bias in terms of measurable hospital characteristics.

Implications for Managers

The national GPOs have developed alliance solutions at regional and local levels in an effort to help their members optimize existing contracts or develop new contracts (e.g., with regional and local vendors). This suggests national alliances are counterbalancing their large size with local flexibility. Members are also engaging in self-contracting in search of greater savings.

These findings suggest that VPMMs have to manage a larger, more complex portfolio of contracts at multiple levels, which may necessitate growing sophistication and workforce needs in the materials management department. This is not an area where hospital executives have traditionally invested but may need to go forward. VPMMs have multiple GPOs, professional networks, and contracts to oversee. This can provide opportunities for improved savings, pricing transparency, benchmarking, and sharing of best practices—but only if VPMMs have the staffing and training to do so.

Future Research

Our future research will investigate what hospital characteristics influence the mix of national, regional, and local alliances used. We will also examine the impact of purchasing alliances on hospital supply spending and whether the latter is affected by the mix between utilization of national, regional, and local alliances (in addition to self-contracting efforts).

Acknowledgment

The authors thank the Editor, three anonymous reviewers, and Gene Schneller for their helpful comments on a prior draft.

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