

November 2010

HEALTH CARE DELIVERY

Features of Integrated Systems Support Patient Care Strategies and Access to Care, but Systems Face Challenges



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Why GAO Did This Study

Health care delivery in the United States often lacks coordination and communication across providers and settings. This fragmentation can lead to poor quality of care, medical errors, and higher costs. Providers have formed integrated delivery systems (IDS) to improve efficiency, quality, and access. The Health Care Safety Net Act of 2008 directed GAO to report on IDSs that serve underserved populations—those that are uninsured or medically underserved (i.e., facing economic, geographic, cultural, or linguistic barriers to care, including Medicaid enrollees and rural populations). In October 2009, GAO provided an oral briefing. In this follow-on report, GAO describes (1) organizational features IDSs use to support strategies to improve care; (2) approaches IDSs use to facilitate access for underserved populations; and (3) challenges IDSs encounter in providing care, including to underserved populations.

GAO selected a judgmental sample of 15 private and public IDSs that are clinically integrated across primary, specialty, and acute care; they vary in their degree of integration, specific organizational features, and payer mix (e.g., extent to which they serve Medicare and Medicaid beneficiaries and the uninsured). GAO interviewed chief medical officers or other system officials at all 15 IDSs and conducted site visits at 4 IDSs, interviewing system executives and clinical staff.

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What GAO Found

IDSs in GAO's sample reported that using electronic health records (EHR), operating health insurance plans, and employing physicians all support strategies to improve patient care. An EHR contains patient and care information, such as progress notes and medications. Some IDSs said that using EHRs supports their patient care strategies such as care coordination, disease management, and use of care protocols by increasing the availability of individual patient and patient population data and by improving communication among providers. IDSs also reported that operating a health insurance plan can support patient care strategies by providing to the IDS both financial resources, such as savings from reducing avoidable hospitalizations for health insurance plan members, and data on plan members. For example, financial resources could be used to fund services such as care coordination—which many insurers do not reimburse—and the data could assist with strategies such as disease management. Employment of physicians was reported to facilitate physician accountability for quality of care because physicians who are employed by the IDS must meet certain performance indicators, and the IDSs collect data on and review physician performance. Employment of physicians was also reported to increase adherence to care protocols and to facilitate provision of care to underserved populations through compensation that mitigates physicians' concerns that they might not receive payment from uninsured patients.

IDSs in the sample discussed several approaches they use to facilitate access to care for underserved populations. These approaches include using community-based settings, such as school-based health centers and federally qualified health centers (FQHC); conducting outreach; helping patients apply for coverage programs such as Medicaid; providing financial assistance; and collaborating with community organizations, including faith-based organizations. For example, some IDSs operate FQHCs within their system, and others collaborate with local FQHCs that are not part of their system. In addition, to improve access to mental health care services for patients, including those in underserved populations, some IDSs integrate mental health and primary care services.

IDSs in the sample reported facing various operational challenges in providing care, including care for underserved populations. Some reported that not receiving reimbursement from health care insurance companies for the care coordination services they provide to patients is a financial challenge. Other operational challenges IDSs identified included finding specialty care for underserved patients, including mental health care; sharing clinical information in patients' EHRs with providers outside the system; and changing management and physician cultures to adapt to organizational change.

The Department of Health and Human Services reviewed a draft of this report and provided technical comments, which GAO incorporated as appropriate.

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Abbreviations

CPOE	computerized physician order entry
EHR	electronic health record
FQHC	federally qualified health center
HAAM	Health Alliance for Austin Musicians
IDS	integrated delivery system
NYCHHC	New York City Health and Hospitals Corporation

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November 16, 2010

The Honorable Tom Harkin
Chairman
The Honorable Michael B. Enzi
Ranking Member
Committee on Health, Education, Labor, and Pensions
United States Senate

The Honorable Henry A. Waxman
Chairman
The Honorable Joe Barton
Ranking Member
Committee on Energy and Commerce
House of Representatives

Health care delivery in the United States has long been characterized by fragmentation at the national, state, and local levels. Care is delivered by multiple providers, in multiple care settings, and often without systematic coordination and communication across providers and settings. Fragmentation of care delivery can lead to poor quality of care, medical errors, inefficient delivery of services, higher costs, and patient dissatisfaction. Fragmentation can be especially burdensome for patients with chronic illnesses because of their ongoing care needs and for underserved populations—individuals who are uninsured or medically underserved—because of their financial and other challenges to accessing services.¹

One way that hospitals, physicians, and other providers have addressed fragmentation is by forming integrated delivery systems (IDS) to improve efficiency, quality, and access to care. An IDS can be integrated across its providers and facilities in terms of such aspects as clinical care, financial management, and human resources. These systems can vary in the way they are organized, with services linked vertically, among different levels of care (e.g., clinic, specialist's office, hospital), or horizontally, across one level of care (e.g., hospitals). They can also vary in the extent to which

¹In this report we define medically underserved individuals as those individuals who demonstrate economic, geographic, cultural, or linguistic barriers to health care services, including Medicaid enrollees and rural populations.

they are integrated. IDSs can be publicly owned or private. While public IDSs have a mission of providing care to underserved populations, some private IDSs share this mission and others serve these populations to varying degrees.

The Health Care Safety Net Act of 2008 directed GAO to report on integrated health system models that integrate primary, specialty, and acute care and serve uninsured and medically underserved populations.² We provided an oral briefing to congressional staff on October 8, 2009. In this follow-on report, we provide more in-depth information on

1. organizational features that IDSs use to support strategies to improve patient care;
2. approaches IDSs use to facilitate access to care for underserved populations; and
3. challenges IDSs encounter in providing care, including care provided to underserved populations.

Scope and Methodology

To address our research objectives, we selected a judgmental sample of 15 IDSs that clinically integrate primary, specialty, and acute care and serve uninsured and medically underserved populations.³ To select our sample, we began by reviewing published research and interviewing researchers with expertise in IDSs. As a result, we identified 44 public and private nonprofit systems from which to select our sample. In December 2009, we sent a Web-based data collection instrument to these systems to determine the extent of their clinical integration and to obtain additional information about organizational features of the system. This included whether the system is made up of subsystems—local or regional delivery systems that are organized below the system level—that integrate clinical care within themselves. We sent e-mail reminders and conducted telephone outreach to systems that had not responded by our requested deadline. In the end, we received completed data collection instruments from 19 systems. We excluded 4 systems from our study because their responses indicated a lack of clinical integration or because of an

²Pub. L. No. 110-355 § 2 (b)(4), 122 Stat. 3988, 3990-91. The act refers to IDSs as “integrated health systems.”

³We define primary care in this report as basic or general health services such as family medicine, internal medicine, pediatrics, obstetrics and gynecology, dental care, and certain types of mental health/substance abuse treatment. Specialty care is defined here as health services in a specific field of medicine, such as cardiology, dermatology, and psychiatry. Acute care is defined here as short-term medical or surgical treatment.

affiliation with a “closed system”—one that exclusively serves members of the system’s health insurance plan.⁴ Our final sample consisted of 15 IDSs, which include five subsystems. (See table 1.)

Table 1: IDSs in GAO Sample

Name	Public/private	Location
Allina Hospitals & Clinics	Private	Minnesota and Western Wisconsin
Ascension Health, Seton Family of Hospitals (subsystem)	Private	Central Texas
Cambridge Health Alliance	Public	Greater Boston, Massachusetts
Denver Health	Public	Denver, Colorado
Geisinger Health System	Private	Central and Northeastern Pennsylvania
Hennepin Healthcare System	Public	Minneapolis/St. Paul, Minnesota
Henry Ford Health System, Detroit Region (subsystem)	Private	Detroit, Michigan
Intermountain Healthcare	Private	Utah and Southeastern Idaho
Marshfield Clinic	Private	Central, Western, and Northern Wisconsin
Mayo Clinic, Rochester Region (subsystem)	Private	Rochester, Minnesota
Memorial Healthcare System	Public	Broward County, Florida
New York City Health and Hospitals Corporation, Queens Health Network (subsystem)	Public	New York, New York
Parkland Health & Hospital System	Public	Dallas, Texas
Partners Healthcare	Private	Greater Boston and Eastern Massachusetts
Sisters of Mercy Health System, St. Edward Mercy Health System (subsystem)	Private	Arkansas

Source: GAO.

The 15 IDSs vary in many aspects, including the degree to which they are integrated, specific organizational features, and payer mix (e.g., extent to which they serve Medicare and Medicaid beneficiaries⁵ and the uninsured) (see app. I). We reviewed the Web sites for the IDSs in our sample, relevant articles and reports about the systems, and other documents the systems provided. Based on our review of the extent of clinical integration of each system, its location (census region and urban/rural), and whether it is publicly or privately owned, we selected for site visits four systems

⁴An example of a closed system is Kaiser Permanente.

⁵Medicare is the federal health insurance program for people over age 65, individuals under age 65 with certain disabilities, and individuals diagnosed with end-stage renal disease. Medicaid is a joint federal-state program that finances health care coverage for certain low-income adults and children. Medicaid programs vary from state to state.

that reflected variation among these dimensions: Ascension Health's Seton Family of Hospitals, Denver Health, Henry Ford Health System's Detroit Region, and New York City Health and Hospitals Corporation's (NYCHHC) Queens Health Network. We administered a structured interview protocol with chief medical officers (or other system officials, as appropriate) to obtain information on organizational features that IDSs use to support strategies to improve patient care; approaches IDSs use to facilitate access to care for underserved populations; and challenges IDSs encounter in providing care, including care provided to underserved populations. To gain additional in-depth information, we conducted interviews with IDS officials at the four sites we visited, including system executives and clinical staff. In some cases, information provided by IDS chief medical officers and officials is specific to underserved populations, and we note it as such in this report. In other cases, the information is more general, relating to the overall system or patient population, which can include underserved patients.

Findings in this report are based on a judgmental sample and are not generalizable to all IDSs. The organizational features, patient care strategies, approaches to facilitate access, and challenges that we describe are not necessarily unique to IDSs, but may also be found in other health care settings and experienced by different providers. However, the information we present is from the perspective of the IDSs in our sample. We relied on data obtained through the Web-based data collection instrument, interviews with system representatives, and published studies and did not conduct independent analyses of the effectiveness of strategies.

We conducted this performance audit from June 2009 to November 2010, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

IDSs vary in their organizational configuration and in the continuum of services they provide. They frequently use patient care strategies such as care coordination, disease management, and care protocols. Other providers that are not part of IDSs may also use some of these strategies and may also face challenges similar to those IDSs may face. For example, some IDSs serve a patient population that includes a high proportion of

underserved individuals and may face financial challenges in doing so. Other providers who also serve a high proportion of underserved individuals may face some of the same financial challenges.

Organization of IDSs

IDSs can be organized in different ways and use various staffing models.⁶ Some IDSs are a single entity that includes a delivery system (hospitals, physicians, and other providers) and a health insurance plan. Examples of this type of IDS include NYCHHC and Geisinger Health System. Other IDSs include a delivery system but do not have a health insurance plan, such as Partners Healthcare and Memorial Healthcare System. IDSs may employ their own physicians, rely on community-based physicians who are not employed by the system but are granted use of the hospital facilities and staff, or use a combination of those two approaches. An IDS can be organized at the system level, or it can be more decentralized, having subsystems that organize health care at the local or regional level. These subsystems integrate care within themselves but not necessarily with other subsystems in the overall system. IDSs can consist of multiple subsystems. Because there is so much variation in the ways that IDSs can be organized, it is difficult to determine the exact number of IDSs in the country; however, millions of Americans receive care from IDSs.⁷

IDSs offer a continuum of services to a particular patient population or community and can vary in what services are provided within this continuum. For example, some IDSs provide nursing home care within their systems, and others do not. Similarly, not all IDSs provide certain specialized services such as organ transplantation or major burn services within their systems. An IDS may have a contract with other providers to offer certain services, or may refer patients to providers not affiliated with the IDS for a service.

⁶Anthony Shih et al., *Organizing the U.S. Health Care Delivery System for High Performance* (New York, N.Y.: Commonwealth Fund Commission on High Performance Health System, August 2008).

⁷A. Enthoven, "Integrated Delivery Systems: The Cure for Fragmentation," *The American Journal of Managed Care* 15, no. 10 (2009): S284-S290.

Patient Care Strategies Used by IDs

IDs use multiple strategies to improve patient care, such as care coordination, disease management, clinical practice guidelines, and care protocols. Care coordination is the integration of patient care activities between two or more participants involved in a patient's care to facilitate the appropriate delivery of services. It occurs across the continuum of care and across different delivery sites, encompassing both health care and social support interventions, and is often used for patients with special health care needs or chronic health conditions. Care coordination activities can include case management and patient navigation services.⁸ Disease management involves providing coordinated health care interventions and communications to patients who have chronic conditions, such as diabetes or asthma, where patients' self-care efforts can affect their health outcomes. Disease management is a systematic approach to patient care that uses evidence-based practice guidelines. Evidence-based practice guidelines, also referred to as clinical practice guidelines, are systematically developed statements that guide providers and patients in making decisions about appropriate health care for certain conditions. They are typically based on an examination of the best available scientific evidence and broad consensus about the best treatment to follow. Care protocols, which are generally more specific than guidelines, provide more detail about the management and treatment of diseases and conditions. Patient care strategies can be designed to achieve a variety of goals, such as improved health outcomes and quality of care, increased efficiency, and lower costs. They may be performed by physicians, nurses, or other clinical or nonclinical staff members and often are implemented outside of a patient's face-to-face appointment with a physician.

Studies have shown that IDs are more likely to use patient care strategies than are other providers, such as solo practitioners. For example, a national study of the management of chronic illness for patients with asthma, congestive heart failure, depression, and diabetes found that certain IDs were significantly more likely to use recommended, evidence-based care management processes than were less organized providers.⁹ In addition, a study of physician practices in California in the early 2000s

⁸Patient navigation services can include assistance in scheduling appointments and arranging transportation and child care.

⁹Stephen M. Shortell and Julie Schmittiel, "Prepaid Groups and Organized Delivery Systems," in *Toward a 21st Century Health System*, eds. Alain C. Enthoven and Laura A. Tollen (San Francisco, Calif.: Jossey-Bass, 2004): 1-21.

found that physicians affiliated with an IDS were more likely to use disease management programs than were physicians in nonintegrated medical group practices or small practices.¹⁰

IDSs' Role in Serving Underserved Populations

Depending on their geographic location and their mission, IDSs serve varying proportions of underserved populations. Individuals who are underserved have higher rates of illness, and they often face barriers to accessing timely and needed care. For example, uninsured patients are more likely than insured patients to have chronic illnesses that are undiagnosed or undertreated.¹¹ People with limited English proficiency may have problems comprehending health care information and complying with treatment. Rural residents also face barriers to access because of physician shortages in rural areas. In addition, underserved patients may have difficulty obtaining specialty services, including diagnostic services. Integrating care, such as by linking primary and specialty care, can reduce some of the access barriers that underserved populations experience.

¹⁰D.R. Rittenhouse et al., "Physician Organization and Care Management in California: From Cottage to Kaiser," *Health Affairs*, 23, no. 6 (2004): 51-62.

¹¹Institute of Medicine, *America's Uninsured Crisis: Consequences for Health and Health Care* (Washington, D.C.: National Academy Press, 2009).

IDSs Reported That Using Electronic Health Records, Operating Health Insurance Plans, and Employing Physicians Support Strategies to Improve Patient Care

The 15 IDSs in our sample collectively reported that organizational features such as using electronic health records (EHR),¹² operating health insurance plans, and employing physicians all support various strategies for improving patient care, including care coordination, disease management, and use of care protocols.

Using EHRs Was Reported to Support Patient Care Strategies by Increasing Availability of Patient Information

Officials at some IDSs in our sample told us that using EHRs supports their strategies to improve the quality of patient care by increasing the availability of clinical information and patient population data and by improving communication. All 15 IDSs reported having implemented EHRs to some extent. For example, as of March 2010, Seton was in the process of implementing its EHR, and Henry Ford's EHR was available at all of its facilities. Clinical strategies supported by using EHRs include care coordination, disease management, electronic prescribing (e-prescribing) and computerized physician order entry (CPOE), and care protocols.

¹²An EHR is an electronic collection of information about the health of an individual or the care provided, such as patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports. The EHR can also support other care-related activities, including evidence-based decision making. The Health Information Technology for Economic and Clinical Health Act of 2009 established the Electronic Health Record Incentive Program, through which certain providers become eligible for financial incentives when they implement certified EHRs. Providers using certified EHRs must demonstrate "meaningful use" to improve health care quality, safety, and efficiency to receive the incentive payment.

Care Coordination

Use of EHR at Denver Health

- Denver Health uses an EHR across all locations, and each patient has a single numerical identifier.
- A single login screen gives providers access to the EHR, digital radiology images, and functions such as computerized physician order entry (CPOE).
- Through the EHR, information related to each patient's preventive services, such as checking of hemoglobin A1C levels or cancer screening, is automatically populated onto a hard copy encounter form, which the provider reviews at the time of the patient's visit and uses to record additional clinical information during the visit.
- If a patient is admitted, the hospital provider has access to the patient's clinical information from past points of contact, including clinic-based care. In addition, primary care providers receive daily notification, facilitated by the EHR, when patients are admitted and have access to hospitalization information as soon as it is entered or scanned into the EHR.

According to officials at some IDSs, using EHRs facilitates care coordination because EHRs make patient clinical information more readily available to providers and improve communication among providers, staff, and patients. For example, officials from Denver Health characterized the EHR as a key component of integration. At Denver Health, the EHR supports care coordination because physician notes from patient encounters are scanned in within 24 hours of patient contact and clinical information, such as previous laboratory tests, is available to all providers (for additional information, see sidebar). Similarly, an official from Mayo Clinic told us that the EHR helps avoid overutilization and duplication of services, and an official from Partners Healthcare told us that the EHR aids in care coordination because physicians can see patient clinical information no matter where in the system the patient is. Marshfield Clinic's EHR is also available at all of its facilities, giving providers access to clinical information, digital radiology images, and capabilities such as e-prescribing. At Marshfield Clinic, each patient's EHR contains a "dashboard" with information on preventive services to highlight needed services and to facilitate communication among providers so that services and assistance can be requested electronically. Marshfield's EHR also creates a list of high-risk patients with outcomes in need of interventions so that physicians and other staff can follow up with those patients.

Disease Management

According to IDS officials, using EHRs facilitates disease management by making patient-level and population-level data available to providers, which allows providers and IDSs to adjust approaches to treatment based on individual patient and population-wide progress. NYCHHC, for example, has disease management programs for patients with asthma, diabetes, congestive heart failure, hypertension, cardiovascular disease, and depression. Each regional subsystem within NYCHHC has its own separate EHR. The EHRs update disease registries nightly, and through the disease registries, providers can develop a comprehensive understanding of a patient over time.¹³ For example, providers can assess a given diabetic patient's health status at any point in time, and compare it to another point in time to ascertain what may have been associated with a change in health status. The diabetic disease registry also enables NYCHHC

¹³Disease registries are databases that contain information on patients diagnosed with a particular disease.

physicians with similar groups of patients to compare their patients' outcomes. NYCHHC officials said that information technology makes it easier to get data and identify trends, and that EHRs allow them to anticipate and mitigate potential problems more easily and much earlier. Because the EHR provides real-time clinical information, providers are able to see test results immediately upon completion, which might not be possible without an EHR. Having real-time information allows providers to initiate appropriate treatment or follow-up. Similarly, the Doc Site Registry at Henry Ford, which uses a common EHR across all its facilities, is a disease registry program available for all patients that is linked to the EHR. It covers diseases such as depression, chronic obstructive pulmonary disease, hypertension, asthma, and chronic kidney disease. The Doc Site Registry prompts providers to administer missing preventive services during patients' visits. Staff at Henry Ford use the Doc Site Registry to identify groups of patients who are in need of care management. In addition, Hennepin Healthcare System has used an EHR system since February 2007 for both inpatient and outpatient services. According to officials at Hennepin Healthcare System, the EHR is fundamental to providing real-time awareness and support for providing clinical care, including care for patients with chronic diseases. One of the officials added that using data from the EHR enables them to determine which interventions are more effective in specific circumstances and gives the staff insight into how to improve care.

E-prescribing and CPOE

Officials at some of the IDSs reported that using EHRs with e-prescribing and CPOE capabilities reduces errors and lowers costs.¹⁴ For example, e-prescribing at Marshfield Clinic was reported to reduce errors related to illegible handwriting and unintentional drug interactions.¹⁵ Through the EHR, prescribers are alerted when an allergy or drug interaction exists. Marshfield Clinic's EHR also requires physicians to consider appropriate alternatives for prescription drugs, and a study found that Marshfield Clinic's suggestions of "preferred alternative" prescription drugs saved payers and patients \$2.5 million in 1 year.¹⁶ In addition, NYCHHC officials

¹⁴Studies on CPOE systems have recognized their potential for reducing medication errors; however, CPOE systems have also been associated with their own risks and errors.

¹⁵Douglas McCarthy, Kimberly Mueller, and Sarah Klein, *Marshfield Clinic: Health Information Technology Paves the Way for Population Health Management* (New York, N.Y.: The Commonwealth Fund, 2009), 5.

¹⁶Douglas McCarthy, Kimberly Mueller, and Sarah Klein, 5.

Care Protocols and Clinical
Practice Guidelines

told us that its CPOE includes drug interaction warnings and improves the legibility of physician orders.

Officials from some IDSs told us that their systems' EHRs facilitate the use of care protocols and clinical practice guidelines by prompting providers to use them and tracking their use. At Denver Health, for example, when entering an order into the CPOE through the EHR, the physician is presented with a standard set of orders that is applicable to the patient. The sets of orders are linked with guidelines explaining the need for the specific orders, and physicians must explicitly de-select any orders they disagree with. A Denver Health official told us that guidelines incorporated into the EHR's CPOE function are more likely to be followed than standalone guidelines. One example of the use of standardized order sets is for Denver Health patients with ketoacidosis;¹⁷ this use of standardized order sets was associated with a 23 percent decrease in intensive care unit length of stay and a 30 percent decrease in hospital length of stay.¹⁸ In another example, Allina Hospitals & Clinics, which uses a single EHR system at all 11 of its hospitals and for all of its employed physicians, created systemwide pneumonia vaccine guidelines to better identify patients eligible for the vaccine. Allina Hospitals & Clinics' EHR electronically prompts the nurse to use the guidelines at the time the patient is assessed for admission.

¹⁷Ketoacidosis occurs when ketone levels in blood and urine become too high as a result of uncontrolled diabetes or illness, and can lead to diabetic coma or death.

¹⁸S.V. Bull et al., "Mandatory Protocol for Treating Adult Patients with Diabetic Ketoacidosis Decreases Intensive Care Unit and Hospital Lengths of Stay: Results of a Nonrandomized Trial," *Critical Care Medicine*, 35, no. 1 (2007): 41-46.

Operating a Health Insurance Plan Was Reported to Support Patient Care Strategies by Providing Resources and Increasing the Availability of Data on Patients in the Plan

Care Coordination

Officials from IDSs in our sample reported that operating a health insurance plan can support patient care strategies by providing to the IDS both financial resources, such as savings resulting from reducing avoidable hospitalizations for health plan members, and data on health insurance plan members.¹⁹ IDS officials reported that financial resources could be used to fund services such as care coordination—which many insurers do not reimburse—and the data could be used as a basis for implementing strategies such as disease management.

A Geisinger Health System official discussed how operating a health insurance plan could enable an IDS to invest financial resources in coordinating care for patients insured by the plan. The official said one way that the Geisinger Health Plan provides care coordination is through its ProvenHealth Navigator program. Geisinger Health Plan hires nurses trained in population health management to work in primary care settings, where they provide specialized care coordination and preventive services for the plan's high-risk patients. According to the Geisinger Health System official, the ProvenHealth Navigator program is associated with reductions of up to 30 percent in hospital readmissions and about 20 percent in acute admissions. Because Geisinger Health System hospitals have fewer admissions, Geisinger Health System revenues from hospital care are reduced. However, for the overall system, the reduced revenue has been offset by savings the health insurance plan experiences because it is paying for fewer hospital admissions for its members. Furthermore, patients have benefited from avoiding preventable hospital stays.

Disease Management

Officials at some IDSs provided us with examples of ways that operating a health insurance plan enables them to allocate resources for disease management services or enables them to create better-informed disease management programs by providing access to useful patient information through the tracking of health insurance plan data. Henry Ford implemented an innovative protocol for use of an outpatient heparin treatment in place of an inpatient heparin treatment for patients with deep vein thrombosis before outpatient heparin was the standard of care. The type of heparin used in the outpatient treatment was not covered by most insurers. Because Henry Ford controls its own insurance benefit through

¹⁹Ten of the IDSs in our sample offer a health insurance plan that can be available to groups, to individuals, to system employees, or to people enrolled in Medicaid, Medicare, or the Children's Health Insurance Program.

its health insurance plan, the Health Alliance Plan, it was able to cover the cost of the outpatient heparin, which was associated with a decreased length of stay, as well as a decreased cost per admission.²⁰ Henry Ford also uses its health insurance plan claims data to better inform patient care. For example, Henry Ford has access to over 10 years of data on patients with osteoporosis,²¹ allowing it to know how patients were treated and what the outcomes of those treatments were, which can guide future efforts to manage treatment of osteoporosis. Similarly, an official from Intermountain Healthcare told us that it used its health insurance plan data to identify patients with conditions such as hypertension and diabetes and conduct targeted education for those patients through mailings and other initiatives.

Some IDSs Reported That Employing Physicians Supports Patient Care Strategies by Ensuring Physician Participation in Quality Efforts

Employing physicians, rather than relying solely on community-based physicians who are not employed by the system, may facilitate strategies to improve the quality of patient care at an IDS, in part because of the IDS's ability to require or encourage certain aspects of care and to monitor certain aspects of the care employed physicians provide. At each of the 15 IDSs in our sample, some physicians are employed by the IDS. Strategies supported by the employment of physicians include accountability for quality of care, use of care protocols, and mitigation of physician concerns related to payment for care for underserved populations.

Accountability for Quality of Care

Employment of physicians was reported to facilitate physician accountability for quality of care because physicians who are employed by the IDS are expected to meet certain performance indicators, and the IDSs collect data on and review physician performance. For example, an official from Memorial Healthcare System said that employed physicians are expected to comply with performance indicators, but that Memorial Healthcare System does not have the same leverage with community-based physicians it does not employ as it has with the physicians it employs. The Memorial Healthcare System official told us the system can compare an employed physician's data with those of its other employed physicians and with performance benchmarks, and that such data

²⁰Vinod K. Sahney et al., *The Business Case for Pharmaceutical Management: A Case Study of Henry Ford Health System* (New York, N.Y.: The Commonwealth Fund, 2003), 12.

²¹Osteoporosis is a disease in which bones become fragile and more likely to break.

comparisons help motivate physicians to improve their performance.²² A Denver Health official told us that the employment of physicians is an important part of implementing physician accountability and quality of care, and that physicians that the system employs are more likely to fully support hospital initiatives than are community-based physicians who are not employed by the system. An official from Intermountain Healthcare said that physicians are motivated to improve performance when presented with a comparison of individual performance indicators and peer performance indicators, and Intermountain Healthcare is able to provide more detailed information on physicians it employs because of the employed physicians' use of the EHR.

Use of Care Protocols

Officials from some IDSs told us that employment of physicians can increase adherence to care protocols, because IDSs can require or encourage their use. For example, Geisinger has a pay-for-performance program for providers of coronary artery bypass graft surgery for Geisinger patients. Because Geisinger employs these surgeons, it can require them to follow 40 care protocols through its ProvenCare Heart Program. In a 2007 study, adverse outcomes occurred less often in the ProvenCare treatment group than the control group, the latter of which consisted of patients treated before the implementation of ProvenCare, and the likelihood of the patients being discharged to their home rather than to another care facility was higher.²³ In addition, an official from Memorial Healthcare System told us that employed physicians are expected to follow protocols for chronic conditions. Memorial Healthcare System can track whether employed physicians—in both inpatient and outpatient settings—are using the protocols, and employed physicians receive feedback on their compliance with protocols. Memorial Healthcare System can track use of protocols for other physicians who provide inpatient services, but cannot track use of the protocols for other physicians who provide outpatient services.

Mitigation of Physician Concerns Related to Payment

Officials from several IDSs told us that employment of physicians can facilitate provision of care to underserved populations because compensation from IDSs can mitigate physicians' concerns that they may

²²The Memorial Healthcare System official told us that he is able to track physician data for all physicians practicing in the inpatient setting, but that for physicians practicing in an outpatient setting, he is able to track physician data only for employed physicians.

²³A. S. Casale et al., "ProvenCareSM: A Provider-Driven Pay-for-Performance Program for Acute Episodic Cardiac Surgical Care," *Annals of Surgery*, 246, no. 4 (2007): 613-623.

not receive payment from uninsured patients. For example, an official from Intermountain Healthcare told us that physicians receive the same compensation regardless of the patient's insurance status. At Henry Ford Hospital, where the Henry Ford Medical Group is the sole source of physician staffing, the physicians are expected to provide the same standard care processes, which are evidence-based, without considering the patient's insurance status, and often physicians do not know what the patient's insurance status is. Similarly, the Sisters of Mercy Health System's St. Edward Mercy Health System has a set compensation structure for newly hired primary care physicians for at least 2 years under which there is no financial incentive for them to distinguish among patients of different insurance status. After 2 years, primary care physicians are asked to take at least 10 percent of their patients from Medicare or Medicaid populations, and they are reimbursed at a rate similar to that of commercial insurance for patients from those populations that exceed the 10 percent level (up to 20 percent).

IDSs Use Community-Based Settings and Other Approaches to Facilitate Access to Care for Underserved Populations

Providing Community-Based Care

The IDSs in our sample discussed several approaches that they use to facilitate access to care for underserved populations. These include providing community-based care, conducting outreach, helping patients apply for coverage programs, providing financial assistance, integrating mental health and primary care services, and collaborating with community organizations.

School-Based Health Centers

Officials from some IDSs reported providing underserved children with some of the health care services along their continuum of care—such as primary care, mental health care and counseling, and health education—through school-based health centers (SBHC).²⁴ Examples of IDSs with school-based health centers serving underserved children include Denver Health, Henry Ford, Intermountain, NYCHHC, and Parkland Health &

²⁴School-based health centers are located on school grounds; provide primary health care and other health care services, such as mental health care, regardless of the student's ability to pay; and offer a broader range of services than a school nurse generally provides.

Hospital System. Henry Ford’s SBHCs provide management of chronic illnesses, such as asthma and diabetes, and mental health counseling and referral in addition to their primary care services. Intermountain’s SBHCs have expanded access to their health services to family members of the children they serve.

Federally Qualified Health Centers (FQHC)

Officials from several IDSs reported either operating or collaborating with FQHCs to provide care to underserved populations.²⁵ Some IDSs, such as Denver Health and Parkland, operate FQHCs within their systems. All of Denver Health’s 12 school-based health centers are FQHCs, as are all 8 of its primary care clinics, its urgent care center, and its hospital-based women’s care clinic. Similarly, Parkland’s Homeless Outreach Medical Services, which operates mobile health units in partnership with the City of Dallas, is an FQHC. At two other IDSs—Seton and Henry Ford—there are no FQHCs among the clinics in their system, but both IDSs collaborate with local FQHCs that are not part of their system. For example, Henry Ford collaborates with two local FQHCs, facilitating access to primary and specialty health care services. The FQHCs provide primary care services to patients, and Henry Ford provides needed specialty care services. In addition, Henry Ford collaborates more broadly with one of the FQHCs, providing resources to help meet the clinic’s needs (for additional information, see sidebar). Another IDS, Marshfield Clinic, has a contractual partnership with an outside FQHC through which Marshfield Clinic provides primary and preventive health care and dental care to low-income uninsured and underinsured individuals and families. Marshfield Clinic also supported the establishment of the FQHC by helping it apply for federal grant funding.

Henry Ford’s Collaboration with an FQHC Outside Its System

- Recognizing a need for greater primary care services in the community, Henry Ford helped fund the FQHC’s expansion and pays its rent.
- Henry Ford provides low-cost laboratory services to the FQHC.
- Henry Ford physicians, including specialists, serve as providers in the FQHC.
- Henry Ford also makes its EHR available to the FQHC to facilitate the sharing of clinical information on shared patients.

²⁵FQHCs include (1) health centers that receive federal grants under Section 330 of the Public Health Service Act, including Community Health Centers, Migrant Health Centers, Health Care for the Homeless Health Centers, and Public Housing Primary Care Centers; (2) FQHC “Look-Alikes” that have been identified by the Health Resources and Services Administration and certified by CMS as meeting the definition of “Health Center” under Section 330 of the Public Health Service Act, although they do not receive grant funding under Section 330; and (3) outpatient health programs/facilities operated by tribal organizations (under the Indian Self-Determination Act) or urban Indian organizations (under the Indian Health Care Improvement Act). FQHCs are eligible to receive special Medicaid and Medicare reimbursement rates.

Mobile Health Units

Some IDSs operate mobile health units to expand access to care for underserved populations, such as people who are homeless and residents of rural areas. For example, Parkland's Homeless Outreach Medical Services mobile health units visit Dallas area homeless shelters to provide medical and social work services to children and adults. Services include immunizations, care for acute and chronic conditions, health education, and well-child care. To facilitate access to health care services for patients in rural communities, especially those who are uninsured, Seton operates a mobile mammography program and a mobile pediatric clinic. The mobile mammography program provides free mammography screening, breast self-examination instruction, and a clinical breast examination as well as eligibility screening for available public and Seton-sponsored health coverage. A nurse provides case management services for women screened through the mobile mammography program. The mobile pediatric clinic serves children through age 21, providing services such as well-child care, immunizations, and chronic disease management.

Telehealth

Some IDSs, such as Marshfield Clinic, St. Edward Mercy Health System, and Geisinger, facilitate access to certain health care services to patients in rural areas by using telehealth to provide services such as primary care, mental health care, and certain specialty services. Telehealth enables providers to interact remotely with patients and other providers by using electronic communication and technologies such as video conferencing, bringing a wider range of services to underserved individuals in their communities. For example, Marshfield Clinic telehealth services are available in 40 medical specialties at 55 sites, including dental clinics, skilled nursing facilities, Head Start clinics,²⁶ a rural hospital, and 31 rural clinics, 5 of which are FQHCs. Telehealth is available in care areas such as mental health, dentistry, and primary care. Through telehealth, Marshfield Clinic specialists and primary care providers consult with each other and outside referring physicians, and Marshfield Clinic patients can receive services from other specialists located in academic medical and research centers throughout the country. St. Edward Mercy Health System facilitates access to health care services for pregnant women and

²⁶The Head Start program is a federal early childhood program that gives grants to local organizations to provide preschool education and other services such as family support, health screenings, and dental care to low-income children and their families.

newborns in rural communities through its participation in the perinatal telehealth program of the University of Arkansas for Medical Sciences and Arkansas Children’s Hospital. The program links physicians at St. Edward Mercy Medical Center with a neonatologist or an obstetrician who specializes in high-risk pregnancies for consultation. To facilitate access to psychiatric services for veterans living in rural communities, Geisinger incorporates telemedicine into its Reaching Rural Veterans program. The program uses telehealth and a patient navigator to identify and assist veterans who have post-traumatic stress disorder and their families and connect them to local private and public resources.

Conducting Outreach

Most IDSs in our sample conduct outreach targeted at underserved populations. IDSs engage in outreach activities such as health education, health screening, and linking individuals with providers for needed health care services. For example, Denver Health conducts outreach to underserved men in targeted neighborhoods and at the Denver County jail through its Men’s Health Initiative. The Men’s Health Initiative provides basic health screening; case management services, including services for men with complex health care needs; and referrals for specialty health care services. At Cambridge Health Alliance, volunteer health advisors work in the community to conduct health education and screening, participate in health fairs, provide referrals for services, and lead culturally and linguistically appropriate peer support groups such as those for patients with chronic conditions. According to Cambridge Health Alliance, since 2001 the volunteer health advisor program has provided 8,100 screenings, and more than 700 individuals have been enrolled in health coverage and referred to a primary care doctor.

Helping Patients Apply for Coverage Programs

All IDSs in our sample facilitate access to care for uninsured patients by helping them complete applications for public coverage such as Medicaid and local coverage programs. At some IDSs, application assistance is a component of community outreach activities, such as in Denver Health’s Men’s Health Initiative. Two systems—Seton and Parkland—use a Web-based tool to screen for eligibility for federal, state, and local health insurance programs. According to Seton representatives, using the Web-based tool enables the system to adopt a “no wrong door” approach, screening patients for eligibility regardless of where the patient enters the system. With the Web-based tool, Seton can track whether patients submitted applications, remind patients to do so, and track their enrollment status. Parkland uses the tool, which screens for eligibility for about 100 programs, at its main campus and all of its community health clinics, school-based health centers, and other locations.

Providing Financial Assistance

HHC Options and Seton Care Plus

HHC Options

- Patients with income up to 400 percent of the federal poverty level may be eligible.
- Enrollee fees include
 - \$15 to \$60 for adult clinic or emergency room visits
 - \$2 to \$22 per prescription drug
- NYCHHC considers HHC Options an important way to serve immigrant communities.

Seton Care Plus

- Patients with income up to 250 percent of the federal poverty level may be eligible.
- Enrollee fees include
 - \$5 to \$40 for preventive health examinations
 - \$20 to \$60 for outpatient surgery
- Care coordination and disease management services are available to enrollees.

Many IDSs in our sample also provide financial assistance, such as a sliding fee scale, for health care services to patients who are uninsured and do not qualify for public health insurance programs. For example, NYCHHC operates the HHC Options program, through which individuals who are uninsured or underinsured and meet income requirements pay a fee based on income and family size for health care services. Officials from another IDS, Seton, told us that it operates a “health insurance-like” program known as Seton Care Plus, through which uninsured individuals who meet income requirements can access health care services. Seton Care Plus enrollees pay a fee based on income for primary care services provided at Seton primary care clinics and receive discounts for specialty services from community specialists who have agreed to provide such services. According to officials from Seton, although Seton Care Plus is not insurance, it is similar in some ways, such as in its requirement for prior authorization for certain services and in its tracking and monitoring of the use of medical services. (For additional information on HHC Options and Seton Care Plus, see sidebar.)

Integrating Mental Health and Primary Care Services

To improve access to mental health care services for patients, including for underserved populations, some IDSs integrate mental health and primary care services by providing mental health screenings in primary care locations or collocating mental health providers in primary care settings. For example, the NYCHHC Queens Health Network, which serves a high proportion of patients who are uninsured or have Medicaid coverage, annually screens all adult patients with diabetes for depression in primary care settings. The primary care physicians treat patients with mild to moderately severe depression, and patients needing more specialized care are referred to the mental health clinic.²⁷ Similarly, Henry Ford conducts depression screening for patients with chronic conditions. Henry Ford implemented a two-step screening process—which is embedded in the EHR—in its primary care clinics. The patient is first

²⁷Research shows that depression is highly prevalent among people with diabetes. Research also shows that depression is associated with chronic illness 20 to 50 percent of the time.

screened using a two-item screening questionnaire, and if that screening indicates a need, the patient completes a second, more extensive depression screening. The EHR uses the patient's responses to notify the primary care provider if treatment for depression is required and provides the evidence-based treatment protocol. Henry Ford reported that in a 12-month period from June 2007 to June 2008, its primary care doctors were providing treatment for depression to 67 percent of the patients they identified through screening. In addition, two IDSs with facilities in Minnesota, Mayo Clinic and Allina, participate in a collaborative care model in which primary care providers screen and treat adult patients with depression.²⁸ Primary care providers use a standardized questionnaire to assess symptoms of depression, a tracking system to monitor patient status, a medical guide for identifying appropriate treatment, care coordination for patients, a psychiatrist who is available for consultations, and tools for preventing relapses by patients in clinical remission.

Another way some IDSs facilitate access to mental health care services is by collocating providers such as social workers, nurses, and psychiatrists in primary care settings. For example, Denver Health collocates some mental health providers in community health clinics and school-based health centers. Some of the community health clinics have a limited number of mental health providers on site, as well as a psychologist or psychiatrist. Staff at the school-based health centers include master's level mental health clinicians and child psychiatrists for consultations as needed. Another example of an IDS that collocates primary care and mental health care is NYCHHC, where most mental health clinics are colocated with primary care clinic locations. Therefore, patients needing both primary care and mental health services can obtain those services in one location.

IDS officials told us that improving access to mental health care could have a beneficial effect on a patient's physical health. A Denver Health official noted that patients with unmet mental health care needs could face difficulty adhering to medical care treatment plans. Similarly, a staff member at Seton's community clinic commented that diabetic patients who are depressed and therefore not taking care of themselves often cannot manage the disease appropriately.

²⁸ A group of Minnesota medical groups, along with representatives from six of Minnesota's commercial health plans and the Minnesota Department of Human Services, developed the collaborative care model, which is referred to as DIAMOND—Depression Improvement Across Minnesota, Offering a New Direction.

Collaborating with Community Organizations

Officials from most of the IDSs in our sample reported collaborating with community organizations to facilitate access to care for underserved populations. In these collaborative efforts, IDSs work with organizations such as other providers and faith-based organizations, sometimes providing financial resources or directly providing patient care, referrals, screening services, or health education. For example, Seton collaborates with other local organizations through the Health Alliance for Austin Musicians (HAAM) to provide physical and mental health care services to low-income, uninsured musicians in Austin, Texas. Seton provides primary care services through Seton Care Plus to HAAM members, while other community organizations offer mental health, dental, and audiology services. Although HAAM members obtain mental health care services through a HAAM mental health provider, they obtain medications prescribed by that provider through Seton Care Plus, which gives them access to low-cost prescription drugs. Hennepin Healthcare System collaborates with other providers in its community on a pilot program to help patients who sought nonemergency care in the emergency department to find a primary care home.

Some other IDSs collaborate with health clinics in their communities by providing in-kind and financial resources. For example, Intermountain and Geisinger provide financial assistance to local health clinics. St. Edward Mercy Health System provides office space to a local community organization that provides social services and assistance to children who have been abused, and a St. Edward Mercy Health System physician serves as medical director for the organization. Some of the systems in our sample work with local faith-based organizations. For example, Henry Ford works with 15 to 20 local churches to offer health education and screening related to issues such as nutrition, cancer, and heart disease. Memorial Healthcare System and Parkland also collaborate with area churches to conduct outreach, provide some health care services, or provide health education and screening.

IDSs May Face Various Operational Challenges in Providing Care

IDSs in our sample reported facing various operational challenges in providing care, including care for underserved populations. Some reported that not receiving reimbursement from health care insurance companies for the care coordination services they provide to patients is a financial challenge. Other operational challenges IDSs reported included finding specialty care for underserved patients, including mental health care; sharing information with providers outside the system; and changing management and physician cultures to adapt to organizational change.

IDSs May Face the Financial Challenge of Not Receiving Reimbursement for the Care Coordination Services They Provide

Officials from some IDSs in our sample said that not receiving health insurance reimbursement for the care coordination services they provide is a financial challenge. While all the IDSs in our study provide these services as a patient care strategy, such services are generally not covered by health insurance.²⁹ For example, Cambridge Health Alliance provides patient navigation and care management services but does not receive reimbursement for those services from health insurance companies. Cambridge Health Alliance said that because these services are necessary for treating certain patients, including those with mental illness, it continued to provide the services without receiving payment for them. Similarly, Henry Ford operates a pediatric medical home program that includes care coordination services, but does not receive health insurance reimbursement for these services.³⁰ Allina cannot bill for services provided by its nonclinical care guides, whose services are part of a broader care coordination strategy. The care guides are trained to provide one-on-one counseling and patient navigation services to patients diagnosed with a chronic disease to help them meet their clinical goals. Allina told us that the Care Guide program increased the number of clinical goals that were met for participating patients and decreased inpatient care costs. An Allina official also commented that because Allina provides these services without receiving health insurance reimbursement and it does not operate a health insurance plan, it cannot recoup the savings that may result from care coordination, such as the reduced need for services for preventable events.

IDSs May Face Difficulties in Finding Specialty Care, Including Mental Health Care, for Underserved Patients

Some IDS officials said that finding specialty care, including mental health care, for their underserved patients has presented challenges. The challenges that IDSs may face in finding mental health care providers include recruiting and funding providers to practice in the system and identifying providers in the community to accept referrals of underserved patients. For example, an official from Marshfield Clinic, which serves a rural population, told us the system has difficulty recruiting mental health care providers for its patient population, including Medicare and Medicaid beneficiaries. As a result, the mental health care providers at Marshfield

²⁹There are some instances where funding is available for care coordination services, including Medicare demonstration projects and Medicaid waiver programs, but they are limited, and health systems generally do not receive payment for these services.

³⁰The Henry Ford Medical Home for Children program helps families of children who have chronic diseases, developmental disabilities, or physical disabilities through early identification, medical management, and health promotion.

Clinic have a large patient caseload and find it difficult to spend time collaborating with other types of providers to integrate care. Like Marshfield, Seton experiences difficulty recruiting psychiatrists to practice at one of its rural facilities. Seton officials also told us that while previously a psychiatrist worked in one of the system's urban primary care clinics, the clinic could not sustain the funding for the position. Clinic staff said they are able to consult with a psychiatrist only on a limited basis, and that there are many patients at the clinic who have serious mental illnesses but cannot access the care they need. In addition, Seton officials told us it is challenging to find psychiatrists in the community to accept referrals for the system's Medicaid and uninsured patients.

Officials from some IDSs also told us that, in certain circumstances, they face challenges when seeking other types of outside specialty care for their underserved patients. For example, Sisters of Mercy refers patients to practices outside its system for certain specialty care that is not available within its system. However, it sometimes encounters problems finding outside specialty providers to treat its uninsured patients. Seton has also experienced this challenge. To fulfill its mission to provide health care to underserved populations, Seton provides primary care services to uninsured patients through its community clinics. It also participates in a program through which it recruits specialists from the community who agree to see a certain number of uninsured patients, but it has experienced difficulty finding specialists to participate in this program and provide specialty care to Seton patients.

Sharing Information in EHRs with Outside Providers May Present Challenges to IDSs

Some IDS officials described challenges related to sharing the clinical information in patients' EHRs with providers outside of their systems.³¹ To improve availability of patient clinical information, some IDSs make their EHRs available to outside providers that also treat their patients. Of those IDSs, some reported that while the outside providers can read the EHRs, they cannot directly enter clinical information. For example, Geisinger makes its EHR available to outside providers to give them immediate access to patient medical records, but the providers are not able to enter any additional clinical information directly into the EHR.³² Geisinger can

³¹The use and disclosure of patient health information by and between providers are subject to a number of state and federal laws, including, for example, the privacy protections under the Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191, title II, 110 Stat. 1936.

³²About half of Geisinger Health Plan members receive some care from outside providers.

scan this information into the EHR if the outside provider communicates it, but scanning is not instantaneous, as direct entry would be. A Geisinger official noted that while scanning is not optimal, absent a common EHR where information can be directly entered, the scanned records can be a helpful supplement to a patient's EHR in many cases. Similarly, providers serving patients at the FQHCs that Henry Ford partners with can only view information in the EHR and cannot directly enter clinical information themselves. While the Geisinger and Henry Ford EHRs are available as read-only for outside providers, the Denver Health EHR cannot be viewed by mental health care providers outside of its system. A Denver Health official told us that, with the exception of enrollees in Denver Health's managed care plans, Denver Health's patients with severe and persistent mental illness receive their outpatient mental health care from a community mental health center in Denver that uses an EHR that is separate from Denver Health's EHR.³³ As a result, Denver Health providers, such as those working in the psychiatric emergency department, do not have immediate access to information about the care their patients received at the community mental health center, which can affect patient care. However, Denver Health providers do have access to an electronic database with the prescription history of patients who visit the community mental health center.

IDSs May Experience Challenges in Changing Management and Physician Culture and Implementing an EHR

Officials from some IDSs told us about challenges they faced as their systems have evolved, in particular, difficulty in changing management and physician cultures and in implementing an EHR. For example, as Allina centralized its supervision of clinical care, it redefined the role of its clinical directors, who used to manage groups of clinical services at individual facilities. When the system transferred supervision of the clinical services from the individual facilities to the central system, the facility clinical directors were concerned that they would no longer have a role in clinical management and would be responsible for administrative functions only. The operational challenge was different at Intermountain, where implementing care protocols required a change in the physician culture because of the generally independent nature of physicians and their concern that Intermountain was trying to "tell them what to do." The system has been making efforts to motivate physicians to use

³³Denver Health's managed care plans include Medicare Advantage plans, a children's health insurance plan, and health maintenance organization plans for employees of Denver Health and the City and County of Denver.

Intermountain's voluntary care protocols for about 10 years. To do so, Intermountain uses physician-level data to show how individual physicians are performing relative to their colleagues. Intermountain has more buy-in from physicians now than in the past, but officials there said changing the culture continues to be a challenge.

Some IDS officials said that implementing an EHR system is financially and operationally challenging. For example, NYCHHC currently has eight separate EHRs that were developed and customized at the subsystem level, and it has been financially and operationally challenging to consolidate them into an interoperable system.³⁴ Because the EHRs were developed at the subsystem level, clinical data can be shared within each subsystem, but NYCHHC does not yet have a system that can seamlessly transfer clinical data across the entire system. According to senior NYCHHC officials, consolidating the regional EHRs, as NYCHHC is currently doing for its electronic blood bank registry, is part of the system's strategic plan. Henry Ford has also encountered challenges in implementing its EHR system. Because of cost and connectivity issues, its school-based health centers do not currently have access to the system's EHRs. A Henry Ford official said that the school-based health centers have competing priorities for funds provided by Henry Ford, including staffing needs, and that Henry Ford has not been able to pay for the implementation of the EHR at the school-based health centers but plans to do so eventually.

We are sending a copy of this report to the Secretary of Health and Human Services and the Administrator of the Health Resources and Services Administration. The report also is available at no charge on GAO's Web site at <http://www.gao.gov>.

³⁴Interoperability is the ability of two or more systems or components to exchange information and to use the information that has been exchanged.

If you or your staff have any questions regarding this report, please contact me at (202) 512-7114 or bascettac@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix II.



Cynthia Bascetta
Director, Health Care

Appendix I: Selected Characteristics of Integrated Delivery Systems in GAO Sample

IDS ^a	Public/ private	Census region	Payer mix ^b (percentage of patient population)					Includes FQHCs ^c	Includes rural facilities ^d
			Uninsured	Medicaid	Medicare	Private	Other		
1 Allina Hospitals & Clinics	Private	Midwest	2	11	36	49	2	✓	
2 Seton Family of Hospitals (Ascension Health)	Private	South	22	18	21	32	7	✓	
3 Cambridge Health Alliance	Public	Northeast	22	30	16	31	1		
4 Denver Health	Public	West	47	30	6	17	0	✓	
5 Geisinger Health System	Private	Northeast	2	12	39	44	3	✓	
6 Hennepin Healthcare System	Public	Midwest	19	47	17	16	1		
7 Henry Ford Detroit Region (Henry Ford Health System)	Private	Midwest	4	16	35	44	1		
8 Intermountain Healthcare	Private	West	9	11	23	51	6	✓	
9 Marshfield Clinic	Private	Midwest	3	11	38	45	3	✓	
10 Mayo Clinic – Rochester Region (Mayo Clinic)	Private	Midwest	6	7	33	52	2		
11 Memorial Healthcare System	Public	South	15	15	30	35	5		
12 Queens Health Network (New York City Health and Hospitals Corporation)	Public	Northeast	28	50	12	9	1		
13 Parkland Health & Hospital System	Public	South	34	33	15	9	10	✓	
14 Partners Healthcare	Private	Northeast	5	15	35	40	5		
15 St. Edward Mercy Health System (Sisters of Mercy Health System)	Private	South	9	10	49	30	2	✓	

Source: GAO analysis of publicly available information and IDS responses to Web-based data collection instrument, in the field from December 8, 2009, through January 6, 2010.

**Appendix I: Selected Characteristics of
Integrated Delivery Systems in GAO Sample**

^aSome IDSs are organized into multiple subsystems—local or regional delivery systems that are organized below the system level—that integrate clinical care within themselves. For IDSs organized at the subsystem level, this table identifies the subsystem we studied for this report and gives the system name in parentheses.

^bIDSs were asked to report payer mix data—specifically, for calendar year 2007, the percentage of patients who were uninsured; were covered by Medicaid, Medicare, or private insurance; or had other forms of coverage. Other forms of coverage may include Workers Compensation, Civilian Health and Medical Program of the Uniformed Services (CHAMPUS), Civilian Health and Medical Program of the Department of Veterans Affairs (CHAMPVA), and other government programs.

^cIDSs were asked to report whether any of their facilities were FQHCs. A check mark indicates that the IDS (or subsystem, when applicable) had at least one facility that was designated an FQHC.

^dWe used facility addresses provided by the IDSs to determine rural status using codes 4 through 10 of the Rural-Urban Commuting Area (RUCA) codes, developed by the Health Resources and Services Administration, the U.S. Department of Agriculture, and the University of Washington. Census tracts with RUCA codes 4 through 10 are considered rural for the purposes of Rural Health grants by the Health Resources and Services Administration's Office of Rural Health Policy. A check mark indicates that the IDS has at least one rural facility.

Appendix II: GAO Contact and Staff Acknowledgments

GAO Contact

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In addition to the contact named above, Helene F. Toiv, Assistant Director; Anne Dievler; Joanne Jee; Martha R.W. Kelly; Mariel Lifshitz; Kate Nast; Roseanne Price; Janet L. Sparks; Margaret J. Weber; and Jennifer Whitworth made key contributions to this report.

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