



An Assessment of the California Health Information Technology Landscape in 2022: Summary of Key Findings

Over the past 12 years, California has collaborated with the federal government to help support the state's Medicaid providers in adopting and using electronic health record systems (EHRs). Under the terms of this arrangement, the state was required to periodically prepare and deliver a State Medicaid Health Information Technology (IT) Plan. An important component of this plan is a Health IT Landscape Assessment, which describes the current health IT environment in California. The assessment is intended to report the current state of health IT adoption and use among a wide variety of stakeholders, past trends in the adoption and use of health IT during the period of federal support, and remaining challenges in achieving full adoption and optimal use of health IT in the future. The latest version of the California Health IT Landscape Assessment was completed in early 2022 by researchers from the Clinical Informatics Improvement and Research group at the University of California San Francisco, along with staff at the California Department of Health Care Services (DHCS).¹ This brief summarizes a number of key findings from the assessment.

To prepare the assessment, the researchers collected data from primary and secondary resources including nationwide surveys of hospitals, office-based physicians, family practitioners, skilled nursing facilities, substance use disorder treatment facilities, and health information exchange organizations (HIOs). These surveys were conducted over the past 8 to 10 years. The researchers also analyzed data from DHCS regarding participation in the state's Electronic Health Record Incentive program (recently renamed the Promoting

Interoperability Program), as well as results from a state-funded initiative to increase hospital and physician participation in California HIOs. Although the survey data and DHCS data generally provide meaningful sample sizes, many of the data points extend only through 2018 or 2019 and, therefore, provide a slightly lagged snapshot of the current landscape. Finally, in 2021 and 2022, the researchers interviewed over two dozen health IT leaders and stakeholders in California to collect expert, albeit anecdotal, information about key aspects of the current health IT landscape.

The Medi-Cal EHR Incentive Program drew to a close at the end of 2021. However, the state has ambitious plans to leverage the increased adoption and use of health IT that the program spurred to improve the effectiveness and efficiency of Medi-Cal. Specifically, the CalAIM (California Advancing and Innovating Medi-Cal) program intends to modernize the delivery of health care and other social benefits by integrating the provision and management of numerous state-run programs.² This initiative relies on the streamlined electronic sharing of enrollees' medical, behavioral, and social service data, a task heavily dependent on effective and widespread health IT. To facilitate such sharing, the state has also launched the California Health and Human Services Data Exchange Framework.³ This initiative will establish a single data sharing agreement and common set of policies and procedures to govern and require the exchange of health information among health care entities and government agencies in California. The current health IT landscape, as objectively characterized in the recent

landscape assessment, helps to inform the planning and execution of these important modernization projects.

Assessment Key Findings

The remainder of this brief highlights and summarizes several key findings of the California Health IT Landscape Assessment and their potential implications for programs such as CalAIM. Many details and additional important findings are omitted from this brief, however, so interested readers are encouraged to review the full assessment.

HITECH Act funding and the “meaningful use” programs significantly helped medical providers to adopt EHRs and gain the capabilities to exchange patient data electronically.

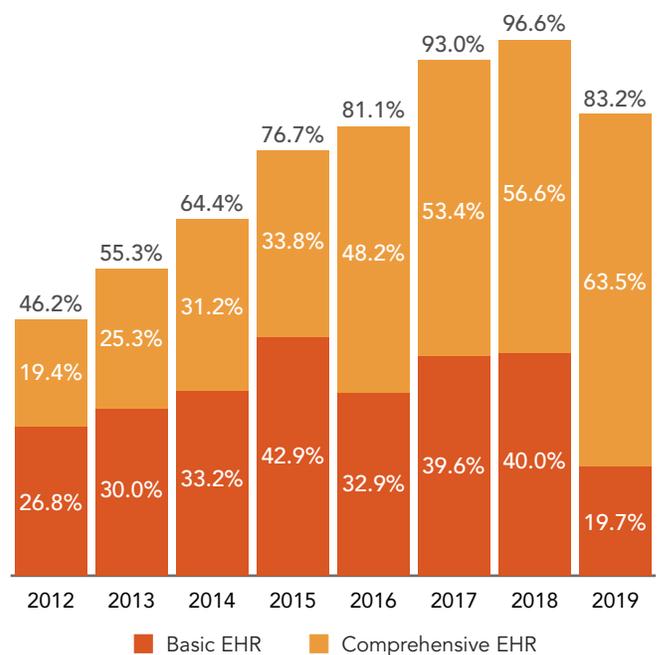
The HITECH (Health Information Technology for Economic and Clinical Health) Act of 2009 was legislation created to stimulate the adoption of EHRs across the US. It included a “meaningful use” program, which offered incentives for Medicare and Medicaid providers (inpatient and outpatient) who could demonstrate that they had an EHR and could meet certain use requirements. Available data starkly demonstrate that the levels of EHR adoption among hospitals and outpatient physicians in California steadily and substantially increased due to the Medicare and Medicaid meaningful use programs, which provided incentives for, funded, and technically supported eligible health care provider organizations to procure and use clinical information technology.

EHR Adoption by Hospitals

According to longitudinal surveys conducted by the American Hospital Association (AHA), the proportion of California hospitals that had adopted at least a *basic EHR*⁴ climbed to 96% by 2018 (see Figure 1). Today, it is likely that virtually all California hospitals use some type of EHR, double the rate of EHR adoption in 2012 (the modest decline in EHR adoption in 2019 was probably a technical artifact owing to changes that year to the wording of survey questions regarding EHR adoption). Figure 1 shows that the subset of California hospitals that had adopted a *comprehensive EHR* also rose steadily during the 2010s, with nearly two-thirds of California hospitals using such an EHR by 2019.

Although the AHA survey data indicated somewhat different EHR adoption rates between small and large hospitals and between urban and rural hospitals, these variations were minor relative to the degree that all types of hospitals increased their use of EHRs (for example, small hospitals achieved a 90% adoption rate by 2018, whereas large and medium-sized hospitals achieved a 100% adoption rate).

Figure 1. California Hospitals Adopting an EHR, 2012–19

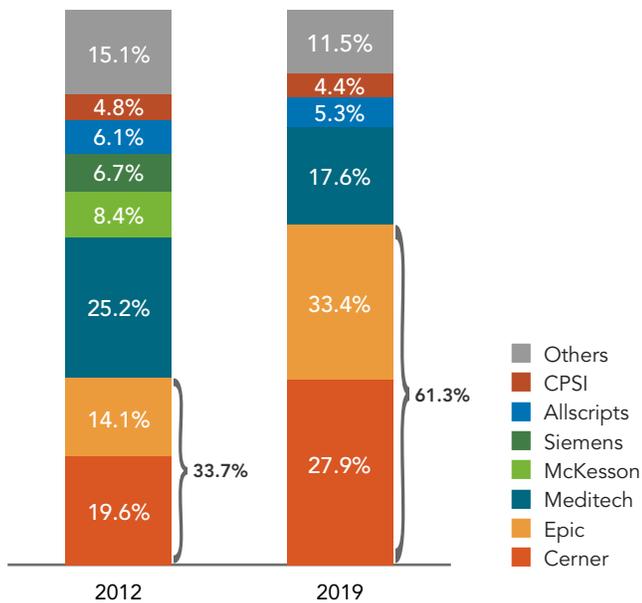


Source: Julia Adler-Milstein et al., *California Health IT Landscape Assessment: Final Report* — February 2022, California Dept. of Health Care Services.

Consolidation in the Hospital EHR Market

During this time period, two vendors came to increasingly dominate the hospital EHR market in California: Cerner and Epic. The AHA survey indicated that the combined market share of these two vendors increased from 34% to 61% between 2012 and 2019 (see Figure 2), with the share gained by Epic and Cerner ceded primarily by Meditech, McKesson, and Siemens (although the latter was acquired by Cerner in 2015).

Figure 2. EHR Vendor Market Share Among California Hospitals, 2012 vs. 2019



Source: Julia Adler-Milstein et al., *California Health IT Landscape Assessment: Final Report* — February 2022, California Dept. of Health Care Services.

Within segments of the California EHR market, Cerner dominated among small hospitals in 2019, and Epic, to a lesser degree, led among large hospitals. In urban areas, Epic and Cerner were used by roughly the same proportions of hospitals, although in rural settings, Cerner was favored by a factor of almost six to one.

EHR Adoption by Outpatient Physicians

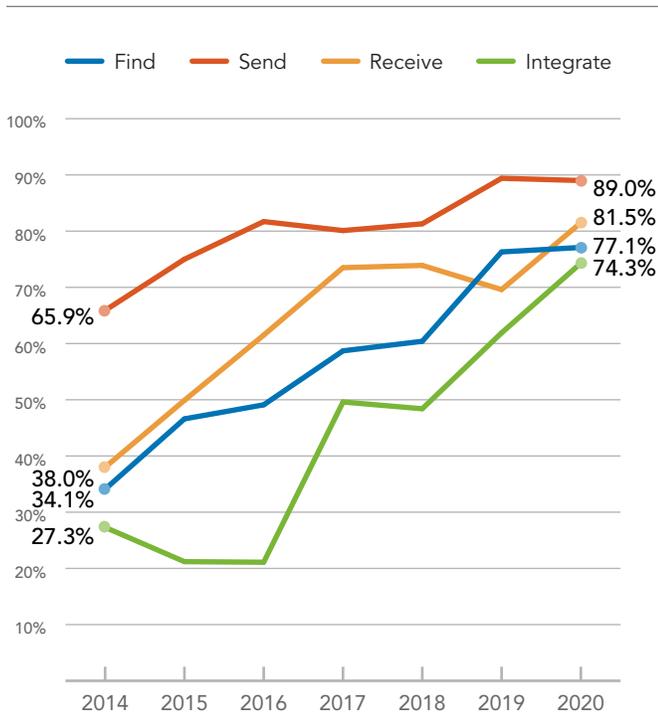
Based on surveys of office-based physicians in California, 79% of respondents adopted some type of EHR system by 2017 (the most recently available data), with 73% having adopted a system certified to include the comprehensive features required by the federal meaningful use program.⁵ However, primary care physicians (PCPs) appeared to have adopted EHRs at a somewhat higher rate than their specialist colleagues, with 84% of PCPs reporting use of a certified EHR by 2015 versus 71% of specialists. Interestingly, the survey data indicated that PCPs' adoption of EHRs, both certified and uncertified, did not increase between 2013 and 2017, a time during which hospitals' adoption of EHRs in California roughly doubled (see Figure 1).

More recent survey data, however, suggest that the adoption of EHRs among primary care physicians continued to rise. In 2019–20, 97% of family medicine physicians surveyed at the time they took their board exams reported that they used an EHR in practice. The very high adoption rate within this cohort, which likely skewed toward younger physicians, suggests that EHR use in outpatient care may continue to increase with a new generation of “digital native” doctors.

Data Exchange by Hospitals

The AHA longitudinal survey of hospitals also solicited information about respondents' electronic data exchange — that is, whether or not the hospitals in California engage in the four primary domains of electronic data exchange: finding, sending, receiving, and integrating patient data with outside systems. The results of this survey (see Figure 3) indicate that engagement in all four domains increased steadily between 2014 and 2020, with 89% of hospitals sending patient data electronically by 2020, and 74% of hospitals integrating data sent by others into their own systems (the latter rate having increased substantially from just 27% in 2014).

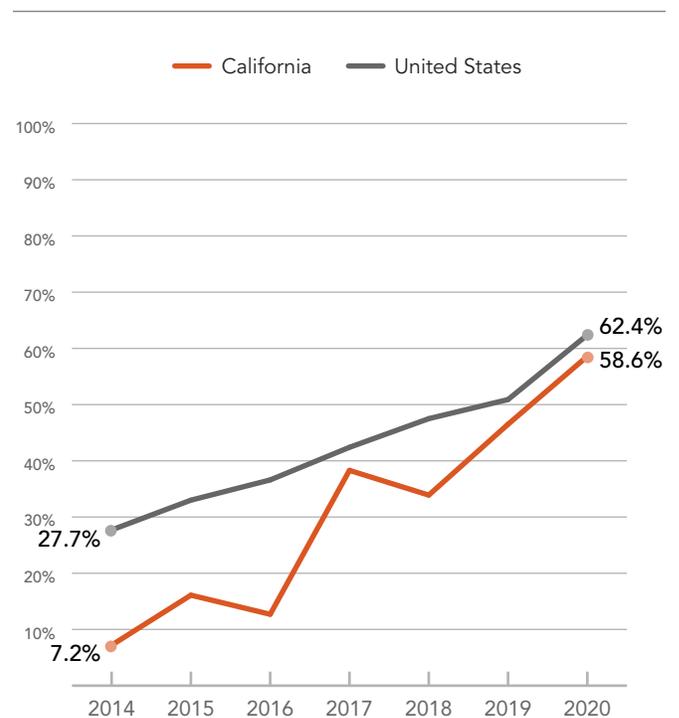
Figure 3. California Hospitals Engaging in Each Domain of Health Information Exchange, 2014–20



Source: Julia Adler-Milstein et al., *California Health IT Landscape Assessment: Final Report* — February 2022, California Dept. of Health Care Services.

Most dramatically, the proportion of California hospitals engaging in all four domains of interoperability increased eightfold, from 7% to 59%, over the same period, enabling the state to close a substantial gap with the rest of the nation (see Figure 4). The meaningful use program's financial incentives for Medicare and Medicaid providers to demonstrate engagement in interoperability, along with EHR-certification criteria that required health IT vendors to support interoperability, clearly galvanized California hospitals to begin engaging in all facets of data exchange.

Figure 4. California Hospitals Engaging in All Four Domains of Health Information Exchange, 2014–20



Source: Julia Adler-Milstein et al., *California Health IT Landscape Assessment: Final Report* — February 2022, California Dept. of Health Care Services.

Data Exchange by Outpatient Physicians

The health IT (HIT) landscape assessment does not indicate the degree of engagement in health information exchange (HIE) by California outpatient providers, owing to a paucity of available data on this topic. The available data showed only that 80% of outpatient physicians participating in the California Medicaid meaningful use program opted out of reporting the frequency with which they exchanged health information, an option available to physicians who did not participate in a sufficient number of care transitions involving Medicaid patients.

Although most hospitals and other eligible entities can send patient data electronically, the degree of data sharing and the value of data received can be improved.

The technical capabilities of EHRs to find, send, retrieve, and integrate data and the meaningful use incentives for provider organizations to engage in these activities have not necessarily resulted in the routine electronic sharing of patient data. For example, the 190 hospitals reporting to the California Medicaid meaningful use program in 2018 indicated that they sent an electronic summary-of-care record for only 33% of the patients they discharged (on average). This modest rate prevailed although 89% of California hospitals responding to the AHA survey the same year indicated that they engaged in sending electronic health data at least some of the time. Further, the 33% rate of sending electronic summary-of-care documents remained unchanged over the 2015–18 period. It's possible, therefore, that the meaningful use incentives prompt only minimal rather than universal patient data sharing. As one interview subject stated:

"I don't think HITECH did a very good job of actually putting [data sharing requirements] in place and making it a requirement that you not only have a system, but you exchange [data]."

As another example, hospitals reporting to the California Medicaid meaningful use program in 2018 indicated that they made clinical data available electronically for 90% of their patients. However, these hospitals also reported that only 10% of their patients actually accessed these data.

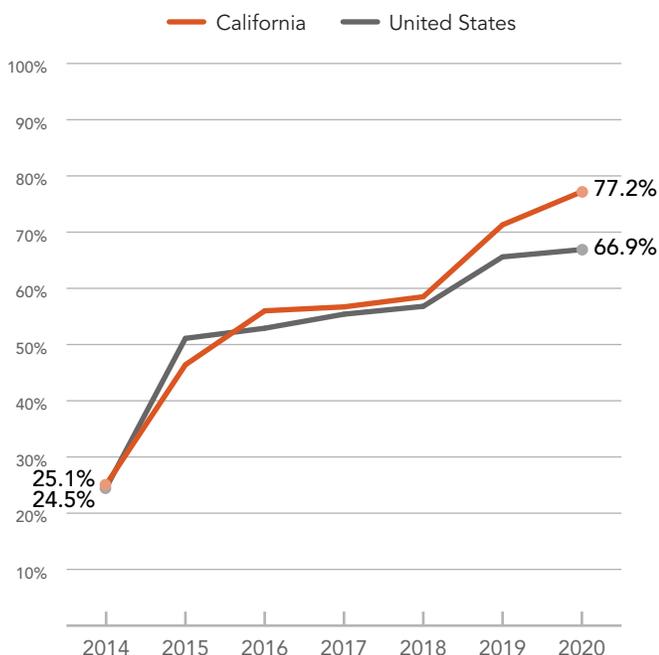
Finally, health IT stakeholders interviewed for the landscape assessment anecdotally related that, even when data are shared electronically, they are often too voluminous or not sufficiently structured to meet the practical needs of recipients:

"We heard over and over again that while there was data exchange happening as a result of HITECH, it was not meaningful data exchange. It was a lot of big data dumps, not sortable, not ingestible, and not usable, and with no obligation to actually exchange data, just meet the letter of the law."

Participation by health care providers in regional and local HIE organizations has grown substantially, but many HIOs face financial sustainability issues and other barriers.

Among the ways that health care providers in California exchange clinical data are through regional and local HIE organizations (HIOs), so it is important to understand how these entities are faring. California currently has 12 such HIOs serving various parts of the state. Hospital participation in these organizations increased substantially between 2012 and 2019, per data from the AHA longitudinal hospital survey (see Figure 5). By 2019, 78% of California hospitals reported participating in an HIO, increasing from 25% in 2012 and surpassing the national average of 67%. Large and medium-sized hospitals in California participated in HIOs at a somewhat higher rate (both approximately 80%) than small hospitals (68%). However, urban and rural hospitals participated in HIOs at equal rates by 2019 (both about 78%) after urban hospitals gradually closed a 27 percentage point deficit that existed in 2012.

Figure 5. California Hospitals Participating in a Health Information Exchange Organization, 2012–19



Source: Julia Adler-Milstein et al., *California Health IT Landscape Assessment: Final Report* — February 2022, California Dept. of Health Care Services.

The Cal-HOP Program

Today, the proportion of California hospitals that participate in HIOs is likely even higher than in 2019 owing to the efforts of the recent Cal-HOP (California HIE Onboarding Program) initiative. Cal-HOP was a federally funded, state-managed program to subsidize the costs for health care organizations to join HIOs, including the costs for legal contracting, technical data integration, and EHR vendor services. Using Cal-HOP funds, 63 hospitals joined a California HIO between 2019 and 2021 or expanded their existing data sharing relationships with an HIO. Cal-HOP funding also assisted 330 outpatient practices to create or extend data sharing arrangements with HIOs, help that was particularly useful for providers working with underserved populations. As one HIO interviewee stated:

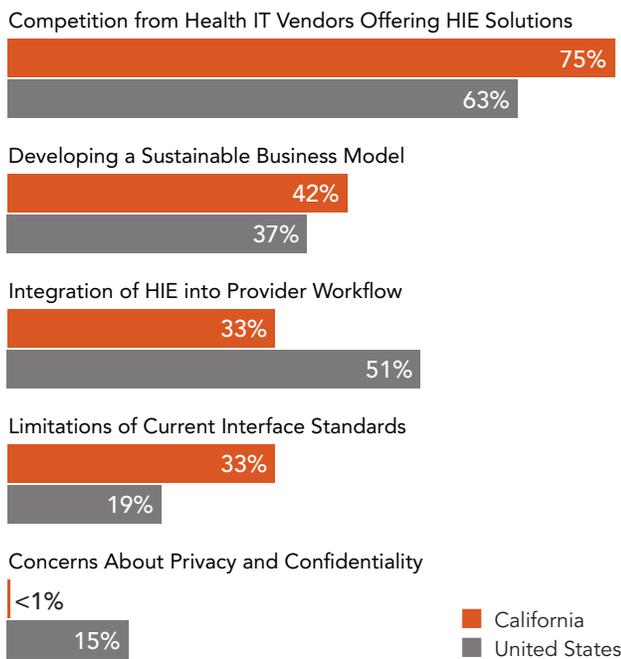
"[Cal-HOP] allowed us to onboard small provider practices in our region that participate in Medi-Cal."

Although the Cal-HOP program provided substantial benefits, it was not without its challenges and limitations. As reported by participating stakeholders, the delayed availability of the funding at the outset combined with a federally imposed deadline to end the program in 2021 resulted in a shortened implementation timeline for HIOs and provider organizations. The end result was an inability to onboard as many new hospitals and ambulatory practices as could have otherwise participated.

Barriers to HIOs' Further Growth and Development

Despite greater numbers of hospitals and other provider organizations participating in California HIOs, a survey of these HIOs in 2019 uncovered persistent barriers to achieving long-term growth and sustainability (see Figure 6). Foremost among these barriers (cited by 75% of respondents) was competition from health IT vendors offering HIE solutions already integrated with providers' EHRs, such as Carequality or Epic Care Everywhere. HIO survey respondents also mentioned the challenges of developing sustainable business models (42%) and integrating their separately hosted services into provider workflows (33%). Interestingly, none of the California HIOs cited concerns about privacy and confidentiality as a barrier to ongoing development, although such concerns were a challenge mentioned by 15% of the HIOs responding to the same survey nationwide.

Figure 6. Self-Reported Barriers to Further Growth and Development Among California HIOs, 2019



Source: Julia Adler-Milstein et al., *California Health IT Landscape Assessment: Final Report* — February 2022, California Dept. of Health Care Services.

Finally, during interviews in early 2022, the leaders of several California HIOs mentioned the need for further financial and policy support from the state government (beyond the recently concluded Cal-HOP program) to achieve greater provider participation and long-term sustainability. The following quotes from two of these leaders are emblematic of these sentiments:

“My hope for [the] future is that we have a combination of data sharing mandates through AB 133. I very much hope we have a set of data sharing incentives — that doesn’t exist yet in policy — but I’m hoping we can get there. And then a variety of other policy nudges that get the providers to the table so the HIEs aren’t bearing the brunt of all of that work.”

“Whatever comes out, in terms of federal or state initiatives around HIE, has to involve both provider incentives and also earmarking funding to support the HIEs — the basic, general operation of the HIE. Implementation and onboarding resources like Cal-HOP [are] great and they definitely help, no question, but I think we can’t overlook the need of the operational expenses . . . to keep it all going.”

The electronic exchange of public health data has improved, but provider organizations cite remaining barriers to effective electronic reporting and exchange that will need to be addressed by public health agencies.

Health IT stakeholders interviewed in early 2022 anecdotally stated that the meaningful use requirements of HITECH had accelerated the electronic reporting of public health data on the part of providers and provider organizations to a current level of “probably 90%.” However, based on data from the AHA surveys in 2017–19, California hospitals also experienced a number of barriers and challenges to exchanging data with public health agencies.

Foremost, about 45% of the responding hospitals indicated that public health agencies lacked the capacity to electronically receive immunization data, lab results, surveillance data, case reports, and other information typically collected for public health purposes. In 2019, rural hospitals reported this challenge somewhat more than urban hospitals (52% vs. 44%), suggesting that public health agencies in rural areas may have fewer resources to support electronic data reporting. Further, roughly one-third of California hospitals reported that interface-related issues (e.g., costs and complexity) made it difficult to send information electronically to public health agencies (presumably, even when public health agencies had the capacity to receive it). Again, rural hospitals reported this challenge in 2019 more than urban (42% vs. 29%), suggesting that the IT resources needed to build and maintain such interfaces may be less available to rural facilities, on average.

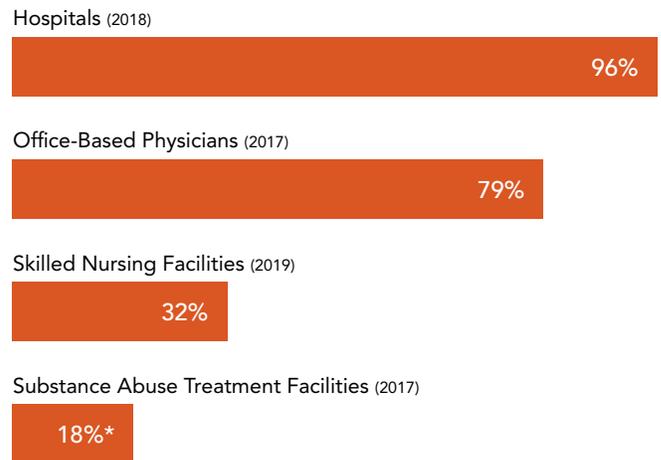
Finally, although electronic reporting of data to public health agencies has improved over the past decade, health IT stakeholders interviewed recently expressed that current public health reporting systems, such as CalREDIE and CURES, require substantial updates and standardization to meet future expanded reporting requirements and data exchange, such as those articulated by AB 133.⁶

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The HITECH funding and meaningful use programs did little to increase EHR adoption and electronic data exchange for skilled nursing facilities, substance use disorder facilities, and nonmedical social service agencies. This leaves a notable gap in achieving the objectives of the CalAIM program, which the state may need to address.

The Medicare and Medicaid meaningful use programs and ancillary funding vehicles significantly increased EHR adoption and HIE capabilities among “eligible” providers in California — hospitals, physicians, some professionals, and certain other clinicians. However, other types of facilities and professionals involved in maintaining and restoring the health of Californians were not eligible for the incentive funding and technical assistance provided by HITECH. Further, the health IT systems typically used by these types of organizations were not required to implement any particular exchange capabilities or standards, unlike the EHRs that were certified for use by eligible hospitals and eligible professionals under the HITECH meaningful use programs. At least partially owing to these limitations of the HITECH programs, the data collected for the HIT Landscape Assessment indicate that “noneligible” organizations, including skilled nursing facilities (SNFs), substance use disorder treatment facilities, and nonmedical public welfare agencies, now lag behind eligible provider organizations in their adoption of EHRs and in their electronic sharing of patient information. Figure 7 illustrates the differential in EHR adoption rates among health care settings, based on available data.

Figure 7. EHR Adoption Rates in California, by Health Care Facility Type



*Percentage that use exclusively electronic means to store and maintain health records only, not full EHR adoption.

Source: Julia Adler-Milstein et al., *California Health IT Landscape Assessment: Final Report* — February 2022, California Dept. of Health Care Services.

EHR Use at Skilled Nursing Facilities

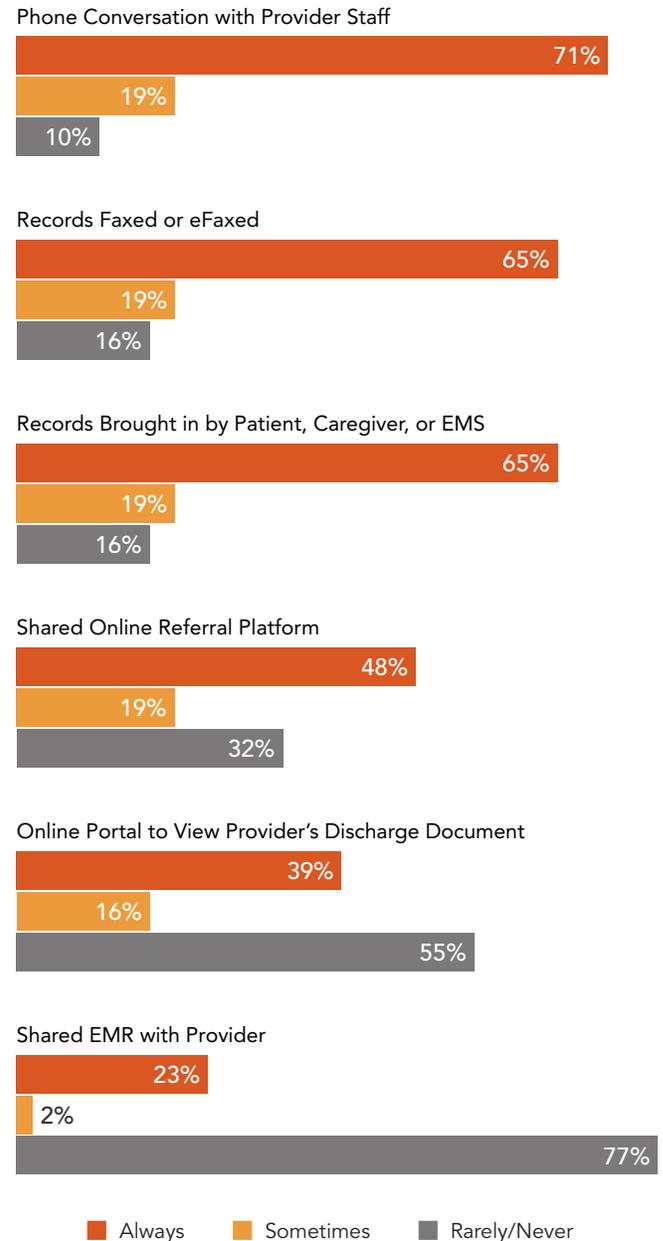
Although no definitive data exist on the adoption of EHRs among SNFs in California, only 32% of the SNFs responding to a 2019 survey reported that their “physician documentation” was stored within the SNF’s EHR (as opposed to within attending physicians’ office-based EHRs or within the EHRs of affiliated hospitals). At the same time, 22% to 56% of the SNF survey respondents indicated that they perform various information management functions using “fully electronic” methods, including documenting clinical notes (39%), viewing lab results (28%), entering medication orders (56%), and receiving decision support for medications (33%). However, many of these functions may be provided by electronic systems that support only those single capabilities or a handful of capabilities, rather than fully functional EHRs. More recently (and anecdotally), a leader of the California Association of Health Facilities, an industry trade group for SNFs, estimated in a late-2021 interview that “over half [of the association members] probably have a solid EHR, others have bits and pieces.”

Data Exchange by Skilled Nursing Facilities

When patients are admitted to SNFs, their clinical data are seldom made available via electronic documents and messages sent from the discharging facility. Among the California SNFs that reported having an EHR in the 2019 survey, less than 30% indicated that they have interoperability with their local hospital EHR(s) (which is, nevertheless, better than the national average of 16%).

In fact, a majority of the SNFs responded that they still use nonelectronic methods “always or often” to receive information about incoming patients, including phone conversations with the discharging hospital (71% of respondents), faxes sent by the discharging hospital (65% of respondents), and records physically brought in by the patient or a caregiver (65% of respondents) (see Figure 8). Although 40% to 50% of the respondents did indicate that they always or often use an “online referral platform” or “online portal” to access data for incoming patients (an improvement over nonelectronic means), this method may not provide the capability to import patients’ discharge medications, discharge diagnoses, and recent lab values into the SNFs’ own information systems in a structured and coded form.

Figure 8. Methods Used by California SNFs to Receive Patient Information from Discharging Providers, by Frequency, 2019



Source: Julia Adler-Milstein et al., *California Health IT Landscape Assessment: Final Report* — February 2022, California Dept. of Health Care Services.

EHR Use at Substance Use Disorder Treatment Facilities

The most recent survey of health IT use at substance use disorder treatment (SUDT) facilities was in 2017, and it did not directly ascertain the proportion of facilities that use EHRs. However, the survey respondents did indicate which information management tasks were performed at their facilities using methods that were “exclusively electronic,” “electronic in combination with paper methods,” or “exclusively paper-based.” Only 18% of these respondents indicated that they used “exclusively electronic” methods to store and maintain health records, which may be a suitable proxy for the proportion of SUDT facilities that use EHRs. A higher percentage of respondents reported that their facilities used exclusively electronic methods for various individual information management tasks, such as assessments (29%), progress monitoring (35%), and treatment plans (36%). However, given the partly or fully paper-based methods used to store and maintain health records at the same facilities, these methods for individual tasks likely entail limited-purpose tools rather than fully functional EHRs.

Data Exchange by Substance Use Disorder Facilities

Although quantitative data were not available regarding SUDT facilities’ use of electronic methods to exchange patient data, representatives of the facilities’ trade association did express anecdotally a general frustration in the “lack of willingness from primary care, Medicaid managed plans, and HIEs to engage in data sharing with behavioral health systems.”

Data Exchange by Other Facilities

Frustration regarding electronic data sharing was also reported in recent interviews by representatives of other facilities not eligible for HITECH funding. The comments of these stakeholders were consistent with the quantitative survey findings for SNFs and SUDT facilities. A representative of county mental health service providers shared:

“There’s a lot of management that we do [for patients with mental illness]. So the lack of willingness for primary care or Medicaid managed care plans to share data with us is really challenging.”

A representative of public welfare agencies stated:

“There is room to try to make sure our systems can better match things up to assess how we are doing in terms of things like, are kids in foster care being seen by health providers? Are they getting preventative care? Are they getting mental health assessments? Are they getting treatment as they need? The existing data systems don’t make it easy to answer that question.”

The state’s CalAIM initiative has established ambitious goals for the sharing of health, social services, housing, and criminal justice information, records, and other data with the state, Medi-Cal managed care plans, health care providers, social services organizations, care coordination, and case management teams. As such, the state will need to address the remaining gaps in EHR adoption and electronic data sharing among SNFs, behavioral health facilities, social service agencies, and other noneligible entities that did not benefit from the HITECH and meaningful use programs over the preceding decade.

Further policy measures and changes to regulations are required to facilitate and promote the electronic data exchange needed for state initiatives such as CalAIM.

Beyond potential funding for adopting EHRs and for implementing the technical mechanisms to share data electronically, stakeholders interviewed for the Health IT Landscape Assessment also supported additional state policies they felt are needed to achieve the data sharing goals of the CalAIM initiative. These policies include regulatory requirements, financial incentives, or both for provider organizations to consistently share data during transitions of care. These measures are required to overcome remaining inertia in data sharing, such as that characterized by one stakeholder from a SNF:

“Hospitals only care if you take their patients. If you don’t get all the information, they’re not super worried about it . . . it’s very frustrating when you have patients that are struggling, and there’s information we know we should have [but don’t].”

Further, regulatory “safe harbors” may be needed for required data sharing. For example, nonmedical social service organizations reported barriers to useful data sharing arising from state and federal confidentiality laws, including the HIPAA (Health Insurance Portability and Accountability Act) prohibition on medical providers sharing patient data with noncovered entities. If possible, state-level action (or state-level guidance of federal action) may be required to relax prohibitive privacy constraints while preserving privacy.

In addition to policies and incentives, technical assistance was responsible for much of the success in adoption, particularly in settings that lacked financial and technical resources. The value of technical assistance will also be applicable when considering CalAIM’s ambitious goals. As one stakeholder wrote:

“It was not only the dollars that were associated with HITECH, but it was the technical assistance that came with HITECH that was really the dual edge there. That you not only provided the funding source for the IT system investments, but provided ongoing technical assistance is really critical and crucial, particularly for smaller entities — that was probably a crucial part of the equation.”

Finally, the state may need to designate specific existing interoperability standards, or even extend existing standards to accommodate new use cases, to support the objectives of the California Data Exchange Framework as a vehicle to facilitate the CalAIM program. As one stakeholder summarized:

“With the Data Exchange Framework, I think it’s great that we’re getting more specific into how we think about the standards and particularly federal standards, and also getting clarity on what is and not allowable for exchange.”

Conclusion

Data from the past 10 years show a progressive and substantial rise in health IT use and health care data exchange among hospitals and physicians in California, largely owing to federal and state incentive funding. The electronic exchange of data between health care provider organizations and public health agencies also increased during this time. However, significant work remains to achieve the same levels of health IT use and data exchange among other organizations that did not receive HITECH incentive funding, including skilled nursing facilities, behavioral health providers, and nonmedical social service agencies. Work also remains to further expand the frequency and value of electronic data sharing among provider organizations, as well as to further modernize statewide information systems for the collection and sharing of public health data. This ongoing work will be critical to achieving the goals of the CalAIM program and other planned improvements to California’s health care delivery system.

About the Author

Walter Sujansky, MD, PhD, is the principal consultant at **Sujansky & Associates**, a California-based consulting firm that specializes in the analysis and design of EHRs, disease registries, and solutions for health information exchange. Dr. Sujansky is also an adjunct professor at the Center for Biomedical Informatics Research at the Stanford School of Medicine, and an expert health IT consultant for litigation involving intellectual property and medical malpractice.

About the Foundation

The **California Health Care Foundation** is dedicated to advancing meaningful, measurable improvements in the way the health care delivery system provides care to the people of California, particularly those with low incomes and those whose needs are not well served by the status quo. We work to ensure that people have access to the care they need, when they need it, at a price they can afford.

CHCF informs policymakers and industry leaders, invests in ideas and innovations, and connects with changemakers to create a more responsive, patient-centered health care system.

Endnotes

1. Julia Adler-Milstein et al., *California Health IT Landscape Assessment: Final Report — February 2022*, California Dept. of Health Care Services (DHCS).
2. “CalAIM,” DHCS.
3. “Data Exchange Framework,” California Health and Human Services Agency.
4. The AHA survey asked a number of specific questions about each hospital’s clinical information technology. Responses to the questions determined whether the hospital’s EHR had “basic” or “comprehensive” capabilities as defined by Jha et al. (see Ashish K. Jha et al., “Use of Electronic Health Records in US Hospitals,” *New England Journal of Medicine* 360, no. 16 (Apr. 16, 2009): 1628–38).
5. See “Promoting Interoperability Programs,” Centers for Medicare & Medicaid Services, last modified May 16, 2022.
6. See *Health Omnibus Trailer Bill — AB 133* (PDF), County Health Executives Association of California.