

WHITE PAPER

BEST PRACTICE CONSIDERATIONS FOR CLINICAL INTEGRATION

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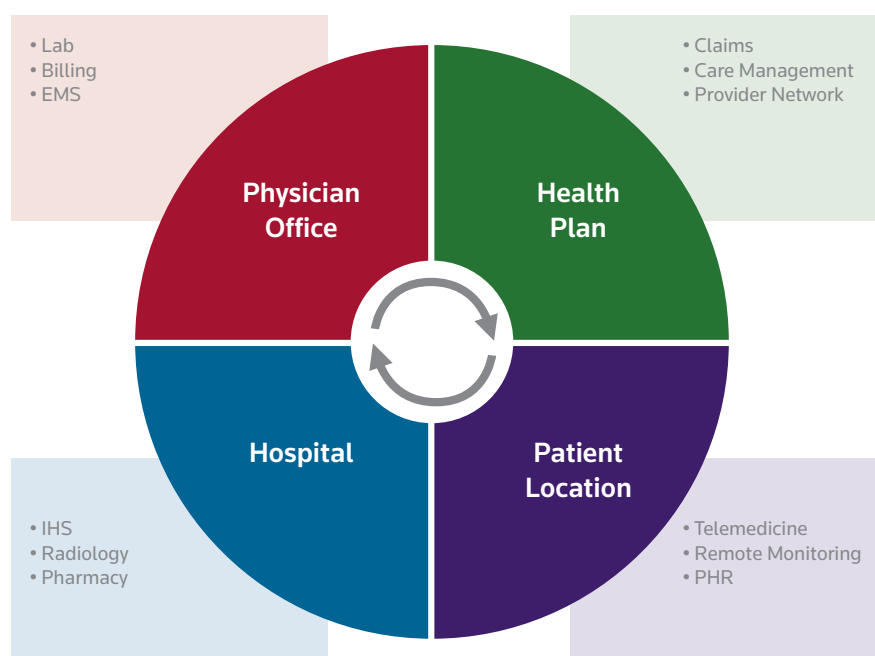
INTRODUCTION

With healthcare costs rising at an alarming rate without reciprocal increases in quality or outcomes, many have begun to call for changes within the United States healthcare system. Already, there have been widespread efforts to reform the delivery of care. The resurgence of managed care models, the rise of the patient-centered medical home, and the development of accountable care organizations (ACOs) are just some of the concepts introduced through legislation to alter the delivery of healthcare. To succeed, these efforts all rely on current patient information being documented in a longitudinal record of care and made accessible to authorized providers at the point of care. As a result, hospitals, health systems, and independent physician providers need to integrate their clinical systems to provide this data and a record of care for each patient.

THE NATURE OF THE PROBLEM

Beginning in the late 1980s and lasting through the mid-1990s, the healthcare industry undertook large-scale efforts to control costs. President Clinton's healthcare reform and the onset of capitation served as catalysts for hospitals and physicians to develop Integrated Delivery Networks (IDNs) aimed at managing costs and protecting market share. Though the intent of this movement was to integrate a previously divided system unable to take advantage of economies of scale to cut costs, the results were networks of providers rather than a truly integrated system. Thus, the original purpose of the IDNs, which was to rationalize the distribution of care, was seldom realized.

Figure 1: Overview of Clinical Integration



Over the past 20 years, healthcare delivery has shifted again, and providers are increasingly offering their services on an outpatient basis. This movement reflects the fact that outpatient services tend to better equate with a practicing physician's business model than the traditional inpatient model more often practiced by the IDNs and health systems created under President Clinton. At the same time, advances in technology have made it easier for providers to move patients from inpatient settings to free-standing surgery centers and other outpatient facilities.

This trend has led to a disaggregation of hospital services, as providers no longer need the physical building to perform imaging, ambulatory procedures, or surgeries. As a result, the traditional role of the hospital to aggregate services from providers is changing. Care has once again returned to a state of perpetual fragmentation, and many of the costs and difficulties that led to early reform efforts under Clinton are worse than ever. Patients who require coordinated care (such as those with multiple chronic conditions) tend to see multiple providers over the course of an episode of care. Often, information is not shared between disparate providers, forcing them to rely on their incomplete patient knowledge to fill in the gaps. This lack of information has been associated with increased costs and poor outcomes. To overcome the challenges posed by today's healthcare system, hospitals are realizing the need to clinically integrate with physicians to define new care delivery models that support the value of aggregation

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The Mayo Clinic in Jacksonville, Fla., is a prime example of vertical clinical integration as it has created a department of transplantation that includes liver, renal, and pancreas transplant surgeons as well as transplant nephrologists, all hepatologists, lung failure pulmonologists, heart failure cardiologists, and two critical care medicine specialists. This new model has been in place for five years and has been a major contributor to the program's success on a number of measures. For example, the number of liver transplants has increased from 150 each year to approximately 250 each year, making it one of the nation's largest liver transplant programs.

In simplest terms, the American Medical Association (AMA) describes clinical integration as the means to facilitate the coordination of patient care across conditions, providers, settings, and time in order to achieve care that is safe, timely, effective, efficient, equitable, and patient-focused. Given the fragmentation within the healthcare system, coordination of care between providers has both economic and quality benefits. Increasing coordination between historically isolated elements of the healthcare system is a staple of clinical integration. The practice also aligns with the "Triple Aim" posited by Don Berwick, the acting administrator for the Centers for Medicare & Medicaid Services (CMS): to transform healthcare to produce better care for individuals, better health for populations, and lower per capita healthcare costs.

In practice, clinical integration takes many forms. It can range from simple care coordination efforts for a clinical condition, such as developing care teams for diabetes patients, to the formation of large-scale health systems that employ physicians. "Vertical integration" refers to the coordination of the delivery of care within a single organization (such as a hospital), while "horizontal integration" refers to the coordination of care across organizations (such as between a hospital and a local physician group). "Virtual integration" accomplishes similar goals, but does so "through the use of patient management agreements, incentive payments, and information systems, rather than an emphasis on acquiring and disseminating coordination practices across providers and facilities within a network." (still need citation) Naturally, there is a great deal of overlap between these types of integration, and most integrated systems use a combination of different approaches.

CLINICAL INTEGRATION AND HEALTHCARE REFORM

Clinical integration is a fundamental component of a reformed healthcare system. Many of today's responses to rising healthcare costs and poor quality outcomes include attempts at payment reform. The fee-for-service model of payment for healthcare, in which doctors are reimbursed for the various clinical procedures they perform over the course of care, is widely viewed as a major contributor to rising costs. Under fee-for-service, providers are rewarded for volume and intensity (e.g., ordering more in-depth testing) rather than value (e.g., spending time talking with a patient). As such, the development of new payment models has become an increasingly popular trend. The ACO, a bundled or risk-based model, is currently making headlines, but payment reform efforts have been around for years. Other payment reform models include capitation, episode-based payment, pay-for-performance, and shared savings. The ultimate goal for each of these models is to promote care coordination to improve quality outcomes while decreasing costs.

Typically, payment reform revolves around approaching healthcare from a group perspective, by managing the care of a group of patients or by using groups of providers to better coordinate care for a single patient. In either case, care systems that successfully move away from the fee-for-service model to a value-based payment system will require a high degree of cooperation and integration between different providers. They will need to create a virtual single-patient record to facilitate the sharing of patient information and have systems in place to manage the comingling of administrative, clerical, and financial data sources as these once disparate silos of care interact.

Thus, the development of alternative payment models directly corresponds with higher levels of clinical integration. Often, clinical integration is an important step in laying the groundwork for ACOs and other delivery system models. Clinical integration programs offer hospitals, physicians, and other providers the necessary experience in building programs that improve efficiency and quality. They also establish strong, working contractual relationships, which can serve as the foundation for large-scale payment reforms.

Most importantly, taking steps toward clinical integration before implementing large-scale payment reforms or developing an ACO helps organizations align behavior to improve outcomes, lower costs, and gain market, clinical, and financial knowledge as well as physician-partnering experience.¹ Ultimately, this can significantly alleviate financial start-up costs and workflow disruptions that threaten to overwhelm organizations that are too quick to implement change.

Both the federal government and commercial payers have begun to move to value-based reimbursement, with programs including the CMS program for risk-adjusted reimbursement, pay-for-performance, and economic credentialing. Providers have struggled to meet the requirements of these programs, especially as available funds for provider reimbursement have not increased. One of the problems in transitioning to a system that accounts for quality of care is the difficulty in effectively measuring quality and then subsequently creating the proper incentives to achieve improvement. Programs implemented at the national level are often constrained by issues such as a lack of data standardization, unavailable or missing data, and challenges associated with the implementation of administrative and process requirements throughout the clinical environment. Clinical integration can help overcome all of these challenges by creating standardized datasets from which to pull quality measures, a platform upon which value-based reimbursement programs can more easily be implemented, and by creating a system that makes care cheaper — so reimbursement rates can remain the same or decline without harming a doctor’s financial well-being.

Hospitals, IDNs, and physicians are continually being asked through national programs such as Medicare and Medicaid to report on specific quality measures that are usually generated through the abstraction of claims forms. This quality data often intersects with cost data. Hospitals and providers who usually report on the data demonstrating they provided the highest quality care at the lowest cost are often given high marks. Patients then have an incentive to receive care from these “achievers,” which can be in the form of better health differentials or, potentially, through lower copays or deductibles. This type of “consumerism” is one of the market drivers for healthcare reform, but again relies on significant collaboration from hospitals and providers to collectively engage in quality improvement efforts.

The formation of a clinically integrated network to accommodate the care delivery changes within health reform is a major system transformation. The Federal Trade Commission defines this network as “...an arrangement to provide physician services in which: 1. all physicians who participate in the arrangement participate in active and ongoing programs of the arrangement to evaluate and modify the practice patterns of, and create a high degree of, interdependence and cooperation among these physicians in order to control costs and ensure the quality of services provided through the arrangement; and, 2. any agreement concerning price or other terms or conditions of dealing entered into by or within the arrangement is reasonably necessary to obtain significant efficiencies through the joint arrangement.”

The network has four defining characteristics, as shown in Figure 2.

Figure 2: Characteristics of a Clinically Integrated Network

CHARACTERISTIC	EXPLANATION
Workflow alignment for independent and employed providers	Standard set of performance and quality metrics for all providers who participate in the network
Fully developed continuum of care	Care is coordinated between inpatient, ambulatory, and post-acute providers, with an emphasis on transitions between medical settings
IT-intensive	The use of sophisticated analytic technologies to identify utilization and trends in services that can help develop better evidence-based protocols for care
Revenue cycle	Introduces new methods to assist with compliance of new rules within the Prospective Payment System and can manage the retrospective revenue cycle in conjunction with providers meeting certain quality metric prior to reimbursement

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MD Anderson Cancer Hospital in Houston developed their own electronic health record (EHR) system – Clinical Station – and used a decentralized approach to integrate the EHR within their network. They began with the immediate needs of specific hospital and physician partners to access the 60 sources of data used for patient care and research, as well as sending medical images of patients to labs. Over time, they have integrated more than 90 sources of data and have incorporated natural language processing into their enterprise.

THE INTERCONNECTION OF SEPARATE PARTS

The different yet interconnected parts of the healthcare delivery system underscore the need for integration between hospitals and physicians, as well as the importance of choosing the appropriate technology to facilitate this aggregation. For example, data for quality monitoring and reporting takes on different dimensions for each stakeholder. Patients and consumers can use information to make the choices that will enable them to get better, quicker care. Quality data at the consumer level helps patients choose a health plan that is more cost-efficient or a healthcare provider that has a proven history of success for a specific service. Similarly, when an employer is comparing various health plans or self-insured options, they may want information including provider costs and outcomes included in a given plan's network. They may also want the plan's record of performance in meeting service and quality standards. Health plans may use the information to evaluate the price and quality of all physicians, hospitals, and other providers in an area. Additionally, this data may be used as benchmarks for their performance on service and quality measures against their competitors. Lastly, hospitals and physicians can use the same data to measure their own performance, and would benefit from using more transparent price and quality information as feedback to help identify improved performance as well as the most efficient and effective referrals.

The appropriate use of clinical integration solutions is also critical to accommodate different reimbursement models proposed by CMS. Under the CMS methodology, an ACO would provide care and assume responsibility for patients that fall within a catchment area. Providers would be expected to meet certain quality thresholds, or measures, established by CMS that represent evidence-based and cost-effective practices. Once providers cross these thresholds, they would be eligible to share in the savings that the measures would create. To support this significant change in the reimbursement model, an integrated system must be able to monitor both quality and costs during the treatment of a patient to ensure quality thresholds are met and total expenditures fall under the bundled payment amount. As the healthcare delivery system moves toward a model of coordinated and accountable care, in which reimbursement is based on improved outcomes and cost efficiency, an integrated system must contain the functionalities for these changes and provide feedback to the providers for continuous quality improvement.

Integrated systems can provide more current information about patient conditions, treatments, and other relevant characteristics. Additionally, they can provide information and knowledge about clinical guidelines and pathways that are specific to a condition and offer functionality such as clinical reminders that issue alerts at the point-of-care about important quality recommendations that should be followed. This is significant in care coordination, as information needs and processes are vital to ensure accurate care. The ability of a system to track measures of healthcare over time, involve the care team (including the patient) in providing information about progress, and facilitate population-based care all become important elements facilitated by clinical integration to appropriately treat and manage chronic conditions.

Perhaps the greatest benefits of clinical integration stem from improvements in patient care. When patients are tracked from setting to setting, the chance of potentially harmful medication errors and conflicting treatment plans is reduced. Further, clinical integration can promote the sharing of proven best practices and standards in care, as well as system-wide data collection, which can guide future treatment of clinical conditions and identify emerging trends or problems, among other benefits.

THE SOLUTION

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Presbyterian Hospital of Dallas is part of Texas Health Resources, a 14 hospital IDN that serves more than 38,000 patients a year. It employed a horizontal integration strategy across the network with both master patient index and record locator service to accommodate more than 1.5 million electronic records and has used the system for quality reporting and utilization review.

A key issue in supporting collaborative care is the need for information sharing between different care providers. A nonintegrated system is hampered by the existence of numerous electronic and paper-based information systems. To achieve seamless and secure information transfer between different information systems, there are a few approaches a health system or network can take.

An electronic medical record (EMR) represents a system in which a single record is created and shared between providers within a clinical setting. It is characterized by data communication between systems that rely on message communication protocols using proprietary data structures and message content. This type of infrastructure is useful when a hospital or IDN can make a commitment to one dominant EMR platform and then scale it out over time across the enterprise. Sometimes a dominant EMR platform is augmented by a care coordination platform that can pull data from a few disparate EMRs to create a single virtual patient record. This strategy converts the data from the minority EMRs to align with the data and messaging standards of the dominant EMR platform. As a result, each provider within the network knows what information will be shared and the locations where information can be transmitted. A care-coordination

platform that takes data from disparate EMR vendors typically allows the information to remain within the data storage of a feeder system. A dominant EMR platform then tracks where the information is stored and transforms the data into its preferred data and communications standards to create a single virtual patient record.

Utilizing the decision support functionality in the EMR within the clinical environment can be a useful function for implementing standardized care pathways or procedures. However, attempting to standardize care can bias workflow design toward an organizational perspective that focuses solely on those items that are documented and can be articulated. Yet, many clinical pathways are based on circumstances and often rely on the experience that comes from everyday practice and the ingenuity of the physician. As a result, the strict standardization of procedures often highlights pronounced differences between the intention of the organization and actual physician practice. To alleviate this tension, the use of clinical alerts can provide reminders to providers regarding patient status as a diagnosis is made or during the course of treatment — particularly if the patient has one or more chronic conditions. Therefore, clinical alerts suggest potential courses of evidence-based treatment to providers. They can use these treatment suggestions to define a clinical care pathway that coincides with their judgment and expertise as medical providers.²

Additionally, an integrated system that incorporates clinical decision support and alerts provides a mechanism for continuous feedback for the provider. They can use this information to evaluate their progress or to suggest potential pathways for future diagnoses. The information captured by the system during the clinical encounter is documented and can be measured against quality indicators. Once a patient is discharged, providers can examine the reports generated by the system to see if established procedures for quality were utilized. They can also compare the way care was actually provided to the evidence-based practices and pathways suggested by the alerts and decision support tools. The comparison can aid in retrospectively examining patient outcomes to determine if additional procedures should have been followed, or whether a different treatment protocol or care plan should have been created.

The enterprise-wide strategy is often a multimillion-dollar investment that takes several years to accomplish. Many HIT leaders are not able to put “all their eggs in one basket” given the cost and disruption caused from ripping and replacing disparate EMR vendors into an enterprise-wide infrastructure. This is why another approach is receiving considerable attention over the last few years: health information exchange (HIE). This HIE alternative mobilizes healthcare information electronically within and across organizations, and links all the personal information of a single individual — even when it’s held in numerous databases —while maintaining the relevance and meaning of the information being exchanged.

WHAT TO LOOK FOR WITHIN AN EMR BEFORE INTEGRATION

Despite the utility offered by functionality such as decision support to assist in the provision of care along evidence-based guidelines, there are still other factors to consider during the integration process. Within most system integration projects, end users often struggle with human-computer interface problems. Poor system interface design (e.g., overly complex screens, inconsistencies in the interface, poor grouping of like terms, etc.) can exacerbate the challenges to workflow posed by integration. For example, in provider settings with multiple EMRs, users have to navigate through a diverse array of tabs when utilizing clinical decision support. Each tab represents a different feeder source that incorporates different approaches to clinical pathways, evidence-based guidelines, or suggested care plans, among other items. Having a significant number of tabs can provide dissonant information and overburden providers, leaving them unable to quickly determine what information they need and instead spending considerable time filtering the data manually rather than providing care. Likewise, the large amount of information generated from such functionality can potentially lead to information overload. When this happens, providers will not necessarily receive the critical information they immediately need, but rather, the full spectrum of information relating to the diagnosis or treatment of the patient.

Thus, it is important in clinical integration efforts, to offer a stable and robust interface design that allows the provider to filter the amount of information provided according to specified dimensions. Additionally, the information must be provided quickly and accurately so there is minimal disruption in patient care and, subsequently, minimal disruption to the workflow. Like consumer travel sites such as Microsoft’s Expedia Web application, a provider should be able to filter the patient’s condition, clinical reminders, and suggested treatment protocols in a manner similar to filtering information for the appropriate flight, hotel, and car rental.

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The Community Health Network has hospitals throughout Indianapolis. The network used a horizontal and centralized integration strategy among four of its hospitals as well as utilizing an MPI and RLS for each of the patients within its system. A single vendor was responsible for the integration of the system, which assumed both clinical and administrative functionality

It is also important that a provider access the entire longitudinal care record for a patient to understand prior care plans, the diagnosis and medication history, any past treatments that have been recommended and their effectiveness, as well as any notable trends before care is provided. As the health system moves toward an accountable care model, a number of providers will be responsible for the total care of a patient. Consequently, longitudinal data becomes a crucial component of understanding a patient's past history as multiple providers interact with the patient to make accurate and efficient care judgments in the future. Longitudinal information must be located within an EMR that includes clinical decision support so the provider can drill into the system to gain a complete picture of the patient and evaluate evidence-based guidelines and pathways to determine the best course of treatment.

Finally, there are a number of operational considerations during the clinical integration of a system, with the first and perhaps most important being quality and compliance reporting. Stage 1 of the Meaningful Use regulation focused on the functionality of an EMR with a nod to quality reporting. Stages 2 and 3 of Meaningful Use will focus much more on quality outcomes of care and require an integrated system to evaluate data from providers against an established set of measures promulgated by the U.S. Department of Health and Human Services. Therefore, the system must be capable of taking data from the community of providers that use it and aligning that data with the existing quality-reporting mechanisms of the system to electronically report on a number of clinical measures to assure compliance with the future Meaningful Use requirements.

THE COMPONENTS OF CLINICAL INTEGRATION

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Memorial Hermann Healthcare System (MHHS) is the largest healthcare system in the Houston metropolitan area, a nine-hospital system with 3,600 beds and annual admissions of 138,000. Since 2008, the physician group associated with MHHS has been deeply involved in advancing a clinical integration program across the entire system. To date, more than 2,000 physicians from the MHHS physician group participate in the program, which, in exchange for commitments to improving quality and efficiency, enables physicians to jointly contract for higher fee schedules and performance-based bonus payouts.

Clinical integration across providers and hospitals has historically been a sought-after, yet rarely achieved, goal. It has taken on increasing significance as medical facilities look to make investments to integrate disparate systems to improve the patient experience, clinical outcomes, and clinical cost-effectiveness, and to position a facility for the impacts of healthcare reform. Organizations are reinventing the medical staff model to address the need for more physician involvement, virtual medical groups, and the role of the primary care physician. They are also redesigning how they deliver services to coordinate more effectively across the continuum of care: acute, ambulatory, skilled nursing, and home care. Additionally, institutions are considering the financial implications of moving from encounter-based reimbursement to a bundled, performance- or capitation-based payment system.

Clinical integration is a physician-centric set of processes that support continuity of care as well as population and complex patient management. Key components include:

- An integrated technology platform that supports continuity of care and enables all stakeholders access to medical history and critical patient data
- Collaborative communication among primary care physicians, specialty physicians, and hospitalists regarding where care is delivered (emergency department, urgent care facility, hospital, physician's office, patient's home, or another setting), specialist assessments and treatments, and care planning
- Case managers who are responsible for discharge planning, starting at admission or when the patient enters the ED
- Medical management coordination, including management of complex cases, coordination with disease-management programs, and outreach to chronic, high-cost "frequent fliers"
- Data on populations, utilization, program participation, clinical outcomes, and costs

Clinical integration can also help support a number of needs for hospitals and IDN, including:

Regulatory/Payment Reform – Market forces are driving providers, hospitals, and health systems toward clinical integration. The passage of the Affordable Care Act represents a significant step in aligning healthcare systems toward quality outcomes of care, with provider accountability and financial reimbursement based on the type of care delivered. Disparate systems holding patient information cannot stand alone, as this makes it difficult to meet the reporting needs required by the legislation. A system must be fully integrated across the enterprise, with comprehensive and longitudinal data about patients to meet the financial and quality objectives of reform.

Technology – An integrated platform for clinical integration can serve more than one purpose – apart from the need to accommodate quality reporting and financial monitoring, an integrated system can improve operational efficiency. It can bundle data into a common platform and provides a longitudinal care record for providers to examine to determine future courses of treatment based on past results. By mapping the terminology to a standardized set, the integrated environment can also serve as a gateway for HIE, as it will be able to bidirectionally exchange data with systems that have similar standards. An integrated platform provides advanced functionality – connecting numerous streams of data does not improve outcomes of care without advanced functionality such as clinical decision support. By assessing the data against a knowledge base of evidence-based practices, providers can examine established clinical pathways and receive best-practice alerts within a course of treatment that can potentially lead to improved outcomes and better fiscal management.

Clinical – The combination of a stable, dynamic infrastructure and a new model of healthcare delivery promises transformational change within the healthcare environment. Yet, the consolidation of diverse providers within a defined geographic area and the use of an EMR are not enough to bring about the systemic changes sought by many policymakers, providers, and consumers. The use of an EMR is a crucial component within the infrastructure of clinical integration, but alone cannot fully manage the care of both patients and populations. The use of analytics in addition to these components provides an integrated view of the clinical, financial, administrative, and research elements that are all needed to measure accountability, performance, and quality. There are two types of analytics that can be used within an integrated model: predictive and retrospective. Predictive analytics take patient data from both current and historical clinical events to make future predictions of a patient’s health. Retrospective analytics evaluate patient data from past clinical events for disease or population health management.

Analytics for clinical integration must adapt four views to assist in the accountability, performance, and quality goals of each of the providers. These views include that of the individual clinical provider, the patient, the population, and the hospital. Analytics can assist with comparative effectiveness in determining the appropriate care pathway by examining both current and historical data. Also, it can retrospectively examine data to analyze the overall clinical and operational performance of an ACO. Using both predictive and retrospective analytics can highlight the level of care provided to a patient based on certain conditions and provide data to potentially determine the appropriate bundled payment for that specific diagnosis and treatment.

Financial – A sound EMR platform prepares a hospital or other clinical settings for payment reform. Reimbursement for care will move away from the high-intensity model based on the number of treatments provided under fee-for-service, to one that focuses on outcomes. An integrated system provides the only mechanism to assess and evaluate quality and provide both episodic and retrospective feedback to assist providers in continuous quality improvement. Additionally, when clinical integration is successfully implemented, this model provides a wide range of financial benefits in both the short and long term. It provides the operations with a foundation to support clinical cost management at the patient level, rather than the encounter level. It also provides the data to support incentive/acuity-based revenue, using mechanisms like pay-for-performance and risk-adjusted coding.

Operational – Clinical integration strategies must incorporate a performance management approach due to the need to increase quality, reduce waste, and control costs. The successful implementation of an integration strategy facilitates this approach by surfacing key performance issues within the core clinical processes that result in poor quality outcomes and inefficient resource utilization. It ensures more coordinated healthcare services resulting in improved quality and consistency of care, reduced waste, and faster discovery of inefficient care.

Results – Cost data captured within the EMR and aligned with procedures and outcomes allows the hospital or IDN to create models for return on investment (ROI). This can help measure the facility’s potential ROI for the acquisition of an EMR, using a combination of net present value and payback period calculations, which are benchmarks for determining the value of an investment. The hospital can also compare its own historical and projected performance with benchmarks for key financial indicators including profitability, debt service, capital and cash flow, and liquidity. Successful integration also allows the hospital or IDN to consider potential indirect benefits, such as retained outpatient/ancillary revenue, increased inpatient revenue, improved cost control, and improved quality and reporting transparency.

CONCLUSION

Clinical integration facilitates the coordination of patient care across conditions, providers, settings, and time with the goal of achieving care that is safe, timely, effective, efficient, equitable, and patient-focused. Clinical integration promotes the sharing of proven best practices and standards in care, as well as system-wide data collection, which can guide future treatment of clinical conditions and identify emerging trends or issues. Only through clinical integration can an organization improve outcomes and lower costs in addition to gaining market, clinical, and financial knowledge.

An EMR facilitates clinical integration by creating and sharing a single record between providers within a clinical setting. However, this type of infrastructure is useful only when a commitment is made to a primary platform that integrates all EMR data feeds across an enterprise. Many providers accomplish this by consolidating the number of EMR vendors across the enterprise. However, the advent of HIE technology provides a new alternative for linking disparate EMR data using interoperability methods.

As federal laws continue to evolve and promote changes in provider culture, payment methods, and incentives, the HIE alternative to EMR consolidation provides some unique benefits for achieving clinical integration, including:

- Mobilize healthcare information interoperably within and across organizations
- Create a virtual single patient record of an individual held in numerous databases on a real-time basis
- Avoid the high cost and disruption resulting from replacing disparate EMR vendors
- Leverage standardized and linked data to more efficiently enable point of care decision support and analytical applications

ENDNOTES

¹ Pizzo J., Grube M, Sacks L. Getting to There from Here: Evolving to ACOs Through Clinical Integration Programs. Kaufman, Hall & Associates, Inc., 2011.

² Campbell E., Guappone K., Sittig D., Dykstra R., Ash J. Computerized Provider Order Entry Adoption: Implications for Clinical Workflow. *Journal of General Internal Medicine*, November, 2008, Vol. 24(1), pg. 21-26.

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