The US healthcare system has long been characterized as complex, fragmented, costly, and with significant variation in quality of care. During the health reform debate, many health policy experts have called for the country to reorganize healthcare providers and delivery systems through organizational or virtual integration. The concept of integrated healthcare delivery systems (IDCs) has gained considerable interest. Such systems have been viewed as a better approach to addressing the issues of quality and cost. Indeed, some IDCs are frequently portrayed not just in academic and medical circles but in the popular media as examples of the best, most effective healthcare in this country. However, the evidence used to support such assertions may not have been systematically evaluated. Now that healthcare reform has been enacted and accountable care organizations (ACOs), which have many organizational features similar to those of IDCs, are rapidly being developed and implemented, what do we know about how this approach to organizing healthcare impacts the key factors of quality and cost of care? Do IDCs truly do a better job of providing high-quality care while holding down costs? A comprehensive review of the existing literature that assesses the relationship between IDCs and cost/quality is critically needed.

OBJECTIVES

Objectives: To perform a systematic review of the current literature to assess the association between integrated healthcare delivery systems and changes in cost and quality.

METHODS

Methods: Medline, Embase, Cochrane Reviews, Academic Search Premier, and reference lists were used to retrieve peer-reviewed articles reporting outcomes (cost and quality) related to integrated delivery systems. A general Internet search and reference lists were used to retrieve non-peer-reviewed publications meeting the same criteria. Included peer and non-peer reviewed publications were based in the United States and were published between the years 2000 and 2011.

RESULTS

Results: A total of 21 peer-reviewed articles and 4 non-peer reviewed manuscripts met the inclusion criteria. Twenty studies showed an association between increased integration in healthcare delivery and an increase in the quality of care. One study reported no changes in quality indicators associated with increased integration. None of these studies measured cost reduction directly, but used reduction in utilization of services instead. Four studies associated decreases in the utilization of services with increases in integration.

CONCLUSIONS

Conclusions: The vast majority of studies we reviewed have shown that integrated delivery systems have positive effects on quality of care. Few studies linked use of an integrated delivery system to lower health service utilization. Only 1 study reported some small cost savings.


INTEGRATED DELIVERY SYSTEM

Much of the recent innovation in US health policy has been based upon a fundamental belief that a higher level of integration will yield a more efficient healthcare delivery system. An IDC presumably provides higher quality and more patient-centric care at lower costs. However, there is no clear definition of what constitutes an IDC. Recently reorganized healthcare delivery systems (eg, ACOs) come in all sizes and shapes, and span a wide spectrum of types and levels of integration. Inconsistency in concept and vague definitions can pose significant challenges as policy makers strive to design policy tools to steer the current healthcare away from uncoordinated and fragmented health systems.

Integrated healthcare is complex and has been categorized conceptually in 2 ways: (1) an organized structure that is managed by a financial entity (eg, a financial group that manages different facilities within a healthcare system) or (2) an organized healthcare delivery system that coordinates care and has
Take-Away Points

Recent discussion of health reform has placed much emphasis on integrating healthcare delivery systems. Do integrated healthcare systems truly do a better job of providing high-quality care while holding down costs? Very few studies have provided empirical evidence.

- We conducted a systematic literature review (2000-present) including peer-reviewed and non-peer reviewed studies, and analyzed 25 eligible studies that examined integrated delivery systems on the topics of cost and quality.
- The majority of these studies reported positive correlation between health system integration and quality of care.
- The evidence on reducing cost of care, however, is rather weak.

synchronized functioning. An IDS may encompass providers belonging to multiple facilities who are responsible for providing quality patient care rather than providers from a single facility like a hospital or general practice.\(^\text{2,3}\)

Integrated healthcare has numerous definitions.\(^\text{4}\) The World Health Organization defines integrated delivery as “the organization and management of health services so that people get the care they need, when they need it, in ways that are user-friendly, achieve the desired results and provide value for money.”\(^\text{5(p3)}\) While this definition is focused on the patient experience of integrated delivery, other definitions focus on the responsibility of the system. One such definition states that organized delivery systems consist of “a network of organizations that provides or arranges to provide a coordinated continuum of services to a defined population and is willing to be held clinically and fiscally accountable for the outcomes and health status of the population served.”\(^\text{6(p7)}\) Finally, other definitions focus on the specific services and features that describe an IDS as “one or more hospitals along with physicians, diagnostic centers, and other components of the supply side of the supply chain strive to share information, minimize duplication, and make treatment decisions based upon the institutional best practices.”\(^\text{7(p106)}\)

The preceding concepts and definitions illustrate the complexity and variation involved when discussing IDSs. However, they also help to determine the commonalities present. All of these concepts and definitions include increased communication and information sharing across the care continuum. There is also a common understanding that integrated care should coordinate patient care in a way that improves the patient experience and the quality of the care received.

Jonas and Kowner’s Health Care Delivery in the United States includes the various forms of IDSs under the umbrella of organized healthcare delivery. This book defines organized healthcare delivery as a situation where “Care providers have established relationships and mechanisms for communicating and working to coordinate patient care across health conditions, services, and care settings over time.”\(^\text{8(p206)}\) This definition is broad enough to capture many different system structures, while still including the essential functions that

an IDS must possess. Hence, for this systematic review, we include broader definitions of IDS that focus on care coordination and system integration.

METHODS

Literature Search Strategy and Inclusion Criteria

This systematic literature review provides a comprehensive look at the current peer-reviewed literature on IDSs. It also includes a review of other non-peer reviewed publications on the subject, including white papers and reports from nonprofit and industry organizations. Although these documents have not been independently evaluated through peer-review processes, we believe that these sources can provide valuable insights. Due to the fact that these documents are not required to go through a lengthy review process required for publication in a peer-reviewed journal, they are often the first to report on emerging topics and issues.

For peer-reviewed articles, a systematic literature search was performed in 2012 using Medline, Embase, Cochrane Reviews, and Academic Search Premier, as well as the follow-up references in retrieved articles for outcomes (cost and quality) of IDSs from 2000 to 2011. Search terms included integrated delivery system, integrated care, integrated service network, continuity of care, chains of care, care coordination, coordinated care, provider system integration, and vertical integration.

While the literature search for non–peer reviewed articles was not as systematic as that for the peer-reviewed literature, it was conducted through a similar process. A general Internet search engine was used to find white papers, case studies, and reports from various organizations. Several peer-reviewed publications cited such documents as well, leading to several more studies for consideration. The content of these documents was then assessed to determine the applicability of each paper to this review.

Articles were included if they evaluated outcomes (cost and quality) of IDSs. We excluded theory-based articles, articles not specific to the US health system, and articles published before 2000.

RESULTS

Numerous publications on IDSs were available. However, the majority of this material focused on the key elements required to successfully adapt current health systems to IDSs.\(^\text{9-11}\) In this review we were interested in articles and papers pertaining to the cost of care associated with IDSs and the quality of
care they provide. Previous literature reviews have addressed the issue of how to define and measure integrated healthcare delivery, but did not link integration with outcomes.

After the initial literature search, we identified 168 peer-reviewed articles. We excluded 78 based on title and abstract review. A total of 90 full-text articles were assessed for eligibility, 69 of which were not eligible, for a final sample of 21 articles. All 21 articles evaluated some measures of quality of care and correlated these measures with health system integration; 6 of these articles also assessed the impacts on cost of care.

The initial search of the non-peer reviewed literature generated 27 white papers, reports, and case studies for consideration. Of these studies, 13 were excluded based on abstract review. The remaining 14 studies were read in their entirety to assess their eligibility for this review. Those that did not pertain to information on cost or quality outcomes were excluded. This resulted in a final sample of 4 non-peer reviewed publications (Figure).

To synthesize our literature review findings, we abstracted study settings and key findings from all selected papers into 3 domains: health system focus, outcome measures, and conclusion.

Peer-Reviewed Publications

Quality. Enhancing care continuity and coordination are 2 important components of IDSs. With more stringent guideline- or protocol-based care, integrated healthcare systems seemed to provide better quality of care in our systematic review. Out of 21 studies, 19 showed improvement in quality of care with respect to clinical effectiveness, lengths of stay, medication errors, and number of office visits. Compared with non-IDSs, several studies have found more favorable outcomes for patients treated in IDSs for chronic diseases such as diabetes, hypertension, depression, congestive heart failure, and asthma. There is evidence of some improvement in the care delivery process as a result of IDSs, which when quantified ranged from 10 to 25 percentage points. For example, 4 studies found that IDSs improved patient medication adherence and decreased medication error rates.

Focusing on outpatient primary care, 1 study evaluated the association between organizational structure of physician groups and healthcare quality to determine whether IDSs provided higher-quality care. These researchers found that integrated medical groups performed better on 4 Healthcare Effectiveness Data and Information Set (HEDIS) measures related to preventive health screenings; although on 2 measures related to management of chronic disease, there was no statistically significant improvement.

One study found that there was a correlation between integration and the presence of practice systems for chronic care management. Functional integration was much more significant than merely structural or financial integration as a determinant of chronic care systems. Similarly, another study found that large physician groups and those owned by a hospital or health plan were more likely than smaller groups to use evidence-based care management processes.

Four studies looked at the impact of electronic medical record/health information technology in IDSs and found that introducing health information technology creates operational efficiencies and patient-centered care (Table 1). Cost. Few studies examined the impact of IDSs on cost of care. Only 5 peer-reviewed papers in our systematic review looked at healthcare cost. Of those, most studies provided evidence about the differences in utilization of services for patients treated in IDSs versus non-IDSs. In other words, the level of service utilization per patient was used as a proxy measure for cost of care. Using this measure, 4 out of 5 papers reported that IDSs were associated with lower cost of care. Two studies found that clinical service integration in various forms of ACOs and large multispecialty group practices would lower cost of care. One study examined the medication treatment management program within an IDS and concluded that the program generated cost savings related to medication use. One study discussed the cost related to the level of service integration within the hospital for patients with heart failure, but found no significant relationship between integration of services and economic outcomes.

Non-Peer Reviewed Publications

The studies selected for this review consist of 2 monographs and 2 white papers on the topic of IDSs.

Quality. Of the 4 selected non-peer reviewed publications, 3 reported that improvements in quality of care were associated with health systems’ clinical service integration. All 3 reports showed improvement in HEDIS measures. Among the 17 different health systems these reports examined, IDSs were associated with a lower hospital admission rate per patient, a shorter length of stay per hospital admission, and an overall lower rate of adverse health outcomes. With IDSs, there also were increases in the use of evidence-based practices by physicians in various fields. Many IDSs also saw improvements in preventive care (eg, increased vaccination rates). Although these studies appear to indicate a positive correlation between integration and quality of care, 1 report found that expected quality improvements were not present. They also found that patients participating in multi-
year wellness and prevention programs in 1 IDS showed little to no health improvement\textsuperscript{58} (Table 2\textsuperscript{55-58}).

Cost. Of the 4 non–peer reviewed publications selected for this systematic review, 3 examined cost of care. All 3 publications reported that cost savings were seen in health systems that had various features of clinical integration. Of these 3 reports, 2 found that there were substantial improvements in quality-of-care measures that the researchers assumed led to indirect cost savings for the system. These reports also noted that substantial cost savings were associated with electronic prescribing implementation due to a tandem generic medication prescription initiative within the IDS involved.\textsuperscript{55,57} While these reports indicate positive results, 1 report using data from several IDSs across the country found that, among the systems observed, there was very little cost difference, and that when cost differences were observed they were much smaller than what was expected.\textsuperscript{58}

DIscussion

A variety of emerging concepts describe IDSs. Most of the studies are theory based, yet the tenets of the theories have not been tested empirically to evaluate the relationship between the level of integration and either cost or quality outcomes. Earlier work by Shortell and colleagues\textsuperscript{17} suggests that it is not size or structure per se, but rather an organizational commitment to, and culture of, continuous quality improvement that is most closely linked to better performance as measured by clinical quality, patient satisfaction, organizational learning, and financial performance. However, relatively few medical groups were high performers in all performance categories. In many cases, a medical group’s performance varied considerably within the domain of clinical quality; for example, a medical group that performed well in chronic disease management might be average or below in health promotion. Furthermore, the same study by Shortell and colleagues showed no correlation between high performance on quality measures and financial performance, calling into question the assumption that IDSs are inherently better at both improving quality and controlling costs. The researchers did find some positive correlation between high performance on quality measures and certain indicators of integration (eg, larger practice size, affiliation of the medical group with a hospital, health system, or health plan), yet affiliated practices were actually less likely to be high performers on financial measures.

The result of our systematic review provides partial evidence to support the conclusion that IDSs have better quality
<table>
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<th>Table 1. Summary of Peer-Reviewed Articles</th>
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<tr>
<td><strong>Objectives/Health System Focus</strong></td>
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<tr>
<td>To assess the relationship between</td>
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<td>practice characteristics and healthcare</td>
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<tr>
<td>quality(^1)</td>
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<tr>
<td>General internists, most working in</td>
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<td>small primary care office settings</td>
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<tr>
<td>To examine whether IMGs provide</td>
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<td>higher-quality primary care than IPAs</td>
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<td>among PacifiCare providers(^5)</td>
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<td>Physician group</td>
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<td>To examine the use of integrated CMPs</td>
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<tr>
<td>by POs and to identify factors</td>
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<td>influencing their use(^6)</td>
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<tr>
<td>POs</td>
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<tr>
<td>To assess the performance of medical</td>
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<td>groups and provide a framework for</td>
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<td>differentiating between high-performing</td>
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<tr>
<td>and low-performing medical groups(^7)</td>
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<td>Medical groups</td>
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<tr>
<td>To examine the costs and quality of</td>
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<td>care provided to Medicare beneficiaries</td>
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<td>across the United States by physicians</td>
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<td>who did and did not work in large</td>
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<tr>
<td>multispecialty group practices(^8)</td>
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<tr>
<td>Physician group</td>
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<tr>
<td>To assess the quality of care Medicare</td>
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<td>diabetes patients received in a fee-for-</td>
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<td>service primary group practice within</td>
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<td>an IDS in Dallas/Fort Worth, Texas(^9)</td>
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<tr>
<td>Physician group</td>
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<tr>
<td>To evaluate the effects of service</td>
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<td>integration and differentiation on</td>
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<td>outcomes in heart failure rates across</td>
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<tr>
<td>Maryland hospital systems and networks(^2)</td>
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<td>Hospital systems and networks</td>
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### Table 1. Summary of Peer-Reviewed Articles (Continued)

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<tr>
<th>Objectives/Health System Focus</th>
<th>Outcomes</th>
<th>Conclusion</th>
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| To describe key historical and operational elements of change that may assist an organization to develop quality indicators for implementing a strategic plan to improve care, align healthcare improvement efforts with national directions, and examine the types of medication indicators used to assess these changes⁷ | Specific process of care (measures of healthcare underuse, overuse, and misuse) | Integrated Baylor Healthcare System:  
  - Improved medication use behaviors⁶  
  - Decreased adverse drug events⁶  
  - Identified that organizational, compensatory, and cultural commitments may be important for successful implementation of clinical indicator initiatives  
  - Established the baseline performance  
  - Assessed the effectiveness of proposed quality improvements  
  - Provided quantitative and qualitative means to identify best practices  
  - Disseminated best-care practices |
| Baylor Healthcare System, an integrated healthcare delivery organization | | |
| To assess the adequacy of depression care in the VHA using guideline-based process measures derived from administrative and centralized pharmacy records, and to identify patient and provider characteristics associated with adequate depression care³⁴ | Antidepressant dosage and duration adequacy | VHA:  
  - 90% of patients received more adequate medication dosage⁶  
  - 45% of patients received more adequate duration of antidepressant therapy⁶  
  - For certain patient populations, there was sometimes a higher risk of inadequate depression care  
  - Needed more work to align current practice with best-practice guidelines to monitor depression care quality |
| VHA system | | |
| Implementation of integrated clinical information technology was studied, and its effect on medication errors throughout the medication-use process in a healthcare system was evaluated²⁵ | Medication errors throughout the medication-use process (patient safety) | Integrated clinical information system:  
  - Decreased selected types of medication errors⁶  
  - Improved therapeutic drug monitoring in patients with renal insufficiency⁶ |
| Medication safety in a multihospital setting | | |
| To examine the usefulness of the pediatric and perinatal autopsy in a vertically oriented healthcare system based at a major children's tertiary care hospital²² | Percentage of cases with a major or minor diagnostic discrepancy or unexpected pathologic finding using the autopsy as the criterion standard | The IDS hospital with HMO contract:  
  - Confirmed the value of the pediatric autopsy in a children's hospital and a vertically integrated healthcare system  
  - Provided important medical and quality assurance procedure to patient outcomes  
  - Assessed the accuracy of diagnoses  
  - Provided feedback regarding therapeutic outcomes  
  - No therapeutic outcomes were reported |
| Hospital was part of a large HMO serving the surrounding urban and rural areas | | |
| To examine compliance with American College of Obstetricians and Gynecologists recommendation that elective deliveries not be performed before 39 weeks of gestation, to minimize prematurity-related neonatal complications³⁴ | The prevalence of elective deliveries; length of stay | Obstetrics and gynecology IDS in Utah:  
  - Reduced the incidence of elective deliveries before 39 weeks of gestation⁸  
  - Reduced the length of stay in labor and delivery⁸ |
| IDS in Utah | | |
| To compare outcomes between lower-extremity amputees who receive and do not receive acute postoperative inpatient rehabilitation within a large integrated VA healthcare delivery system²⁸ | Acute postoperative inpatient rehabilitation; home discharge; prosthetic limb procurement | Integrated VA medical center:  
  - Provided a greater likelihood of 1-year survival and home discharge⁸ |
| 9 VA Medical Centers | | |

(Continued)
### Table 1. Summary of Peer-Reviewed Articles (Continued)

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<th>Objectives/Health System Focus</th>
<th>Outcomes</th>
<th>Conclusion</th>
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| To present the clinical, economic, and humanistic outcomes of 10 years of delivering MTM services to patients in a healthcare delivery system<sup>26</sup>                                                                                   | Cost savings; patient satisfaction from MTM service                                                   | MTM services within a large integrated healthcare system:  
  - Associated with improved clinical outcomes and cost savings<sup>2</sup>  
  - Provided the level of services with high patient satisfaction<sup>2</sup> |
| In an integrated healthcare system                                                                                                                                                    |                                                                                                      |                                                                                                                                                                                                         |
| To examine whether larger physician group size and affiliation with networks of multiple groups were associated with higher quality of care<sup>23</sup>                                                                                     | Performance scores (HEDIS measures)                                                                    | Physician group affiliation with network of multiple groups:  
  - Associated with higher quality of care for diabetes care than smaller physician groups<sup>2</sup> |
| Delivery of primary care services in Massachusetts                                                                                                                                       |                                                                                                      |                                                                                                                                                                                                         |
| To evaluate the effect of implementing comprehensive, integrated EHR systems on use and quality of ambulatory care<sup>29</sup>                                                                                       | Total number of office visits; use of primary care, specialty care, clinical laboratory, radiology services, and telephone contact | Hospital with integrated EHR:  
  - Reduced use of ambulatory care while maintaining quality<sup>2</sup>  
  - Allowed doctors to replace some office visits with telephone contacts  
  - Shift in patterns of use suggest a reduction in inappropriate or marginally productive ambulatory-care visits<sup>2</sup> |
|                                                                                                                                                                                               |                                                                                                      |                                                                                                                                                                                                         |
| To examine the impact of implementing an integrated EHR system on ambulatory-care use<sup>23</sup>                                                                                           | Adjusted total office visit rate; adjusted primary care office visit rate; adjusted specialty care office visit rate; scheduled telephone visits; secure e-mail messaging | Hospital with comprehensive EHR:  
  - Created operational efficiencies by offering non-traditional, patient-centered ways of providing care  
  - Increased the number of scheduled telephone visits and secure e-mail messaging<sup>2</sup>  
  - Decreased the number of office visits<sup>2</sup> |
| To determine the extent to which POs with 20 or more physicians used CMPs and to identify key factors associated with CMP use for 4 chronic diseases<sup>31</sup>                                                   | POs’ mean use of CMPs                                                                                | The use of CMPs from 1040 POs:  
  - Provided external incentives to POs for improvement of healthcare quality<sup>2</sup>  
  - Assisted POs in improving their clinical information technology capability<sup>2</sup>  
  - No specific clinical outcomes were reported |
| 1040 POs                                                                                                                                                                                                                                           |                                                                                                      |                                                                                                                                                                                                         |
| To assess the implementation of an EHR system on ambulatory-care use and its evolution from basic HIT at its implementation in 2004 to advanced HIT in 2008<sup>32</sup>                                           | Office visits whether diagnoses available on same day                                                  | Hospital with comprehensive EHR:  
  - Associated with dramatic increases in the timely availability of diagnostic information<sup>2</sup>  
  - Provided real-time population surveillance, and valuable for routine clinical care |
| An integrated delivery system                                                                                                                                                     |                                                                                                      |                                                                                                                                                                                                         |
| To assess an electronic registry derived from a fully integrated EHR as the cornerstone of an intervention to improve compliance with recommended diabetes performance measures in an integrated practice network<sup>31</sup> | Glucose control (A1C) and blood pressure control                                                     | Hospital with comprehensive EHR:  
  - Improved the diabetes care in response to a multifaceted intervention<sup>2</sup>  
  - Needed more work to demonstrate the improvements of patient health outcomes |
| Geisinger Health System’s network of 38 practice sites providing care to more than 20,000 persons with diabetes located in a 40-county region of central and northeastern Pennsylvania                                                                 |                                                                                                      |                                                                                                                                                                                                         |
Table 1. Summary of Peer-Reviewed Articles (Continued)

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<th>Objectives/Health System Focus</th>
<th>Outcomes</th>
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| To test the relationship between presence of recommended chronic care model systems and the degree of integration among large medical groups⁵³ | Medical group’s structural, financial, and functional aspects of integrated care, as well as the presence and use of practice systems | Self-reported survey:  
- Large medical groups with integration were positively associated with the presence of practice system components of the chronic care model⁹  
- No specific clinical measures were offered |

A1C indicates glycosylated hemoglobin; AMI, acute myocardial infarction; CHF, congestive heart failure; CMP, care management process; EHR, electronic health record; HEDIS, Healthcare Effectiveness Data and Information Set; HIT, health information technology; HMO, health maintenance organization; IDS, integrated healthcare delivery system; IMG, integrated medical group; IPA, individual practice association; MTM, medication therapy management; NSPO, National Survey of Physician Organizations; PO, physician organization; VA, Veterans Affairs; VHA, Veterans Health Administration.

*Statistically significant.  
*Not statistically significant.  
*Statistical significance not reported.

Outcomes. The evidence on cost of care, however, is rather weak. No study in our review was able to directly measure the cost savings as a result of integration of a health system. Most studies reported a decrease in healthcare utilization as a result of health system integration but did not assess whether the decrease of service utilization was appropriate. While many of the IDSs involved in these studies had improvements in quality of care with lower service utilization, it is important to note these studies’ limitations. First, many of these reports did not include any indication that statistical tests were performed on the data. While the general data trends may have been positive in the areas of cost and quality, significance cannot be assumed. Also, most of the IDSs included in these studies were implementing multiple programs within and outside of their clinical integration initiatives. It is important to note that healthcare systems may operate under different mixes of reimbursement models (eg, managed care contracts). It was not possible for us to take this factor into consideration, as most of the studies included did not report on reimbursement models.

It is also difficult to distinguish the effect of integration per se from the effects of characteristics (eg, larger patient volume, greater use of electronic medical records, systematic quality improvement initiatives) that tend to be associated more frequently with integrated systems. Therefore, larger sample sizes that include various types of IDSs and more consistent outcome measures are needed to gauge the effects of IDSs on the cost and quality of care.

CONCLUSIONS

ACOs and their features involving integrated delivery of healthcare are currently at the forefront of healthcare policy. The hope for the ACO is that it will reduce healthcare costs and improve the quality of care. However, there are no data to support these assumptions, as these systems have only recently been created. Integrated healthcare delivery systems share with ACOs many of the same organizational features, foremost among them being high levels of organizational and clinical service integration. For this reason, the performance of existing IDSs with respect to quality and cost of care are being assessed to predict how well ACOs will perform in the future US healthcare system.⁹

The vast majority of studies we reviewed showed that IDSs have positive effects on quality of care. A few studies we reviewed also linked IDSs to lower health service utilization. However, each study had a different way of describing and defining IDSs. In order to compare IDSs with respect to their effectiveness in controlling costs and improving quality of care, consistent definitions should be used and components of integration need to be well defined. Due to limited information provided in the literature, we were unable to identify specific features in each health system. Nor were we able to meaningfully group the health systems based on their commonalities into various types of IDSs. As a result, it was difficult to draw definitive conclusions. Moreover, to accurately capture the performance of a health system, established methods that consistently measure cost and quality of care across health systems are needed.

Our study has other limitations. The study lacks generalizability due to the heterogeneous nature of the IDS in the studies we reviewed, the unavailability of effect size calculations, and the absence of systematic working definitions for outcomes. There also may be publication bias since there is a higher probability of peer-reviewed journals publishing stud-
ies with favorable results rather than studies with inconclusive or unexpected results.

As integrated systems become more common, it also is becoming more apparent that despite certain commonalities, these systems vary tremendously in how they operate. The emergence of a growing number of IDSs should allow for more data-driven studies comparing organizational performance on quality, safety, access, and cost metrics, thereby adding more insight into exactly what characteristics of IDSs lead to improvements in each of these areas. The question, perhaps, is not so much whether IDSs are better than other models of delivery, but rather, how to identify specific system features that most effectively improve quality of care while controlling costs.

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