California State Medi-Cal Health Information Technology Plan

October 2018

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1 CALIFORNIA'S HEALTH INFORMATION TECHNOLOGY LANDSCAPE

California not only boasts the largest population of the 50 states in the union – approximately 39 million residents – it is also the third largest state geographically. Though 80% of California is rural, 87% of the population lives in urban areas. Health care services are delivered to Californians through more than 430 acute hospitals and over 143,000 active physicians.

California's large and diverse health care delivery system is characterized by provider organizations of varying sizes, ranging from very large to solo practices. Outpatient providers in a community may be tightly integrated via integrated delivery networks (IDNs), loosely affiliated such as independent practice associations (IPAs), or entirely independent. Hospitals may be part of regional, statewide, or multi-state chains, or they may be independent local facilities. Several large health systems such as Kaiser Permanente, Adventist, Dignity Health, Sutter Health, and Tenet provide services in multiple regions and many operate in more than one state.

Hospitals and community outpatient physicians may be tightly integrated into combined business entities or they may be related only by virtue of physician admitting privileges. Provider organizations that are part of larger commercial entities may be well capitalized and capable of sophisticated infrastructure projects, whereas independent provider organizations and organizations treating underserved populations may be undercapitalized, thus less able to develop and support complex infrastructures.

California has a robust safety net infrastructure comprised of approximately 1,200 community clinic and health center sites. Of those, 735 are Federally Qualified Health Centers (FQHCs) and 377 are FQHC look-alikes. The remaining are free-standing community clinics that, like FQHCs and FQHC look-alikes, are nonprofits that offer care on a sliding fee scale. These clinics and health center corporations range in size from single-site entities to multi-site organizations that span multiple counties and geographic areas. Community clinics and health centers serve more than 5.9 million patients annually through over 18.2 million encounters. Many of these clinics and health centers have sophisticated health information technology systems. This is due to the infrastructure of regional clinic associations, many of which provide technical support to the clinics through the Health Center Controlled Network grants from the Health Resources and Services Administration (HRSA) and funding from the electronic health record (EHR) incentive programs.

Health care in California is funded through a mosaic of payment mechanisms. National, statewide, and regional commercial insurers operate in California. The state and local governments finance care for the underserved through a variety of mechanisms including California's Medicaid program (Medi-Cal), both fee-for-service (FFS) and managed care plans (MCP), and the county medical service programs, with a separate mechanism for managing the state's large prisoner health system. To add to this complexity, Medi-Cal carves out its behavioral health management to county medical service programs in all counties. In January 2013, Assembly Bill (AB) 1494 provided for the transition of 751,293 children[1] from the State Children's Health Insurance Program (SCHIP), known as the Healthy Families Program (HFP) in California, to the Medi-Cal Program.

Fifty-six percent of Californians receive health insurance through their employers, 27.9% are covered by Medi-Cal, 1.9% are covered by Medicare, 3.2% are covered by Tricare/CHAMPVA, 17% are covered by individual plans, and the remaining 8.6% of the population is uninsured[2]. Insurance payment models include network-based fee-for-service (FFS) plans (network and indemnity coverage), preferred provider organizations (PPOs), network-based capitation plans, such as health maintenance organizations (HMOs). Delegation of risk and other insurance functions via HMOs is more common in California than in most states. Medicare and Medi-Cal delegate risk and claims payment functions to commercial insurance carriers through Medicare Advantage and managed care plans (MCP). Commercial insurers delegate risk and claims payment functions to contracted IPAs or medical groups.

Quality improvement efforts are robust in some segments of commercial health care through pay-for-performance and other similar programs. In Medi-Cal, quality improvements efforts are largely focused on managed care plans which provide coverage to over 82% of the Medi-Cal population[3]. Medi-Cal managed care plans are required to report annually on a set of fourteen Healthcare Effectiveness Data and Information Set (HEDIS) measures, including associated indicators, and one non-HEDIS measure developed by DHCS and MCPs to be used for a statewide collaborative quality improvement project (QIPs). This brings the total number of performance measure rates

[1] California Department of Health Care Services, Healthy Families Program Transition to Medi-Cal Final Comprehensive Report: All Phases January 1, 2013-November 1, 2013, Accessed on: April 23, 2018.

[2] California Health Care Almanac, *California's Uninsured: As Coverage Grows, Millions Go Without December 2016 (Updated November 2017).* Accessed on: April 19, 2018.

[3] California Department of Health Care Services, *Medi-Cal at a Glance Most Recent reported Month- November 2017*. Accessed on: April 19, 2018.

required for MCP reporting to 30. In Medi-Cal fee-for-service, which currently serves 18% of Medi-Cal recipients, quality improvement efforts are limited to several disease management pilots. The clinical data that practitioners and hospitals are required to report to the Department of Health Care Services (DHCS) for meaningful use (MU) of electronic health records (EHRs) represents a large and new resource for planning and implementing quality improvement efforts in Medi-Cal and statewide.

1.1 EHR ADOPTION AND USE BY PROFESSIONALS

The Medi-Cal Electronic Health Record (EHR) Incentive Program was launched in October 2011 with the goal of improving the adoption and use of electronic health records by Medi-Cal providers in California. A mid-point report[4] on the Medi-Cal EHR Incentive Program was submitted to the California Legislature in June 2016. This report covered the activities, accomplishments, and challenges of the program from October 2011 to June 2016. Most of the contents of this report are integrated into the following sections of this updated State Medicaid Health Information Technology Plan (SMHP).

The EHR adoption landscape described in the following pages was derived from a variety of sources over the last several years. Where possible, information is utilized from existing sources in both published and unpublished literature. Appendix 1 describes in detail the data sources used in the pages that follow in this landscape assessment of EHR use in California. Where data sources are out-of-date, or inadequate for some other reason, we have updated these with new sources where available. Data specific to Medi-Cal EHR Incentive Program participation has been made available to the public via the Open Data Portal[5] developed by the California Health and Human Services Agency (CHHS)[6].

1.1.1 MEDI-CAL EHR INCENTIVE PROGRAM PARTICIPATION

Table 1 displays the number of eligible professionals (EPs) who have received payments by year. Program Year 2017 attestations are still open and payments are being processed. AIU payments ceased in 2016.

[4] California Department of Health Care Services, *Report to the Legislature: Medi-Cal Electronic Health Record Incentive Program (October 2011 through June 2016)*. Accessed on April 19, 2018.

[5] California Health and Human Services Open Data Portal. Accessed on April 19, 2018.

[6] California Health and Human Services Agency. Accessed on April 19, 2018.

TABLE 1: ELIGIBLE PROFESSIONAL PARTICIPATION

Participation Type	2011	2012	2013	2014	2015	2016	2017*
AIU	6,252	4,418	3,751	2,509	3,107	4,914	0
MU	0	2,054	4,110	4,232	4,116	4,826	1,164

*2017 attestations are open until May 8, 2018.

The number of participants has greatly exceeded the number (10,000) projected by the Lewin and McKinsey study conducted in 2010 before the program began (see 2014 SMHP update[7]). There are several potential reasons for this:

- The Affordable Care Act (ACA) increased Medi-Cal enrollment by 30%, resulting in more professionals meeting or exceeding the 30% Medicaid encounter threshold for the program.
- Between January through November 2013, Healthy Families Program (HFP) subscribers were transitioned to the Medi-Cal Program.
- The Lewin and McKinsey study was not able to accurately estimate how many professionals would qualify through group membership. Approximately 70% of professionals qualifying for the program have been members of groups.
- The use of prequalification methodologies for individual EPs and groups/clinics (see Section 3.2.4) has encouraged many EPs to participate in the program. Approximately 42% of professionals have been prequalified individually or as a member of a prequalified group/clinic.

Table 2 below displays the unique number of MU attestations by program and payment year. Program year refers to the year in which an EP submitted an application, while payment year refers to the number of years an EP has received an EHR incentive program payment. Table 2 reflects those EPs that have received an EHR incentive program payment. In 2016, 372 EPs completed all six payment years of the program.

[7] California Department of Health Care Services, *California State Medi-Cal Health Information Technology Plan (January 10, 2014)*. Accessed April 19, 2018.

TABLE 2: EP MU ATTESTATIONS BY PROGRAM AND PAYMENT YEARS

Year	2011	2012	2013	2014	2015	2016	2017	Total
1	0	72	109	141	123	105	0	550
2	0	1,982	2,602	1,641	1,591	1,294	402	9,512
3	0	0	1,399	1,597	1,137	1,212	196	5,541
4	0	0	0	853	820	1,099	195	2,967
5	0	0	0	0	445	744	221	1,410
6	0	0	0	0	0	372	150	522
Total	0	**2,054**	**4,110**	**4,232**	**4,116**	**4,826**	**1,164**	**20,502**

Table 3 below displays the Medi-Cal EHR Incentive Program AIU and MU participation rates for EPs as of April 2018 according to their licensing boards. Physicians (MDs), both doctors of medicine (MDs) and doctors of osteopathic medicine (DOs) constituted 57% of the total number of AIU applications received. Dentists followed, contributing 21% of participants, which is considerably higher than the 12% national participation rate for dentists.

TABLE 3: MEDI-CAL ELIGIBLE PROVIDER PARTICIPATION BY PROVIDER TYPE

Provider Type	AIU	MU	MU % (Any Stage)
Medical Board of California	13,324	6,545	49%
Dental Board of California	5,179	569	11%
California Board of Registered Nursing	4,239	1,939	46%
Physician Assistant Committee	1,058	543	51%
Osteopathic Medical Board of California	805	387	48%
California State Board of Optometry	168	49	29%
Total	**24,773**	**10,032**	**40%**

Physician assistants had the highest rate of AIU to MU participation (51%), followed by physicians (MDs 49%, DOs 48%). Dentists have the lowest rate of AIU to MU participation at only 11%.

To better understand the barriers for MU participation among dentists, in 2017 DHCS conducted a survey of dentists that had received AIU payments but had not returned to attest for MU. The survey was made available to dentists via Survey Monkey. Email invitations were sent to dentists or their contact person/representative. In order to ensure

that all had the opportunity to participate, follow-up emails were sent to those who had not responded. A total of 228 dentists participated in the survey, while 140 additional responses were received from the contact person/representative for the dentists. The response rate to the survey was 12% overall but because of the participation of practice representatives, the rate may have been higher in terms of dentists represented in the survey.

Results from the survey revealed 56% of respondents regularly used their electronic health record/electronic dental record (EHR/EDR). Of those, 44% indicated it was very likely that they would submit an application for future MU payments. Approximately 38% indicated that a MU application would be submitted in 2017, while 24% intended to apply in 2018.

The survey revealed that there is some confusion among dentists regarding MU, as shown in Table 4.

TABLE 4: DENTIST AND DENTAL STAFF UNDERSTANDING OF MU

Dental MU Survey Questions	Yes (%)	No (%)	Uncertain (%)
I do not believe I can qualify for meaningful use because I am a dentist.	9.5	52.3	38.1
I am aware that many meaningful use measures do not apply to dentists and, therefore, can be excluded.	58.4	41.5	N/A
Many of my patients do not have email addresses or internet access, making it difficult to meet patient portal requirements.	77.7	22.2	N/A
I would like more information about meaningful use requirements.	63.6	36.3	N/A
My certified EHR/EDR does not offer dental-appropriate modules and/or applications.	43.4	56.5	N/A

Many dentists would benefit from additional technical assistance, as 78% responded that they are not able to satisfy patient portal requirements. Many comments received in the survey revealed a belief that patients must have an email address in order to comply with the measure requirements. Dentists and their representatives would benefit from knowing that beneficiaries have the option to opt-out for receiving electronic messages and that several other objectives can be excluded. For dentists requesting additional information,

DHCS developed and sent the Dental MU Tip Sheet (Appendix 14). The full survey results are provided in Appendix 13 .

1.1.2 EHR ADOPTION AND USE IN CALIFORNIA BY PROFESSIONALS

A number of studies of EHR adoption and use in California have been conducted since the program began in 2011. These are discussed below. The results of these studies have demonstrated a significant increase in EHR use by all professional types and in all settings.

NATIONAL AMBULATORY MEDICAL CARE SURVEY (NAMCS) (2015)

The Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS) conducted the National Ambulatory Medical Care Survey (NAMCS). Conducted annually, the NAMCS assesses the adoption of certified EHR systems and electronic sharing in physician offices. Based on the survey results released on July 2016, 77.9% of office-based physicians reported having a certified EHR system in 2015, up from 74.1% in 2014.

California's rates, according to the same survey, are not significantly different from the national averages. Approximately 76.5% of office-based physicians have a certified EHR system compared to 77.9% national average.

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO PHYSICIAN SURVEY (2011, 2013)

DHCS partnered with researchers at University of California, San Francisco (UCSF) to develop and conduct a survey (Appendix 2) of physicians through the Medical Board of California's re-licensure process. Originally conducted in 2011, faculty at UCSF, in conjunction with the California Medicaid Research Institute (CMRI) developed and administered the survey in an effort to understand the extent to which California physicians use EHRs and the number of physicians in California who could potentially be eligible for Medi-Cal incentive payments. A follow-up survey was conducted in 2013, which included the same group of physicians originally sampled in 2011. Between June 1 and July 31, 2013, a questionnaire was sent to 9,762 physicians whose MD license renewals were due for renewal with the California Medical Board. Of those physicians who received the survey, 7,065 met the criteria for inclusion. This included physicians that practiced in California who provided at least one hour of patient care per week. A total of 4,334 physicians completed the survey. Of these, 3,078 physicians had participated in the original survey in 2011. The response rate to the supplemental survey was 61% among eligible respondents.

In 2013, 78% of physicians reported having some form of EHR at their main practice location. This was a significant increase from 2011, when only 65% of physicians reported having some form of EHR at their main practice location. Additionally, 56% of physicians who had EHRs reported that the EHRs had the functions necessary to achieve all 12 of the Stage I MU objectives measured. Table 5 illustrates the availability of other EHR functions that may be helpful for providing patient care and to achieve specific core objectives for MU.

TABLE 5: AVAILABILITY OF FUNCTIONS TO FULFILL STAGE 1 MEANINGFUL USE OBJECTIVES AMONG ALL PHYSICIANS, 2013

	Yes, the feature is available				No, this feature is not available (%)	Don't know (%)	Do not have an EHR/ Did not respond (%)
	Yes, use all or most of the time (%)	Yes, use some time (%)	Do not use (%)	Not applicable (%)			
Collect patient demographics	42	16	10	2	2	6	22
Take clinical notes	67	6	2	1	1	1	22
Generate patient problem list	63	8	3	1	1	1	22
Generate list of patient medications	67	6	2	1	1	1	22
Generate list of medication allergies	68	5	2	1	1	1	22
Order/transmit prescriptions electronically	55	7	7	3	4	1	22
Generate routine report of quality indicators	23	16	20	3	5	11	22
Transmit info electronically to/from providers to whom a patient is referred	24	15	19	3	8	8	22

Physicians were most likely to report having the ability to enter and view clinical notes and to generate lists of patients' problems, their medications, and their medication allergies. Physicians were more likely to use EHR features related to providing care to individual patients, such as lists on medication and medication allergies, than using features related to quality improvement or facilitation of electronic communication with patients or other health care providers.

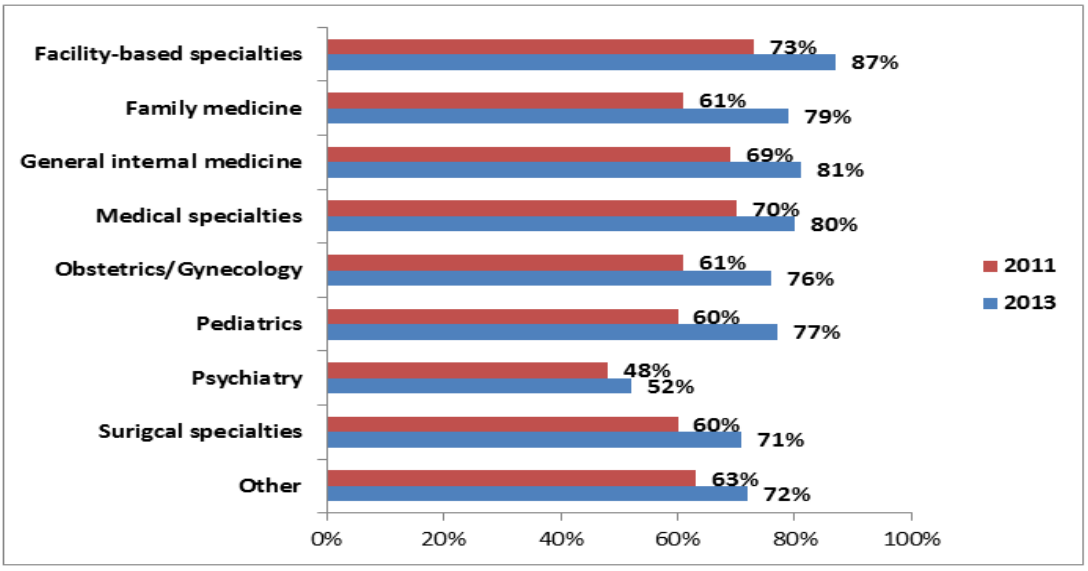
Among physicians participating in the 2013 follow-up survey, the responses suggested that while a number were eligible, many had not registered. Extrapolation of the physician

population with California licenses found that only 4,427 of the 11,650 physicians who may be eligible for the Medi-Cal incentive program had registered for it. This would mean that only 38% of respondents who might have been eligible had registered. This figure, however, might have been underestimated. If the physician was a part of a large practice, an administrator might have included the physician as part of a group, in which case, the administrator might have submitted the physician's registration information. As discussed above, as of April 2018, 13,324 physicians have submitted a Program Year 1 application and 6,545 submitted a Program Year 2 application.

The 2013 survey also asked physicians to report the reasons for not registering. Twenty-seven percent of physicians surveyed did not believe that they were eligible. A small percent, 8%, reported a decision not to register due to a belief that available incentive funding amounts were insufficient while 4% indicated no plans to adopt or use an EHR. Of those surveyed, 62% did not indicate a reason for not registering.

The UCSF surveys found that primary care physicians were somewhat more likely to use EHRs than specialist physicians (81% vs. 77% in 2013). Among specialist physicians, those with the highest rates were internal medicine specialists (cardiologist, pulmonologist, etc.) at 80% and those with the lowest rate were psychiatrists (55%).

FIGURE 1: PERCENT WITH ANY EHR BY SPECIALTY, 2011 AND 2013* (N = 3,078)



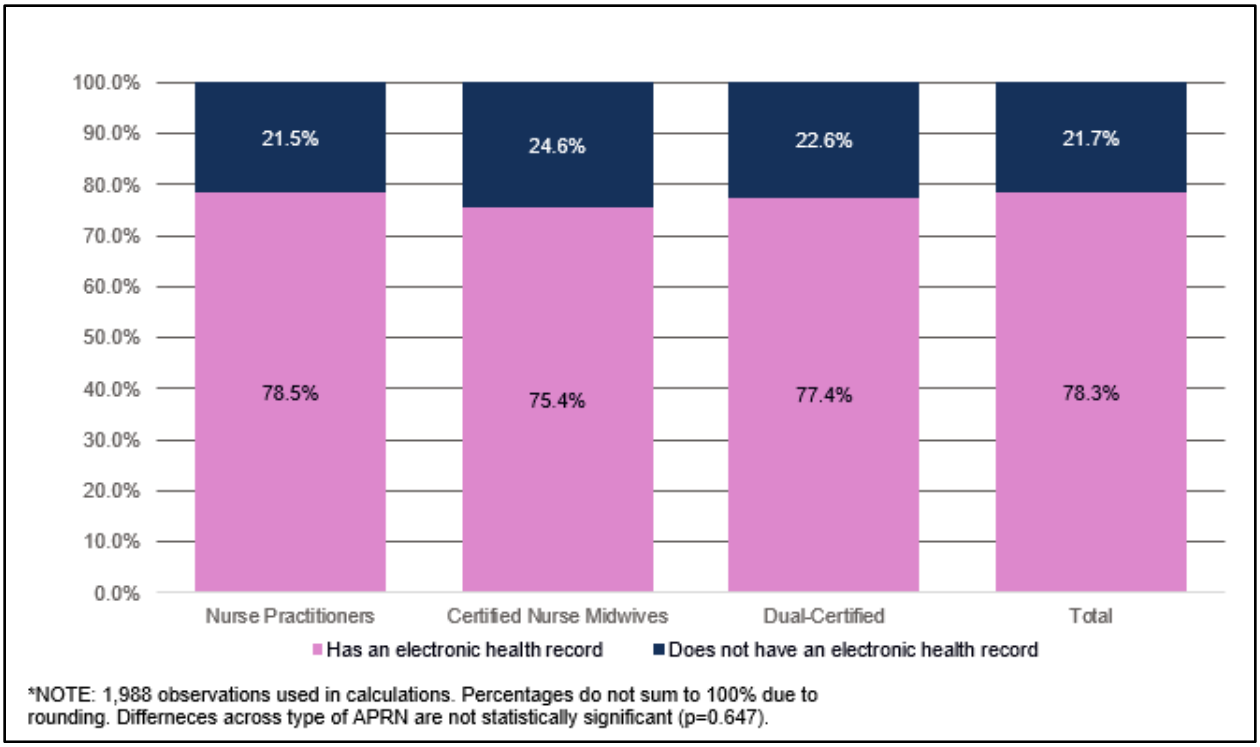
*Differences in the percentage with any EHR are statistically significant for at p<0.05 for facility-based specialties, family medicine, general internal medicine, medical specialties, obstetrics/gynecology, and pediatrics. Chart provided by UCSF.

These results are similar to the results of CDC's national survey of physicians in 2015, with 89.6% of primary physicians and 84.4% of specialist physicians reporting the use of EHRs. This survey also found cardiologists to have the highest rate nationally (95.6%) and psychiatrists to have the lowest rate nationally (61.3%). To help address the lower rate of EHR use by specialists, DHCS provided a $500 payment to California Technical Assistance Program (CTAP) contractors for every eligible specialist to whom they provide services (see Section 1.8).

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO NURSE PRACTITIONER AND CERTIFIED NURSE MIDWIFE SURVEY (2012)

In order to help fill the gap of knowledge about EHR use by non-physician providers, DHCS contracted with researchers at the University of California, San Francisco (UCSF) to modify the survey they have developed for the Medical Board of California for use with Nurse Practitioners (NPs) and Certified Nurse Midwives (CNMs). This survey was sent to 5,000 NPs and CNMs with active California certificates on October 21, 2011. The response rate for the survey was 2,624 (or 54%). The survey found that 2,506 (or 21.5%) of the 11,503 NPs and CNMs employed in advanced practice were potentially eligible for the program at that time.

FIGURE 2: NPS, CNMS, AND DUAL-CERTIFIED ADVANCED PRACTICE NURSES WITH ANY EHR AT THEIR PRACTICE*



The survey findings from all respondents found 78% of all NPs and CNMs across all practice settings had some form of EHR at their main practice location. Of those respondents, 26.1% had an EHR at their main practice location that was able to achieve all 12 of the Stage 1 MU objectives measured in the survey. A follow up survey has not been conducted.

As of December 2017, 2,071 NPs and 432 CNMs were enrolled as either FFS or MCP provider for Medi-Cal. A large number of NPs and CNMs (4,239), as of April 2018, have submitted a Program Year 1 application and 1,939 have returned for MU.

1.2 EHR ADOPTION AND USE BY HOSPITALS

1.2.1 MEDI-CAL EHR INCENTIVE PROGRAM PARTICIPATION

In 2016, there were 436 general acute care hospitals in California. Of these, 328, or 75%, have participated in the Medi-Cal EHR Incentive Program (Table 6). DHCS actively reached out to potentially eligible hospitals that had not yet applied to the program in 2016 (the last year to begin participation), which resulted with 13 additional hospitals beginning participation in 2016. Of California's 13 children's' hospitals, 11 have participated in the program. As of January 2018, 92% (302/330) of participating hospitals had attested to MU for at least one year.

TABLE 6: ELIGIBLE HOSPITAL PARTICIPATION

Payment Year	2011	2012	2013	2014	2015	2016	2017	Total
1	134	100	26	14	42	13	0	329
2	0	70	124	34	22	53	5	308
3	0	0	66	109	28	28	32	263
4	0	0	0	63	90	32	3	188
Total	134	170	216	220	182	126	40	1,088

In 2010, the Lewin and McKinsey's study estimated that 242 hospitals in California would be eligible for the program. The program has now significantly surpassed this number with 329 hospitals participating in the incentive program. This may have been due to the increasing number of Medi-Cal patients enrolled by the ACA and the movement of HFP members transitioned to the Medi-Cal Program in January through November 2013.

A number of studies of EHR adoption and use by hospitals in California have been conducted since the program began in 2011. Some of these are listed and discussed below. They have demonstrated a significant increase in EHR use by hospitals throughout the state.

OFFICE OF THE NATIONAL COORDINATOR REPORT (2008-2015)

In May 2015, the Office of the National Coordinator (ONC) released a report on the Adoption of EHR Systems among U.S. Non-Federal Acute Care Hospitals from 2008-2015. The survey found that 96% of all non-federal acute care hospitals reported that they had adopted a "certified" EHR technology and 84% of hospitals nation-wide had adopted at least a "basic" EHR technology in 2015. This represents a nine-fold increase since 2008. In California, 320 hospitals were surveyed and of those, 198 hospitals responded to the survey. According to the survey, 85% of non-federal acute care hospitals in California reported adopting a basic EHR technology in 2015, compared to 22% in 2011 and 9% in 2008.

AMERICAN HOSPITAL ASSOCIATION SURVEY (2012)

Detailed data on the adoption of HIT by hospitals is available from a 2012 survey conducted by the American Hospital Association (AHA). The response rate for the survey was 50%. Survey results indicated that 49% of responding California hospitals were fully electronic and had an EHR system. An additional 32% of hospitals had a system that was partially electronic and partially paper-based. Among California hospitals with EHRs, 83% had a system that met all of the Stage 1 MU objectives, 11% did not meet the objectives and for the remaining 6%, data was not available.

California hospitals' EHRs varied in their ability to meet Stage 1 MU menu and core objectives. Ninety-three percent of California hospitals were able to record demographics, while 65% could track clinical quality measures. Eighty-five percent of hospitals' EHR systems were able to provide patient lists by condition. Of the hospitals surveyed, 46% were able to conduct syndromic surveillance, which assists in the early detection of disease outbreaks. Table 7 shows the detailed data for California hospitals and their ability to meet Stage 1 MU menu and core objectives at the time of the survey in 2012.

TABLE 7: HOSPITAL CAPABILITY TO MEET MU CORE AND MENU OBJECTIVES, CALIFORNIA, 2012

	Yes (N=215)
Stage 1 Core Objectives	
Record patient demographics	93%
Generate list of medication allergies	89%
Record patient vital signs	84%
Record patient smoking status	81%
Generate list of patient active medications	80%
Generate clinical decision support rules	80%
Perform drug interaction checks	78%
Protect electronic health info	77%
Produce electronic copy of health record information	73%
Produce electronic copy of discharge instructions	73%
Generate patient problem list	72%
CPOE for medication orders	68%
Exchange clinical information	67%
Generate routine report of clinical quality measures	65%
Menu Objectives	
View or receive lab test results	70%
Generate list of patients by conditions	37%
Transmit data to immunization registries	17%
Patients able to access their own EHR	31%
Other EHR Functions	
Order laboratory tests	60%
Order radiology tests	56%
View written records of radiology tests	67%
View images of radiology tests	57%
NOTE: AHA Annual Survey Information Technology Supplement Survey, 2012	

1.3 EHR ADOPTION AND USE BY COMMUNITY CLINICS

Community clinics and health centers are non-profit, tax-exempt clinics that are licensed as community or free clinics under Section 1204 of the California Health & Safety Code.

Patients receive services on a sliding scale or at no charge. Many clinics meet federal requirements and definitions to be considered FQHCs or FQHC look-alikes. Community clinics provide a wide variety of services to low-income and medically underserved people regardless of their ability to pay.

1.3.1 MEDI-CAL EHR INCENTIVE PROGRAM PARTICIPATION BY COMMUNITY CLINICS

Information collected in the State Level Registry does not enable DHCS to precisely define how many community clinics have participated in the Medi-Cal EHR Incentive Program. Every year, DHCS reviews data from the Office of Statewide Planning & Development (OSHPD) to qualify certain clinics based on Medi-Cal and other needy individual encounter volumes (see Section 3.2.4). This pre-qualification status allows clinics to submit their registration for the Medi-Cal EHR Incentive program without having to calculate and provide encounter data for their providers. The number of prequalified clinics has increased each program year. For Program Year 2017, there were 1,037 prequalified clinics. For FQHCs and Rural Health Centers (RHC), services provided to other needy individuals may be counted in addition to those provided to Medi-Cal patients. The number of clinics utilizing other needy encounter as a means to prequalify has decreased in the last two program years. This decrease may have been a result of the increased enrollment of beneficiaries in the Medi-Cal program.

1.3.2 EHR ADOPTION AND USE IN CALIFORNIA BY COMMUNITY CLINICS

The following surveys have been conducted of California community clinics since the program began in 2011.

CALIFORNIA PRIMARY CARE ASSOCIATION SURVEY (2014)

A 2014 California Primary Care Association (CPCA) survey of health centers, which had a 65% response rate, found that of the 91 respondents, 81 health centers had adopted some form of EHR (55 full electronic, 15 electronic and paper) and had participated in MU. Seventy-seven health centers reported that their eligible professionals had applied and attested for AIU for 2011, 2012, and 2013. In addition, 50 of the 65 health centers with dental programs had adopted an EHR as well.

At the time of the survey, NextGen was the EHR of choice for community clinics, with 36 health center adopters, 22 with eClinical Works, 3 with GE Centricity, 2 with Epic, 2 with AllScripts, 1 with an in-house developed EHR and 13 other systems. Of those who had not adopted an EHR, eight planned to adopt an EHR within six months, one within twelve months, and two within three to four years.

There were 37 health centers that reported participating in electronic exchange of information with external partners, while 21 health centers reported exchanging electronic information internally. Of those, 16 health centers reported intent to exchange information electronically in 2014. Eight other health center locations were scheduled to start in 2015 while two additional locations were expected to implement in 2016. While these efforts represent significant progress, the health centers reported continued financial challenges in fully adopting EHR and joining health information exchange programs.

UCSF: THE AVAILABILITY OF ELECTRONIC HEALTH RECORDS IN CALIFORNIA (2013)

The 2013 UCSF physician survey found the highest rate of growth in EHR availability was among physicians in community and public clinics where availability grew from 50% in 2011 to 81% in 2013. Physicians who practiced at a community or public clinic had high percentages of patients who were uninsured or enrolled in Medi-Cal and were more likely to be eligible for the EHR Incentive Program.

HEALTH RESOURCES AND SERVICES ADMINISTRATION (HRSA) HIT FUNDING

Since 2013, HRSA has awarded 48 HIT related grants to California Health Centers, totaling $20,783,832. The names of the recipients, year of receipt, and amount for each grant is listed in Appendix 3. These include:

- Twenty-seven Health Center Controlled Network Grants (H2Q) to six organizations in years 2013-2018 totaling $16,716,668.

  Health Center Controlled Networks (HCCN) are groups of safety net providers (a minimum of three collaborators/members) working together to improve access to care, enhance quality of care and achieve cost efficiencies through the redesign of practices to integrate services, optimize patient outcomes, or negotiate managed care contracts on behalf of the participating members. Supported through the Health Center Controlled Network grant program, the networks work collaboratively to:

  - Adopt and implement certified electronic health record technology,
  - Meet MU requirements under the Medicare and Medicaid Electronic Health Records Incentive Programs, and
  - Improve clinical and operational quality, reduce health disparities, improve population health through health information technology, and achieve patient centered medical home recognition.

Within the networks, individual health centers worked together to share resources, leverage buying power (e.g. discounted software), enhance access to information and promote guidelines on best practices, as well as provide support for achieving quality of care and operational goals. Networks support member health centers in the shared mission to provide comprehensive, culturally competent, quality primary health care services to medically underserved communities and vulnerable populations. While there have been 12 new HCCN grants, there are 14 active HCCNs operated by 10 organizations.

- Three Rural Health Information Technology Workforce (R01) Grants to Livingston Community Health Center in 2013, 2014, and 2015 totaling $900,000.

  The Rural Health Information Technology (HIT) Workforce Program supports formal rural health networks that focus on activities relating to the recruitment, education, training, and retention of HIT specialists. The program provides support to rural health networks that can leverage and enhance existing HIT training materials to develop formal training programs that provide instructional opportunities to current health care staff, local displaced workers, rural residents, veterans, and other potential students. These formal training programs will assist in the development of a cadre of HIT workers who can help rural hospitals and clinics implement and maintain systems, such as EHRs, telehealth, home monitoring and mobile health technology, and meet EHR MU standards.

- Eighteen Small Health Care Provider Quality Improvement (G20) Grants to six organizations in 2013-2018 totaling $3,164,000.

  The purpose of the Small Health Care Provider Quality Improvement grant program is to provide support to rural primary care providers for the implementation of quality improvement activities. The ultimate goal of the program is to promote the development of an evidence-based culture and delivery of coordinated care in the primary care setting. Additional objectives of the program include improved health outcomes for patients, enhanced chronic disease management, and better engagement of patients and their caregivers. Organizations participating in the program are required to utilize an evidence-based quality improvement model, perform tests of change focused on improvement, and use health information technology (HIT) to collect and report data. This is a three-year grant program with individual grant awards limited to a maximum of $150,000 per year.

1.4 EHR ADOPTION AND USE BY INDIAN HEALTH CLINICS

The California Native American population is diverse and programs must consider the multiple needs of the individual, family, and community. California is home to approximately 115 federally recognized American Indian tribes. According to the 2010 census, California has the largest population of individuals self-identified as American Indian/Alaskan Native (AI/AN), with approximately 723,225 identifying as AI/AN alone or in combination with another race (representing 14% of the national AI/AN population). There are 31 California tribal health programs operating 75 ambulatory clinics and 10 urban Indian health programs. These tribal health programs are independent primary care clinics located on or near reservations, in rural and isolated communities. The 10 Urban Indian Health Programs (UIHP) are located in major urban areas. There is a wide variation in the size of Indian health clinics in California ranging from clinics that serve only a couple of hundred patients, to those serving over 10,000 patients. Indian health programs provide a comprehensive array of services, including primary care, dental, substance abuse counseling, and other behavioral health services. All of California's Indian health programs have implemented certified EHRs such as AthenaHealth, NextGen, eClinicalWorks, and the Indian Health Services' (IHS) Resource and Patient Management System (RPMS). In addition, many also have electronic dental records (EDR) such as Dentrix and QSI Dental.

The tribal/urban Indian clinics in California receive partial funding from the IHS to provide care to AI/AN in their designated Contract Health Services Delivery Areas (CHSDA). In addition, these clinics also secure funding from grants, contracts, and third party reimbursement from Medicare, Medi-Cal managed care, and private insurance. Tribal/Urban Indian clinics can participate in the Medi-Cal program as either a Tribal Health Provider (THP) funded under the authority of Public Law (PL) 93-638, 25 USC 450 et seq., or as an Urban Indian Health Program (UIHP) under Title V of the Indian Health Care Improvement Act, PL 94-437, depending on their location and designation. Most tribal health programs receive a flat rate reimbursement from Medi-Cal, although there is some variation depending on which federal and state statutory requirements they meet, such as a Tribal Health Provider Memorandum of Agreement (MOA), FQHC, Rural Health Clinic (RHC), or Community Health Center.

In 1998, DHCS implemented an MOA between the federal IHS and the Health Care Financing Administration (HCFA). HCFA was later renamed the Centers for Medicare & Medicaid Services (CMS). The MOA established the THP provider type and reimbursement rate for services provided to Medi-Cal recipients at tribal health clinics

funded under PL 93-638. Clinics subsequently had the option to change their provider type and most of the tribal health clinics changed their provider status from FQHC to THP at that time to take advantage of the new reimbursement system although they did not change operations. As of December 2014, there were 11 FQHCs and 55 THP Indian health clinic sites enrolled in the Medi-Cal program serving the Native American population.

THP clinics are operated by tribes and tribal organizations as primary care clinics in California under the authority of PL 93-638 and funded by the IHS to continue to provide a significant level of health care services at no cost to individual AI/AN people. These services meet the description of services provided to needy patients established in 42 Code of Federal Regulations (CFR) 495.306 and the THP clinics requested consideration as FQHCs for the purposes of the Medi-Cal EHR Incentive Program. In compliance with CMS' published Frequently Asked Questions (FAQ) on this issue, DHCS will treat the THP clinics as equivalent to FQHCs. DHCS allows CMS's Indian Health Service Administration every year to prequalify IHS clinics as meeting the 30% Medicaid threshold based on encounter and billing data submitted to them. The IHS administrator submits a letter to DHCS documenting each clinic's prequalification status.

Most IHS clinics utilize the RPMS EHR system which is based on the VA's VistA electronic medical record system. In October 2010, the Indian Health Services and the VA signed a MOU intended to strengthen further collaborative efforts to improve the health status of American Indians and Alaska Native Veterans. The language of the MOU recognized the importance of a coordinated and cohesive effort on a national level, which also acknowledged the need for flexibility at the community level. There is a strong need for tribal and urban Indian health programs to interface with the RPMS EHR, the systems used by IHS to manage clinical, business practice, and administrative information. Despite large amounts of federal funding infused to support the RPMS EHR infrastructure, there was little federal funding support for the tribal and urban health programs in California to implement a non-RPMS EHR such as AthenaHealth, NextGen, and eClinicalWorks, or funding interfaces for HIE. DHCS is investigating the use of EHR Incentive program funding available under State Medicaid Director (SMD) letter 16-003 to support interfaces. It is critical that Indian health programs be included in the regional HIE landscape in rural and urban communities given that their patients receive care from a variety of hospitals and specialty care providers in a geographic region. Since there are not any Indian Health Service hospitals in California, tribal/urban Indian clinics rely on local hospitals and specialty providers.

Substance Use Disorders (SUDs) are a significant problem for many AI/AN communities, and many of these communities are impacted by SUD-related issues. Efforts to better understand and meet the needs of this population are a high priority at both the national and state level[8]. On August 13, 2015, CMS approved the Drug Medi-Cal Organized Delivery System amendment (DMC-ODS). The DMC-ODS provides counties and tribal communities the option to participate and offer SUD services to meet the unique needs of beneficiaries. The state DMC-ODS implementation is occurring in five phases, (1) Bay Area, (2) Kern and Southern California, (3) Central California, (4) Northern California and (5) Tribal Partners also known as the Indian Health Program Organized Delivery System (IHP-ODS). Operation of the IHP-ODS is a significant change for the tribal community because the tribal health programs are each independently operated and owned. Currently, there is not a single entity that operates the tribal communities' health programs, and most tribal healthcare facilities have not participated in Drug Medi-Cal. The IHP-ODS creates a higher need for coordination and collaboration and an organizational structure, analogous to the structure that currently exists in the counties. A description of the functional components of the IHP-ODS system needs to be developed and documented in preparation for implementation.

1.5 EHR ADOPTION AND USE BY VETERANS ADMINISTRATION FACILITIES

The Veterans Administration (VA) operates the nation's largest integrated health care system, supporting more than 1,700 hospitals, clinics, community living centers, domiciliaries, readjustment counseling centers, and other facilities. Although the VA facilities do not participate in the Medicaid or Medicare EHR Incentive Programs, electronic health records have long been of vital importance in efforts to improve health care provided to military veterans. Many VA patients tend to be highly mobile and health records may be located at multiple medical facilities within and outside the United States. The capability of making health records electronic helps ensure that complete health care information is available, no matter its originating source. Initial efforts began with the development of an integrated medical information system called the Veterans Health Information Systems and Technology Architecture (VistA). Modernization of the VistA system occurred in 2001, with the creation of a more veteran-centric environment, which provided the same benefits of the existing system but enhanced functionality.

[8] California Department of Health Care Services, *California Substance Use Disorder Block Grant & Statewide Needs Assessment & Planning Report (2015)*. Accessed April 19, 2018.

Future improvements included maintaining interoperability standards in order to share health information among providers. These interoperability standards allowed electronic health records to be created, managed, and consulted by authorized clinicians and staff across more than one health care organization, regardless of the originating source. In April 2009, the VA and the Department of Defense (DOD) began work to build the Virtual Lifetime Electronic Record (VLER) Health Exchange to increase electronic health record interoperability and expand health information sharing capabilities.

The Veteran Health Information Exchange (VHIE)/ VLER Health Exchange allowed VA and non-VA health care providers to share health information electronically and securely through two types of VHIE/VLER Health Program:

- VLER Health Exchange allows VA providers and the community partner providers to query and retrieve certain Veterans' health information electronically using the eHealth Exchange. Participating community care providers can securely view specified Veteran health information through the eHealth Exchange, allowing for improved care coordination.

- VLER Health Direct (VA Direct Messaging) allows VA providers to send specific information about a Veteran's health care to participating community partners using a secure tool that is similar to email.

In addition, VistA provided integrated inpatient and outpatient electronic health records for VA patients, and administrative tools to help the VA deliver medical care to Veterans. The VistA imaging system integrated medical images and scanned documents in the patient's chart. Various types of images, including those related to specialty care, could be incorporated into the patient's chart. Utilized in all VA medical facilities, VistA has provided a variety of benefits related to standardized terms, direct linkage between images and associated medical reports, as well as improved continuity of care. Telemedicine technologies were also incorporated into VistA technologies.

Developed in 2010, the VA launched Blue Button. Representing a national movement, the Blue Button tool was designed to make patient medical records easily available to veterans. Veterans gained access to claims information as well as personal health information maintained by doctors, hospitals, health plans, and others. Adoption of the Blue Button has spread from the VA to other government agencies and the private sector. Under the Blue Button Pledge, more than 450 organizations have made personal health data available via healthcare providers, health insurance companies, labs, and drug stores.

In June 2017, the VA Secretary announced the decision to adopt a new EHR jointly with the DOD. The decision was made after identifying that the existing VistA system required major modernization in order to remain current with health information technology and cyber security improvements. While the VA reported that interoperability with the DOD had been achieved, the seamless exchange of health information was limited by changing information sharing standards and other constraints. In order to maintain future interoperability, the VA concluded that it would adopt the same EHR system as the DOD rather than maintain a separate system. The VA believes that, through the adoption of the same core EHR system, it will enable both Departments to access patient health information without the reconciliation of data between two different systems through the storage of all patient data in one common system.

1.6 EDUCATION AND OUTREACH

Education and outreach efforts have been broad in scope and designed to encourage as many EPs and EHs as possible to apply to the program. These efforts had proven very successful, in light of the large numbers of EPs and EHs that have participated in the program. With the expiration of AIU in 2016, education and outreach efforts are now concentrated on promoting MU attestations and use of HIE.

1.6.1 PROVIDER EDUCATION AND OUTREACH

DHCS' original outreach and education program proved effective in assisting providers meet AIU. DHCS' original provider education and outreach plan identified four main priorities:

1) Shifting provider behaviors and beliefs regarding EHRs and HIEs.
2) Developing goals and metrics for recognizing success.
3) Defining the targets and delivery messages.
4) Execution and ongoing refinement of the plan through monitoring.

Lewin & McKinsey discovered in preparing the landscape assessment that providers had perceptions about EHRs and the incentive program that acted as obstacles to adoption and meaningful use of Certified Electronic Health Record Technology (CEHRT).

TABLE 8: PROVIDER PERCEPTIONS

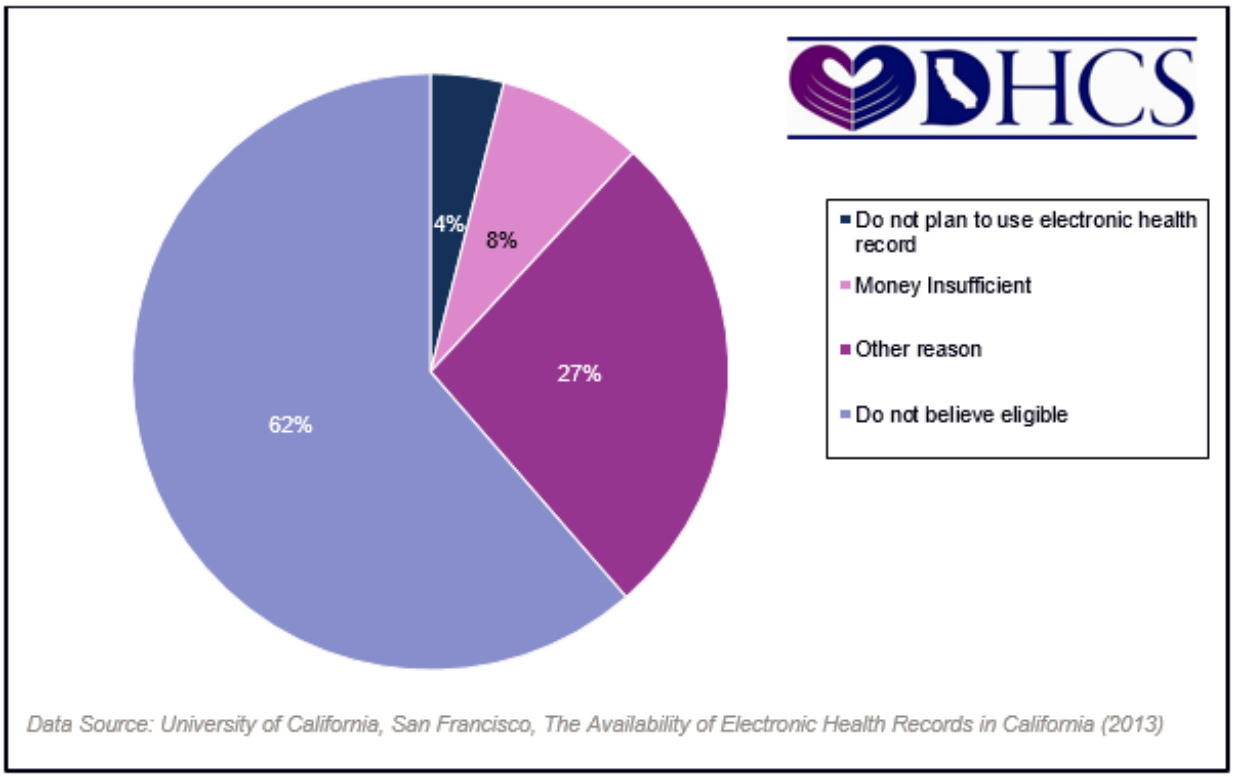
Initial Provider Perceptions:	Desired Perceptions After Campaign Plan:
• I am unaware or confused about ARRA incentive funding and penalties.	• I understand the details about the program and know how to qualify for funding.
• I am confused about the EHR options available to me.	• I have enough information about my EHR options to make an informed choice for my organization.
• I don't have time to go through information about meaningful use requirements, vendors, etc.	• I have access to concise and complete information about funding and EHRs.
• Implementing an EHR will be expensive.	• Although an EHR will be a substantial investment, there are financing options available to my organization, and it will be a smart investment.
• I don't know what the financial or clinical payback will be.	• I understand the potential costs and benefits of an EHR system.
• Implementing EHR is just too much of a hassle.	• There are resources and support available to help my organization during an implementation.
• I don't know if the state is actually going to give me this funding like they say they will.	• I am confident that the stimulus funds will be awarded in a timely manner if I meet requirements.

Early efforts concentrated on ameliorating these perceptions via a variety of methods. The Office of Health Information Technology (OHIT) conducted educational meetings, conference calls, and webinars with a variety of stakeholder groups; including managed care plans, provider associations, and health care foundations. Several informational

documents, including user guides and FAQs were developed. The documents, available on OHIT's State Level Registry website for the incentive program, were provided to various stakeholder groups and discussed during OHIT's monthly Stakeholder Conference Call. Additionally, OHIT wrote informational articles for the publications of provider associations and health care foundations. Program updates were also made available through email distribution and Twitter updates. OHIT also worked to build relationships within the provider community by attending provider conferences to facilitate face-to-face conversations with providers and other stakeholders.

The 2013 UCSF study found that only 49% of eligible physicians in California had participated in either the Medi-Cal or Medicare EHR Incentive Program, with only 24% of the remaining physicians stating an intention to participate. Of those respondents not participating, 35% indicated that this was due to their belief that they were not eligible or that an EHR would be too expensive.

FIGURE 3: REASONS FOR NOT REGISTERING FOR MEDI-CAL OR MEDICARE EHR INCENTIVE PROGRAM, 2013 (N = 1,842)



While DHCS maintained focus on assisting providers with AIU, there were efforts on helping providers to reach MU, particularly through work with the RECs and its successor, the California Technical Assistance Program (Section 1.8). DHCS also conducted internal trainings, providing staff with the ability to answer provider and stakeholder questions regarding MU. DHCS has found that collaboration and the development of consistent messages with key stakeholders, such as the California Department of Public Health (CDPH), were helpful with the dissemination of information to the provider community. See Appendix 4 for a copy of a one page handout developed by the CDPH to assist providers in reporting of four clinical quality measures (CQMs) addressing influenza immunizations, diabetes, hypertension, and colorectal cancer. Attendance at provider conferences and conventions also gave DHCS the opportunity to distribute brochures dedicated to common MU questions available to providers. These documents, in addition to Help Guides and FAQs specifically related to MU objectives and MU attestations, were published on the Medi-Cal EHR Incentive Program website.

PREQUALIFIED EPS AND GROUPS/CLINICS

There has been significant support from stakeholders regarding the prequalification process, which satisfies the 30% Medicaid encounter requirement for EPs and groups who meet prequalification criteria. Of the group applications received, 36% were for prequalified groups or clinics. This represents over 12,000 applications and is a significant segment of the overall population. Prequalified EPs represented 14%, or nearly 3,200 applications. Outreach efforts were primarily performed via the Medi-Cal EHR Incentive Program website, email distribution, and the bi-weekly stakeholder call, which included representatives of many groups and clinics. Additional activities included with these outreach activities were:

- One-on-one support to groups and clinics with emails and calls when necessary.
- Creation of a checklist for prequalified groups illustrating group eligibility requirements and use of the SLR.

1.6.2 HOSPITAL EDUCATION AND OUTREACH

As with EPs, DHCS successfully surpassed the initial goal of the number of EHs attesting to the program (see Section 1.2). A large part of this success can be attributed to the original education and outreach campaign done for EHs. Initial outreach efforts undertaken by DHCS consisted of emails and one-on-one phone calls. In 2015, DHCS conducted webinars and conference calls with individual hospitals and health systems. Of the EHs contacted, twenty EHs were scheduled to attest for program year 2015. While

twenty EHs were scheduled, a total of forty-two EHs attested for program year 2015. DHCS was in direct contact with an additional ten EHs preparing to attest by 2016. Analysts were assigned to these EHs in order to ensure that the EHs successfully started the program by the 2016 deadline. Based on those efforts, a total of 14 new hospitals attested for program year 2016. DHCS obtained information from OSHPD, the state department to which all California hospitals report data, to determine if any other eligible EHs had not attested. DHCS reviewed the OSHPD data to determine if the EHs Average Length of Stay (ALOS) was 25 days or fewer and if the location had 10% or more Medicaid discharges. From this review, DHCS determined that 40 hospitals could possibly be eligible. Prior to the closure of the 2016 program year, outreach efforts focused on enrolling EHs that had not yet attested to the program.

In addition, DHCS created and published several hospital-specific FAQs, quick start guides, and other helpful documents available on the Medi-Cal EHR Incentive Program website. This included the development of a user-friendly hospital workbook, enabling EHs to easily compile the data necessary for the application. DHCS staff received comprehensive training to accurately answer questions from EHs regarding eligibility and the attestation process. Additionally, EHs received one-on-one assistance during the application process through a designated contact person at DHCS. Details regarding future outreach efforts can be found in Subsection 2.5.2.

1.7 REGIONAL EXTENSION CENTERS

A key component in transforming the use of EHRs is the change in workflow within providers' offices. To implement EHRs successfully, there needs to be sufficient support and experience related to the changes in workflow and an understanding of the technology. In recognition of this, the ONC implemented the Regional Extension Center (REC) program to assist providers with the many steps necessary to adopt EHRs and to use them effectively to meet MU.

RECs were tasked with achieving the following three milestones, set by ONC:

- Signed technical assistance contracts between the REC and provider;
- Documentation of Go-Live status on a certified EHR, with active quality reporting and electronic prescribing;
- Meeting the MU criteria established by CMS.

Most of the RECs program funding ended in 2014 but support continued into 2016 for some RECs that received no-cost extensions. In 2015, DHCS received approval from

CMS for a $37.5 million Technical Assistance (TA) program that enabled selected vendors to continue and expand the TA services provided by the RECs. The TA program, or the California Technical Assistance Program (CTAP), is further discussed below in Section 1.8.

CALIFORNIA HEALTH INFORMATION PARTERNSHIP AND SERVICE ORGANIZATION

The California Health Information Partnership and Services Organization (CalHIPSO) was founded in 2009 by California's three largest provider associations: the CPCA, the California Medical Association (CMA) and the California Association of Public Hospitals and Health Systems (CAPH), to help clinical providers successfully navigate the complicated task of EHR implementation. CalHIPSO covered the majority of the state through its network of Local Extension Centers (LECs). By 2014, over 10,000 providers had registered with CalHIPSO for REC services. By December 2014, CalHIPSO had supported almost 6,000 primary care providers in meeting the MU milestone. By October 2015, CalHIPSO had assisted more than 8,500 physicians adopt a certified EHR.

HEALTH INFORMATION TECHNOLOGY EXTENSION CENTER FOR LOS ANGELES COUNTY

In Los Angeles County, the Health Information Technology Extension Center for Los Angeles County (HITEC-LA) is an independent, non-profit organization working as a project of L.A. Care Health Plan, the nation's largest publicly operated health plan. HITEC-LA was the REC charged with helping doctors and primary care providers' purchase, implement and use electronic health records in a meaningful way. HITEC-LA helped providers assess their technology needs, as well as offer education, training, and on-site technical assistance. Ultimately, HITEC-LA in its role as a REC assisted 3,027 members achieve MU.

CALOPTIMA REGIONAL EXTENSION CENTER

In Orange County, the CalOptima Regional Extension Center (COREC) collaboratively worked with physicians and other eligible providers to integrate HIT into their offices and bring them to MU. COREC worked with service partners who delivered on-site support and assistance to Orange County physicians and providers. Although any Orange County provider could participate, COREC's first focus was on primary care physicians, physician assistants and nurse practitioners who operated in individual or small group practices, community clinics or public and/or CAHs. Ultimately, COREC assisted more than 1,000 doctors in the implementation and meaningful use of certified EHR technology.

CALIFORNIA RURAL INDIAN HEALTH BOARD

The California Rural Indian Health Board (CRIHB), as a partner with the National Indian

REC, ensured that California tribal and urban Indian health programs and their eligible providers applied for AIU with a certified EHR. CRIHB provided supplemental resources and guidance to help their members attain MU. CRIHB also collaborated with IHS, tribes, urban Indian health programs, and tribal organizations to develop and disseminate best practices and education to facilitate EHR adoption and enhance the Indian healthcare system in California.

1.8 CALIFORNIA TECHNICAL ASSISTANCE PROGRAM

There are many Medi-Cal EPs in California that did not receive services under the REC program funded by the ONC. RECs were limited to providing technical assistance services to primary care providers working in practices of ten providers or less, community health centers, RHCs, and out-patient clinics at public hospitals. In addition, the RECs only received funding from the ONC to support providers through preparation for the first stage of MU, even though all providers will require significant assistance to reach Stage 2 and Stage 3 MU.

Solo practitioners and specialists represent a portion of Medi-Cal EPs not served by RECs. Many will require assistance with workflow redesign and meaningful use guidance in order to receive ongoing incentive funding. The 2014 expansion of Medicaid under the ACA increased Medi-Cal enrollment. DHCS estimates that an additional 15,000 Medi-Cal EPs not served by the RECs would need assistance over the course of the 10-year program.

DHCS was granted approval to award a total of $37,500,000 to multiple vendors under a three-year California Technical Assistance Program (CTAP) which began in 2015. Through the program, DHCS anticipates that 7,500 additional eligible professionals will be supported to achieve AIU and MU. Due to the size of the state and the number of Medi-Cal eligible providers, DHCS allowed multiple awards to vendors for technical assistance within defined geographical regions and/or among particular provider specialty types. In July 2015, four vendors were awarded contracts to service their defined target groups. Of the vendors selected to provide CTAP support, CalOptima, HITEC-LA, and CalHIPSO had previously provided REC services, while Object Health provided these services as a REC subcontractor. In 2018, DHCS received a 2-year, no-cost extension from CMS for the CTAP program. This will extend the life of the program until June 2020.

CTAP contractors are required to provide the following types of services:

- **Education and Outreach**: Disseminate knowledge about effective strategies and practices to select, implement and meaningfully use certified EHR technology. Assist eligible professionals and groups to meet the requirements to successfully apply to the Medi-Cal EHR Incentive Program.
- **Medi-Cal EHR Incentive Program**: Assist providers in understanding and meeting all requirements of the Medi-Cal EHR Incentive Program. Provide guidance and assistance to ensure eligible professionals and groups submit successful applications/attestations to the State.
- **Implementation and Project Monitoring/Management:** Provide coaching to the practice/clinic through all phases of implementation and advocating for the client with EHR vendor(s).
- **Practice and Workflow Redesign**: Assist providers and organizations in adapting and transitioning paper-based processes to technology enabled processes.
- **Functional Interoperability and Health Information Exchange:** Assist eligible professionals in connecting to available health information exchange infrastructure(s), including community health information organizations (HIOs), enterprise HIOs, and point-to-point health information exchange.
- **Meaningful Use Reporting**: Ensure that providers are making progress towards MU and collecting data appropriately so that the MU measures are accurate and reportable.

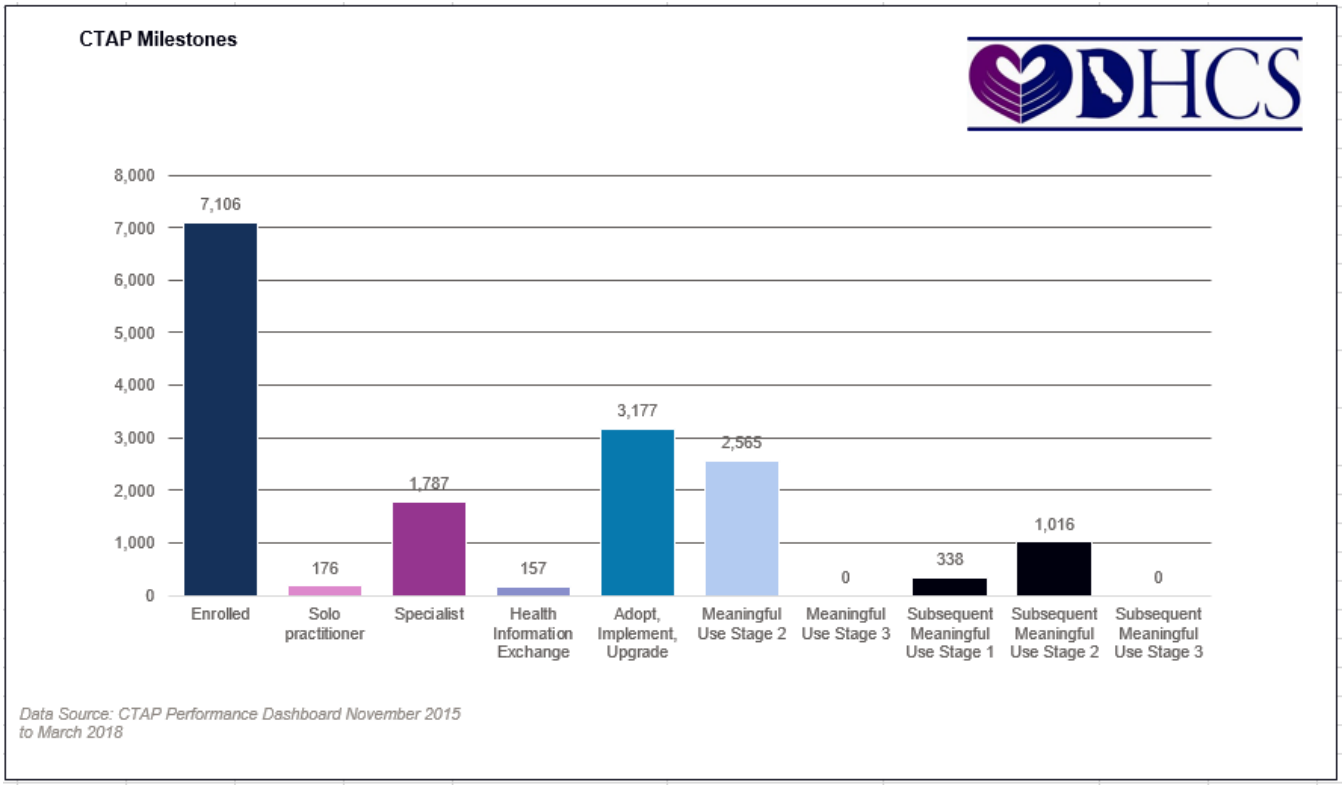
DHCS reimburses the technical assistance vendors using a “milestone-based” formula similar to that used by the ONC to support the RECs. The milestones factor in the need for technical assistance throughout all three stages of MU. The number of payments for each milestone are limited to the number of EPs assigned to each CTAP contractor. Payments are issued to contractors for each milestone as listed below:

- $500 per eligible professional who has signed a technical assistance acknowledgement/agreement;
- $500 per eligible professional who has signed or is included in a legally binding contract or agreement for health information exchange (HIE);

- $750 for each eligible professional enrolled who is a specialist or solo practitioner;
- $1500 for each AIU attestation submitted by an eligible professional;
- $2250 for each attestation by an eligible professional for first year Stage 1, Stage 2, and Stage 3 MU attestations;
- $1500 for each attestation for MU after the first year of any stage.

The graphic below displays the accomplishments of the CTAP program as of March 2018. Over seven thousand providers were enrolled based on CTAP efforts. CTAP providers are approaching their maximum enrollment and, as of March 2018, approximately 86% have gone on to achieve AIU or MU. CTAP activities have focused primarily on AIU as it will not be available beginning 2017. DHCS anticipates that payments issued for MU will increase in future years. As of March 2018, 41% of providers receiving CTAP assistance had made progress toward MU.

TABLE 9: NUMBER OF CTAP MILESTONES ACHIEVED/PROGRESS



1.9 VULNERABLE POPULATIONS

1.9.1 CHILDREN IN FOSTER CARE IN CALIFORNIA

There are approximately 60,000 children at any given time in foster care in California. As is the case nationally, these children tend to have more complex health care needs than other children and account for a disproportionate share of Medi-Cal expenditures. Nearly half of all children living in foster care in California suffer from chronic illnesses, and children in foster care are three to six times more likely than those in the general population to have significant psychological or behavioral problems. Yet children in foster care receive less than optimal care for a number of structural reasons.

On average, children placed in foster care in California experience two to three changes in foster placements each year. Placement changes are often accompanied by changes in health providers. The existing system for sharing information about a child in foster care is largely based on the passing of duplicate paper forms among caseworkers, public health nurses, foster parents, and health providers. Often providers do not receive forms, or receive forms that are missing crucial information about the child. Inadequate medical records for children in foster care contributes to poor quality health care that, in some instances, can be life threatening. This can include duplication of immunizations, over-prescription of psychotropic medications, misdiagnoses, and subsequent medical errors and omissions based on faulty paperwork. According to Children's Action Network, "doctors often have no reliable birth or immunization records, don't know who has previously treated the child, and have no facts about current and past diagnoses, treatments, or prescriptions."

Electronic exchange of key information for this highly mobile, high-needs population of children can result in greater coordination of care between providers and caretakers. This can increase efficiency, reduce program costs at the state and local levels and significantly improve outcomes for youth in foster care. Early findings from related efforts indicated that information management and coordination of care enabled by a system of electronic information-sharing can result in improved preventive care, decreased hospital stays, improved clinical conditions, and decreased cost of care. After implementation of electronic information exchange in Milwaukee, Wisconsin, the number of youth in residential programs declined from 364 to 140 per day, psychiatric hospitalizations declined by 80%, and the cost of care per child dropped from $5,000 per month to less than $3,300. The improvements were attributed to the electronic record system to

facilitate coordinated and individualized services.[9] Children in foster care also experienced a variety of improvements in clinical conditions.

In 2009, The Children's Partnership (TCP) participated in a variety of initiatives promoting electronic care coordination in foster care through two county-level pilots developed over the course of five years. These projects supported the exchange of critical health care-related information among members of a care team and provided foster youth with the tools to manage their own health records. The outcomes of the pilot projects were detailed in the Children's Partnership June 2016 report titled, *Engaging Foster Youth and Foster Parents in Electronic Records Initiatives: Lessons Learned*[10]. Several of the initiatives included in the report were specific to California.

Launched in July 2015, the intent of the Ventura County Foster Health Link (FHL)[11] is to coordinate and improve health care for the over 1,000 children in foster care. Frequent changes in family placements, health providers, and schools can result in incomplete records that could lead to inappropriate or insufficient health care. By connecting existing health information through a secure electronic health records system, the online portal made critical information available to providers and caregivers for enhanced care-related decision-making, effectively eliminating the patchwork of records that can accumulate. Pre-populated with information from the Child Welfare Services/Case Management System (CWS/CMS) database within the Human Services Agency (HSA), the FHL includes immunization history, well-child visits, allergies and health alerts, diagnoses and treatment, and health provider information. Additionally included is the ability to access timely health information such as medication, lab, and medical test data. Educational information such as schools attended and highest grade level achieved are also stored in the FHL. Health information provided on the FHL website and mobile application are hosted on a secure, encrypted server. System access is only granted to authorized individuals. Medical record information is inaccessible after logging out of the FHL. Within the first three months after launching, 51 foster parents and 222 Human Service Agency

[9] The Children's Partnership, *Improving Outcomes for Children in Foster Care: The Role of Electronic Record Systems (January 2009)*. Accessed May 9, 2018.

[10] Engaging Foster Youth and Foster Parents in Electronic Records initiatives: Lessons Learned. Accessed April 19, 2018.

[11] Ventura County Foster Health Link. Accessed April 19, 2018.

staff had created FHL accounts[12]. TCP expects continued growth and utilization of the FHL. Future goals for the FHL include development of a version accessible for older foster youth and inclusion of information from Ventura County school systems.

HealthShack[13] is a web-based, patient-owned repository for electronic health information designed for youth and foster care. Wind Youth Services in Sacramento, CA, in collaboration with FollowMe, Inc., an electronic health information vendor, and the University of California- Davis Children's Hospital, implemented HealthShack as a personal health record system, capable of electronically storing community resources and documents such as medical records, birth certificates, school transcripts, and housing history. Initially implemented in 2009, HealthShack is used within the cities of Sacramento and Stockton as well as Placer County. There are plans to expand accessibility of HealthShack to older foster youth in Sacramento County through partnerships with community-based organizations (CBOs) and the Sacramento County Department of Child Protective Services (CPS). Additional project goals included integration into Sacramento County's work with older youth as part of the emancipation process, maximize use at Sacramento CBOs, and for the creation of electronic linkages to allow automatic updates into the youth's record. These linkages would enable HealthShack to reach a wider set of vulnerable youth (such as those in the juvenile justice system) while also linking data available through county and state databases, such as the California Immunization Registry.

Developed by the Girls Health and Justice Institute (GHJI), the Girls Health Screen (GHS), is an evidence-based and gender-responsive medical screen developed for girls who are 11-17 years old and who have entered a detention or other juvenile justice residential programs. Designed to improve the health of girls in the juvenile justice system, the GHS enables juvenile correctional facilities to identify, prioritize, and address the physical and mental health needs of girls entering their care. The GHS was piloted in a locked Los Angeles County Probation Camp between 2012 and 2014. Approximately 180 girls were served and it has become a part of the standard medical intake for those entering the facility. Additionally, a collaborative effort with the Los Angeles County Departments of Health Services, Mental Health and Probation resulted in the implementation of GHS at Probation Camp Scudder during 2012-2013. In 2016, the GHS

[12] The Children's Partnership, *Ventura County Foster Health Link: Connecting Foster Families with Their Essential Records (January 2016)*. Accessed April 19, 2018.

[13] HealthShack. Accessed April 19, 2018.

was expanded to serve 2,000 girls in all three Los Angeles County detention facilities in web format. Originally paper-based, the Electronic Girls Health Screen is now part of the standard medical intake for all girls entering the Los Angeles county juvenile justice system, which serves approximately 1,600 girls per year. The GHJI has contracted to implement projects in San Joaquin County as well as five additional California counties, several other states, and tribal nations.

DHCS recognizes the great potential to improve coordination across the many programs and services available to children in foster care via the use of EHRs and electronic data-sharing and has been working with stakeholders to develop interventions and pilot projects. The long-term goal is to provide access to information to foster parents, caseworkers, health providers (physical, mental, and dental), public health nurses, educators, attorneys, judges, and older youth in foster care. The California information technology architecture involved may include the statewide HIE infrastructure, the Medicaid Management Information System (MMIS), and the CWS/CMS which is California's version of the State Automated Child Welfare Information System (SACWIS), as well as local systems that vary by county. The goals of this long-term effort are to provide comprehensive information about a child, facilitate communication among providers so they can more effectively coordinate and deliver care to children, afford foster parents and older youth in foster care access to information, and provide youth in foster care with a record of conditions and services received.

1.9.2 IMPROVING PSYCHOTROPIC MEDICATION USE IN FOSTER CARE

In 2012, the California Department of Social Services (CDSS) and DHCS initiated a joint Foster Care Quality Improvement Project (QIP) to improve oversight and monitoring of psychotropic medication use in the foster care population.

In June 2013, the Foster Care QIP issued a draft action plan outlining priority areas.

1. Promotion of cross-system data sharing and use of data for oversight and monitoring.
2. Defining the role of child welfare workers, public health nurses, mental health providers and group home administrators in consent, monitoring and oversight.
3. Implementing oversight and monitoring polices and processes.
4. Improving family and youth engagement.

Workgroups were established to ensure that the deliverables were completed. These workgroups are as follows:

- The Clinical Workgroup developed the tools needed to assist prescribers, pharmacists, and the juvenile courts to improve the provision of psychotropic medications. The tools developed included prescribing protocols and practices for improved monitoring and oversight. The *Foster Youth Mental Health Bill of Rights*[14] was completed in February 2015. The content is based on an original list of mental health rights developed by the Voices of the Unheard Taskforce, a group formed by members of California Youth Connection (CYC). The document outlined some of the legal rights of California foster youth within the public mental health system. The rights listed are intended to reflect and support the needs expressed by foster youth in their experience as consumers within the public mental health system. Young Minds Advocacy Project staff attorneys, in collaboration with CYC and the National Center for Youth Law, prepared the document, *Quality Improvement Project: Improving the Use of Psychotropic Medication Among Children and Youth in Foster Care* [15], on behalf of DHCS/CDSS with input from stakeholders.

- The Youth, Family, and Education Workgroup was established to focus on the development and dissemination of training materials and information about psychotropic medications for youths, parents, caregivers, social workers, juvenile court staff, and other key figures supporting the foster care population. The *Questions to Ask about Medications*[16] was completed in February 2015. When a child or youth does not feel well, sometimes medications can help. First, a complete assessment of the child or youth's mental and physical health must be done to make sure it is not just a one-time occurrence and that other things may not help; such as getting better sleep, making changes at school or home, or talking with a therapist. Medications that can help children or youth with their feelings, behavior, or how they are doing at school are most effective when a therapist is involved. Additionally, the *Questions to Ask about Medications* document provided caregiver(s) and youth important information about prescription medications.

- The Data and Technology Workgroup conducted analysis of child welfare, managed care, and fee-for-service pharmacy claims data. The data included court authorizations and pharmacy claims that have been reconciled and compiled into

[14] DHCS, *Foster Youth Mental Health Bill of Rights*. Accessed April 19, 2018.

[15] DHCS, *Quality Improvement Project: Improving the Use of Psychotropic Medication Among Children and Youth in Foster Care*. Accessed April 19, 2018.

[16] DHCS, *Questions to Ask About Medications*. Accessed April 19, 2018.

reports to assist county child welfare departments monitor court approval of psychotropic medication usage. An additional responsibility of this workgroup was to develop outcome measures as an additional monitoring mechanism.

The Foster Care QIP established a list of deliverables. To date, the following deliverables have been completed:

- On April 16, 2015, DHCS and CDSS announced the release of *The California Guidelines for the Use of Psychotropic Medication with Children and Youth in Foster Care*[17]. While these guidelines were not codified mandates for providers of mental health and/or social services, they were developed for use in conjunction with existing mandatory state regulations for the population addressed. This document is comprised of a guidelines section with four appendices. The guidelines describe the basic principles and values, include a guide to a treatment plan which summarizes best practices from national guidelines, other states guidelines, and California counties mental health services policies and protocols. Prescribing standards for psychotropic medication by age groups are included in the appendix for the Foster Care QIP[18]. Parameters for psychotropic medications indications, dosing and monitoring were adopted from the Los Angeles County Department of Mental Health (LACDMH)[19]. Recommendations to address challenges in the management of complex cases[20] and the associated decision tree[21] excerpted from the guidelines are available to prescribers. Providers are encouraged to review and discuss the Guidelines with care teams and to integrate them into daily practice.

[17] California Department of Social Services (DSS) and Department of Health Care Services (DHCS), Foster Care Quality Improvement Project, Accessed April 19, 2018.

[18] DSS and DHCS, *Appendix A: Prescribing Standards of Psychotropic Medication Use by Age Group*. Accessed April 19, 2018.

[19] DSS and DHCS, *Appendix B: Parameters for Use of Psychotropic Medication for Children and Adolescents*. Accessed April 19, 2018.

[20] DSS and DHCS, *Appendix C: Challenges in Diagnosis and Prescribing of Psychotropic Medications*. Accessed April 19, 2018.

[21] DSS and DHCS, *Appendix D: Algorithm (Decision Tree) for the Prescribing of Psychotropic Medications*. Accessed April 19, 2018.

- Interagency agreements (IA) between CDSS, DHCS, and counties were established to share pharmacy claims data, administrative health data, and child welfare services data. The combined data is shared with county departments of child welfare services to improve coordination of care. As of spring 2018, all counties have entered into an agreement with the state.

  Data shared under the agreements has been used to publish five new Healthcare Effectiveness Data and Information Set (HEDIS) measures, including 5 measures published in *Measuring Quality Care: Safe and Judicious Use of Antipsychotics in Children & Adolescents*[22]**.** These published utilization measures include the following:

  1. Follow-up care for children prescribed attention deficit hyperactivity disorder medication, which includes an initiation phase and a continuation phase.
  2. Follow-up after hospitalization for mental illness, which includes a 7-day and a 30-day follow-up.
  3. Use of first-line psychosocial care for children and adolescents on antipsychotics.
  4. Use of multiple concurrent antipsychotics in children and adolescents. Of children who receive one antipsychotic medication for 90 continuous days, provides the percentage of children who had two or more antipsychotic medications during any 90 day period.
  5. Metabolic monitoring for children and adolescents on antipsychotics. This measure assesses the performance of metabolic monitoring for those children exposed to antipsychotic medications beyond a single acute treatment.

1.9.3 MENTAL HEALTH AND SUBSTANCE USE DISORDERS

Persons with severe mental health and/or substance use (MH/SU) disorders have traditionally been unable to access the proper coordination of physical and mental health services necessary to promote recovery and wellness. This contributes to multiple chronic medical illnesses for these persons with increased costs for the medical system, and eventually results in much earlier deaths. A critical issue in the current health reform and economic climate is that Medicaid has become the single largest payer of mental health

[22] NCQA, *HEDIS Measures for the Safe & Judicious Use of Antipsychotic Medications in Children and Adolescents*. Accessed June 4, 2016.

services for low-income people, accounting for about 40% of all public-sector spending on mental health services in 2001 compared with 21% in 1971. An April 2016 report from the Center for Health Care Strategies found that nationally, beneficiaries with behavioral health diagnoses account for 48% of total Medicaid expenditures[23]. A study of Californians in the fee-for-service Medi-Cal system prepared by JEN Associates compared the 11% of Medi-Cal enrollees with a serious mental illness (SMI) to all Medi-Cal fee-for-service enrollees. The SMI group's spending was 3.7 times higher than the total population ($14,365 per person per year compared with $3,914)[24].

In 2004, voters in California approved the Mental Health Services Act (MHSA). This imposed a 1% tax on the incomes of individuals making more than $1 million per year. These funds are used primarily at the county level to support wellness, recovery, and resiliency for adults and older adults with severe mental illness as well children and youth with serious emotional disturbances and their family members. A portion of the MHSA funds have been specifically set aside for Capital Facilities and Technological Needs pursuant to California Welfare and Institutions Code (W&I Code) Section 5892(a)(2) to promote the efficient implementation of the MHSA. Most counties have used these funds to acquire and maintain certified EHRs for mental health providers. Cerner, NetSmart, and Echo are the primary EHRs used.

Information exchange in a behavioral healthcare setting requires a different approach than primary care. For example, one major difference between behavioral health data and primary care is that a typical consumer is in treatment over a longer period of time encompassing multiple episodes with a number of treatment providers. A behavioral health information exchange (BHIE) can address this unique situation by utilizing a hybrid federated/repository model of data sharing to ensure the consumer record is complete. These and other differences support the need for a health information exchange in order to fully meet the unique data exchange requirements of behavioral health and maximize the effectiveness of behavioral healthcare for consumers. Another example of behavioral healthcare's unique requirements relates to sharing a continuity of care document (CCD). A CCD is designed to share acute care information, but cannot support key behavioral data such as multi-axial diagnosis codes and treatment plan information. Unlike a primary care HIE, a BHIE utilizes a modified CCD to ensure critical information can be shared, while still maintaining CCD standards. Privacy and security rules for consent, use and

[23] Center for Health care Strategies, Inc., *Key Reasons to Integrate Physical and Behavioral Health Services in Medicaid (April 2016, Infographic)*. Accessed April 10, 2018.

[24] JEN Associates, *Beneficiary Risk Management: Prioritizing High Risk SMI Patients for Care Management/Coordination (February 2010)*. Accessed April 10, 2018.

disclosure and reporting are different for those within this population than those in the general population of health care treatment. Additional cultural issues around family member support, stigma and trust are paramount for successful mental health HIE. This requires a strong governance and policy that will allow for standards and requirements to be shared among all community based providers. As quality measures and reporting tools are in their infancy, focused resources will be needed to coordinate the outcomes analysis necessary to improve care. These resources are lacking in the counties and a combined approach to reporting through an efficient HIE will allow for rapid adoption of best practice quality improvement measures for this population.

The electronic exchange of behavioral health data has many benefits for both providers and patients. In July 2015, the California Health Care Foundation (CHCF) released *Fine Print: Rules for Exchanging Behavioral Health Information in California*[25]. In addition to examining the legal framework as related to the exchange of behavioral health information in California, the report also profiled initiatives developed in San Diego and Alameda Counties as well as by Inland Empire Health Plan (a Medi-Cal managed care plan operating in San Bernardino and Riverside Counties). These initiatives, described below, explore the capabilities and any barriers preventing the sharing of some behavioral health information as well as substance abuse records under both federal and California law.

The Council of Community Clinics (CCC) in San Diego County is comprised of 16 private, nonprofit clinics that provide primary care and behavioral health services. Funding received from the 2004 California Mental Health Services Act (MHSA) added behavioral health professionals in FQHCs to address the behavioral health needs of patients. Additional funding from the federal Substance Abuse and Mental Health Services Administration (SAMHSA) allowed for additional screenings for patients receiving specialty mental health treatment for serious physical illnesses by primary care professionals in behavioral health programs. The goal of the pilot was to reduce the 25-year mortality disparity for people with severe mental illness. Data sharing occurred by allowing participating professionals access to the medical records used at the facility or location where care was provided. While there were some successes with data sharing over the course of the pilot project, summary-of-care documents could not be shared as the county-used EHR system did not interface with other EHRs. Alameda County developed a data sharing initiative which focused on the severely mentally ill, who often have serious or chronic physical medical conditions and poorer physical health outcomes.

[25] California Healthcare Foundation, *Fine Print: Rules for Exchanging Behavioral Health Information in California*. Accessed April 10, 2018.

Launched in 2012, the pilot was a part of the county's "10 by 10" campaign, which aimed to increase the life expectancy for mental health consumers by 10 years within 10 years. Specialty mental health claims data was submitted to the county, who then made the claims data available to providers via a secure flat file. The providers had the option to upload the data and create a patient medical home. The medical home provider could decide whether to scan or manually enter the information into the EHR system. Under this pilot, only data that could be shared legally in California without the consent or authorization of the patient was exchanged. At the time of the CHCF report, the majority of the data shared was for adults. The project has since been modified to include the mental health data of minors as well.

Inland Empire Health Plan (IEHP) is a Medi-Cal managed care plan utilized by San Bernardino and Riverside Counties. One of the first managed care plans to have a behavioral health department, the IEHP created a secure portal where behavioral health care providers could add treatment plans or medication lists. The beneficiaries' other treating providers could view, download or print that information. The portal supports one-way sharing of information. When a treatment plan is uploaded to the portal, the behavioral health provider is required to attest that beneficiary consent was obtained in order to share the treatment plan with other providers. After consent is given, the treatment plan can be accessed by any health care provider with an established a treatment relationship with the beneficiary. For those beneficiaries who do not consent, the treatment plan is uploaded to the portal; however, access is blocked for other treating providers. Claims data is used to establish the treatment relationship between the provider and beneficiary.

The CHCF report concluded that behavioral health providers could share mental health information to enhance treatment and coordination of care. While the initiatives were deemed successful, none were able to achieve seamless digital sharing due to the lack of interoperability of EHR technology. In order to ensure that health information was available, additional steps outside the EHR systems were needed.

San Joaquin County has developed a project in which behavioral health providers using the Clinician's Gate EHR contribute a limited data set of mental health patient data to the San Joaquin Community Health Information Exchange which can also be accessed by medical health providers. Data regarding psychotherapy notes and substance abuse cannot be shared. Patients must "opt-in" to allow sharing of behavioral health data and patient consent is required for secondary sharing of behavioral health data by providers.

In June 2017, CHHS developed the *State Health Information Guidance (SHIG) on Sharing Behavioral Health Information*.[26] The SHIG clarifies the circumstances under which mental health and substance abuse disorder information can be exchanged. This is accomplished through the use of scenarios developed through comprehensive research and stakeholder input. The various scenarios further illustrate when it is appropriate to exchange health information. The guidance contained in the SHIG is considered to be authoritative but non-binding.

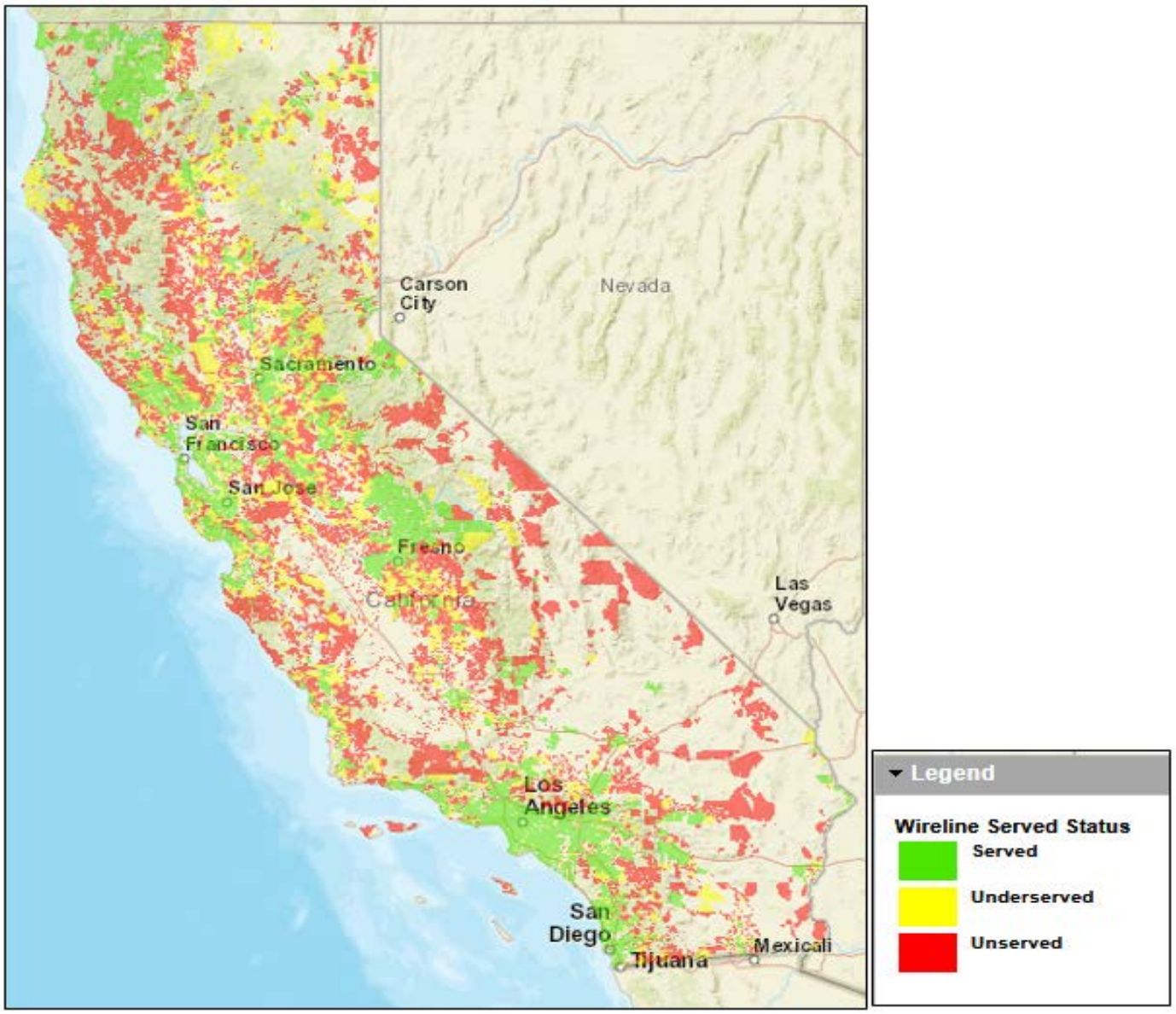
1.10 BROADBAND INTERNET ACCESS

High-speed Internet access, or broadband, has become a fundamental aspect of the infrastructure needed to educate youth, create jobs, promote public safety, improve the standard of living, and deliver essential services like health care. In 2006, Executive Order S-23-06 established the California Broadband Initiative and the associated California Broadband Task Force (CBTF). The CBTF conducted a yearlong study that identified broadband availability and developed recommendations toward improving broadband accessibility. Released in January 2008, the CBTF's report included seven recommendations to further the implementation of statewide broadband access. Of those, five recommendations cited the need to build, improve or leverage existing broadband infrastructure. Health care related recommendations included a collaborative effort between public and private sectors to create a sustainable statewide e-health network. Established by legislation in 2010 (S.B. 1462)[27], the California Broadband Council began work to implement the recommendations outlined in the CBTF report. Federal funds received from the National Broadband Plans supported these efforts, which added to the $420 million received in broadband infrastructure grants from the federal American Recovery and Reinvestment Act of 2009 (ARRA) and the $57 million in California Advanced Services Fund grants. The Council also worked to ensure increased coordination with other state departments and agencies involved in the expansion of broadband accessibility, adoption, and usage throughout the state.

[26] CHHS, *State Health Information Guidance (SHIG) on Sharing Behavioral Health Information*. Accessed April 27, 2018.

[27] SB 1462 (Padilla, Chapter 338, Statutes of 2010). Accessed April 19, 2018.

FIGURE 4: CALIFORNIA BROADBAND AVAILABILITY (2016)[28]

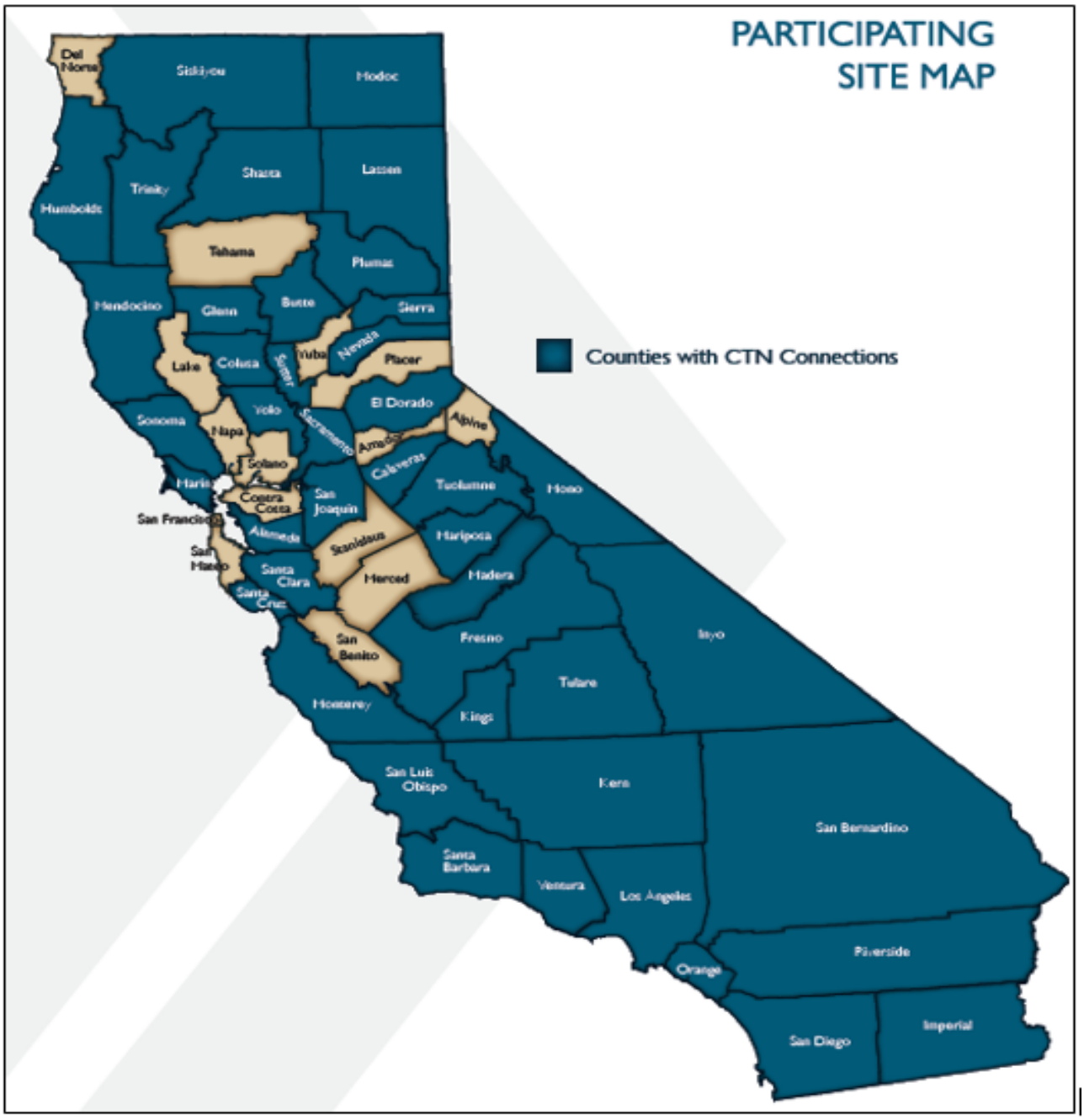


[28] California Interactive Broadband Map (Data as of: 12/31/2016). Accessed February 17, 2017.

1.10.1 CALIFORNIA TELEHEALTH NETWORK

The California Telehealth Network (CTN) serves over 500 safety net clinics and hospitals in rural and medically underserved communities across California. CTN sites receive up to a 65% subsidy on broadband services funded by the Federal Communications Commission (FCC) Healthcare Connect Fund (HCF). The HCF makes it financially feasible to deploy broadband to healthcare providers in rural and medically underserved urban communities to improve health care delivery primarily through the use of virtual, telemedicine patient consultations and other broadband enabled healthcare applications. As demand for access to specialty care physicians in rural areas continues to grow, CTN's site count doubled in 2016 and CTN expects to reach 1,000 sites within the next two years. Participating CTN sites report that they are conducting over 20,000 live telemedicine consultations over the network annually, which is an increase of 65% over 2016. The vast majority of the patient served are Medi-Cal beneficiaries. Of the consultations performed via telemedicine, roughly 70% are for behavioral health services that are not generally available in rural communities. CTN also operates the California Telehealth Resource Center (CTRC) which is one of 12 regional telehealth resource centers funded by the federal HRSA to foster telehealth adoption, and provide training and implementation support for California health care providers. CTN plans to continue to focus on the expansion of broadband and telehealth availability in rural and underserved communities to improve health care delivery.

FIGURE 5: CALIFORNIA COUNTIES WITH A CTN CONNECTION (2015)[29]



[29] CTN, *California Telehealth Network 2015 Annual Report*. Accessed April 24, 2018.

In 2007, the FCC Rural Health Care Pilot Program granted CTN a $22.1 million award in funding. Funding from the award was used to increase access to acute, primary and preventive healthcare in rural California. The Broadband Technology Opportunities Program (BTOP) provided additional funding through a grant administered by the National Telecommunications and Information Administration. CTN and the University of California, Davis Health System were awarded $13.8 million in BTOP funds which supported the adoption of broadband and technology enabled healthcare throughout the State. Funds received from BTOP provided training opportunities made available through partnerships with libraries, community colleges, health organizations and public safety sites. Before ending in 2014, BTOP funding provided telehealth equipment to over 100 safety net health care locations and supplied the initial funding for CTN administrative expenses and staffing. Grant funding received from United Healthcare, the Blue Shield of California Foundation, the Health Resources and Services Administration, California Emerging Technology Fund, Kaiser Permanente, USDA Rural Utility Service, and the California HealthCare Foundation have supported continued operations of CTN. In August 2016, the CTN received a USDA Rural Development Distance Learning and Telemedicine (DLT) grant. The awarded DLT funds have allowed CTN to complete the second phase of infrastructure enhancements to the broadband network and launch web based video conferencing, allowing the CTN network to continue to provide much needed services to Medi-Cal and safety net patient populations. Funding from the grant provided telehealth equipment and software for rural CTN clinics and hospitals.

1.10.2 DIGITAL 395 MIDDLE MILE PROJECT

In August 2010, the National Telecommunications & Information Administration (NTIA) announced that the California Broadband Cooperative was awarded funding for the Digital 395 Middle Mile project. The project proposed building a new 553-mile fiber network that followed U.S Route 395 between northern and southern California. The Eastern Sierras region between Barstow, California and Carson City, Nevada were dependent upon a decades-old telephone infrastructure and had limited broadband capabilities. These limited capabilities left areas of the California Central Valley and eastern California unserved. The service area for Digital 395 encompassed 35 public safety entities, 47 K-12 schools, 13 libraries, 2 community colleges and 2 universities in addition to 36 municipalities, 6 Indian reservations, 2 military bases, 15 healthcare facilities, and 104 government offices.[30] Efforts related to the project were completed in 2014.

[30] The Digital 395 Middle Mile Project. Accessed on: April 25, 2018

1.10.3 DIGITAL 299 BROADBAND PROJECT

In February 2017, Inyo Networks, INC. (Inyo) submitted a grant request for funds from the California Advanced Service Fund (CASF) to provide high-capacity broadband services to communities along the California State Route 299. The proposed project covers rural Northern California between Redding and the California coast, including the areas of Shasta, Trinity, and Humboldt counties. Digital 299 would provide broadband connections for 307 underserved households, with as many as 102 schools, colleges, research institutions, hospitals, clinics, public safety, tribal lands, and other institutions. [31]The project also included service to five community fire stations, including two Cal Fire stations, the Trinity County Sherriff's office, six medical and health institutions, and other areas that are at risk for wildfires and earthquakes. It is anticipated that the project will be mostly completed in three years.

1.11 TELEHEALTH

Telehealth is a collection of methods used to enhance health care, public health, and health education delivery and support while using telecommunications technologies. Virtual medical, health, and education services can be delivered via a broad variety of technologies. These services may include, but are not limited to, dentistry, counseling, physical and occupational therapy, home health, chronic disease monitoring and management, disaster management, and consumer and professional education.

In California, telehealth represents an additional tool used in a medical practice, not a separate form of medicine. Standards of care remain the same whether the patient is seen in-person, through telehealth or another method of electronically enabled health care. DHCS considers telehealth a cost-effective alternative to health care provided in-person, particularly in underserved areas. Telehealth services can decrease travel time, enable providers to see more patients, and increase the amount and type of specialty services available to patients. These efforts toward improved patient care were reflected in the California Telehealth Advancement Act of 2011(AB 415)[32], which removed the limitations upon where a telemedicine appointment could occur. Coverage and reimbursement policies detailed in AB 415 also aligned with federal regulations and

[31] *California PUC Approves 299 Broadband Infrastructure Project*. Accessed on: April 25, 2018

[32] AB 415 (Logue, Chapter 547, Statutes of 2011). Accessed on: April 25, 2018

included all California-licensed health professionals as telehealth providers, including all Medi-Cal managed care plans that contracted with DHCS.

Legislation at the federal level, specifically the 21st Century Cures Act, requires reporting on methods that could improve quality of care for those in a Medicaid program. Telehealth was specifically cited in the act as a possible method to deliver safe and effective health care services. Through examination of high-volume services, it may be possible to discover which services are best suited to telehealth. In addition to the examination of services, further review would assist in the identification of possible barriers that may prevent the expansion of telehealth services.

The CTRC provides additional support of telehealth efforts. Established in 2006, the CTRC is a federally designated Telehealth Resource Center for California whose primary focus is to assist the clinics that serve the state's rural and medically underserved population. Since September 2012, the technical assistance offered by CTRC was provided to 517 organizations throughout the state. Approximately 60% of these organizations received continued support from CTRC through multiple technical assistance visits. CTRC encourages the use of telehealth through on-site, customized hands-on training, which was provided to 141 safety net clinics, rural and critical access hospitals. CTRC also conducted 12 regional telehealth implementation workgroups.

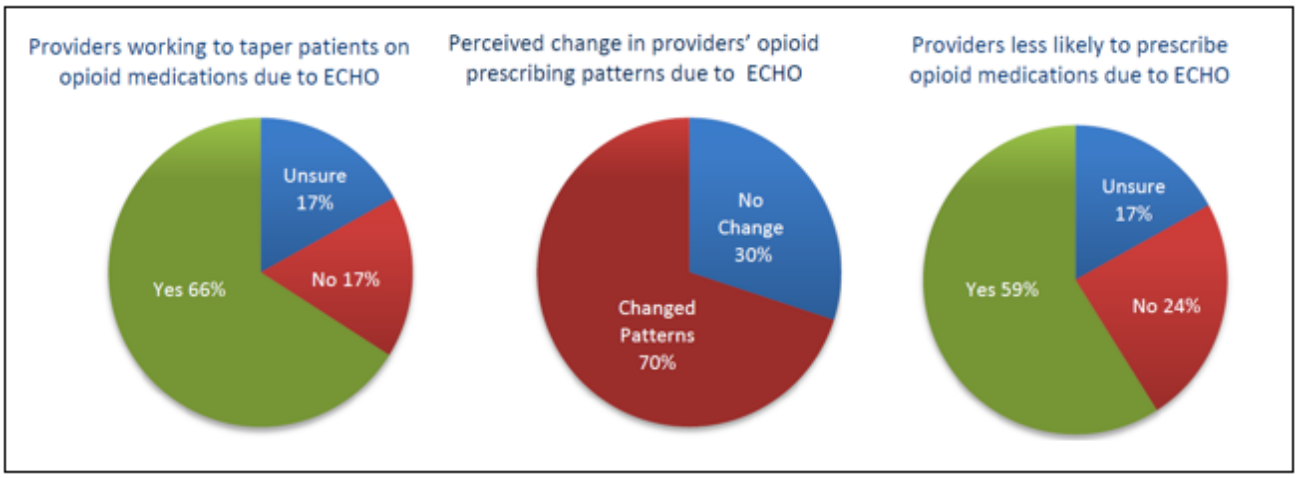
EXPANDING CAPACITY FOR HEALTH OUTCOMES ACT

Project ECHO (Extension for Community Healthcare Outcomes), started by the University of New Mexico in 2003, is a continuing medical education model that uses technology to connect specialty physicians with primary care providers in rural areas. The project successfully showed its capacity to provide best-practice specialty care and reduce health disparities. In December 2016, President Obama signed S. 2873, the Expanding Capacity for Health Outcomes Act (ECHO ACT). The ECHO Act is intended to improve health care in medically underserved areas. With a focus on telehealth, the ECHO Act builds upon the successes of Project ECHO though encouraged development and use of technology-enabled collaborative learning. The ECHO Act requires that the impact on behavioral health, implementation of public health programs (syndromic surveillance), rural health care delivery and other areas be examined to evaluate the impact. The program will test the use of telehealth modalities to connect specialists with other health care professionals for the purpose of case-based learning, disseminating best practices, and evaluating outcomes.

In California, universities and health plans developed initiatives that followed the Project ECHO model. UC Davis has launched the UC Davis ECHO Pain Management

Telementoring, which is a peer-to-peer video conference-mentoring program. The program supports community-based, primary care physicians and developed methods for safe and effective management of chronic pain within the community. The curriculum includes an introduction to pain management and mental health, pain management essentials, opioids, and other topics. Lessons learned from previous sessions noted changes in a provider's opioid prescribing habits as well as increased efforts to assist patients with tapering off opioid medications.

FIGURE 6: REPORTED CHANGES TO OPIOID PRESCRIPTION HABITS (2017)[33]



Similarly, UCSF Medical Center developed the Hepatitis C ECHO Program. This program develops partnerships between multi-disciplinary specialists and health care providers in underserved communities through education and guidance on the treatment of patients with hepatitis C. UCSF provides educational support to participating primary care providers. Using web-based technology, specialists are able to co-manage patients and reduces variations in care, while treating more patients within their communities at a lower cost.

Health plans implemented collaborative efforts with Project ECHO. Starting in spring 2012, the project ECHO LA Knowledge Network was supported by L.A. Care Health Plan. The project linked specialists and primary care providers with the goal of improved care for chronic, common, and complex illness for patients in underserved communities. Health plans also recognized the benefits of Project ECHO in rural communities. In July 2015, the ResolutionCare FUND and the Partnership HealthPlan of California (PHC)

[33] UC Davis Health, Pain Management Telementoring. Accessed on: April 25, 2018

announced a nine-month pilot project. The pilot program created primary care teams to increase the availability of specialty hospice and palliative care resources.

1.11.1 TELEMEDICINE

For purposes of Medi-Cal, the term telemedicine is used to make it distinct from telehealth. Telemedicine allows for the use of medical information exchanged from one site to another using interactive telecommunications equipment that includes, at a minimum, the use of audio and video equipment to enable two-way, real-time, interactive communication between the patient and provider. In rural areas, specifically where distance and provider shortages are barriers to care, telemedicine services can increase patient access to services. As of February 2017, Medi-Cal providers had submitted a total of 6,780 claims for telemedicine-related treatment.

In 2013, researchers at UC Davis found that telemedicine consultations with pediatric specialists reduced the number of drug errors in eight rural emergency departments. The study examined care provided to 234 patients. In 73 cases, a pediatric critical care specialist conferred with an emergency physician, the patient, a nurse, and a parent or guardian. Some specialty consults, 85 cases or 36%, were conducted by telephone, while for 76 cases, the emergency department did not receive a specialist consult. The study found that the error rate for the telemedicine group was 3.4% compared to 10.8% for telephone consultations and 12.5% without a consult[34]. In addition to reduced error rates, the UC Davis study found that the inclusion of a telemedicine consultation resulted in a higher quality-of-care than those without a consultation.

UC Davis Children's Hospital created its own Pediatric Telemedicine Program. The program provided physicians and patients real-time remote consultation and evaluation through interactive, high-definition video and audio communication. A study conducted in 2013 found that only 3% of pediatric critical-care specialists practice in rural areas. The UC Davis program was able to offer 24/7 expertise to remote health-care providers, without the need to transfer a patient to UC Davis Children's Hospital. The program has found that telemedicine consultations improve the quality of care for seriously ill and injured children in rural areas. On average, UC Davis specialists conduct 2,800 inpatient and outpatient telemedicine consultations each year[35].

[34] UC Davis Health, *Telemedicine reduces pediatric medication errors in rural emergency departments (November 25, 2013)*. Accessed on May 3, 2017.

[35] UC Davis Children's Hospital, UC Davis Pediatric Telemedicine Program. Accessed April 25, 2018

Other health plans have examined the use of telemedicine to provide specialty care to members residing in rural areas. In May 2014, Partnership Health Plan (PHP) contracted with TeleMed2U to provide adult specialty telemedicine within 14 rural counties. Since implementation, PHP reported telehealth usage in 11 locations. The eight health centers provide care to over 45,000 members. Through the collaborative effort between PHP and Telemed2U, many patients gained access to specialty services not otherwise available.

1.11.2 TELEDENTISTRY

Teledentistry is the application of telemedicine technology and resources in the practice of dentistry. This may include, but is not limited to, dental consultation, education, and public awareness provided in the same manner as telehealth and telemedicine. Information and communication technologies are utilized, including the electronic exchange of diagnostic image files, such as radiographs, photographs, video, optical impressions, and photomicrographs of patients. The American Dental Association (ADA) defined teledentistry as the electronic exchange of dental patient information from one geographic location to another for interpretation and/or consultation among authorized healthcare professionals. The ADA further clarified in November 2015 that teledentistry can take a number of forms including:

- Live video: Two-way interaction between a patient and dentist using audiovisual technology.

- Store and forward: Recorded health information- such as radiographs, photos, video, digital impressions or photomicrographs- is transmitted through a secure electronic communications system to the practitioner. The practitioner then uses the information to evaluate the patient's condition or render a service outside of real-time or live interaction.

- Remote patient monitoring: Personal health and medical information is collected from an individual in one location then transmitted electronically to a provider in a different location for use in care. This could be used in a nursing home setting or in an educational program.

- Mobile health: Health care and public health practice and education supported by mobile communication devices such as cell phones, tablet computers or personal digital assistants. This could include apps that monitor patient brushing or other home care.

On September 27, 2014, Governor Brown approved and chaptered Assembly Bill (AB) 1174[36], Chapter 662, which amended Section 14132.725 of the WIC. Under AB 1174, "face-to-face contact between a health care provider and a patient is not required under the Medi-Cal program for teledentistry for store and forward," which enabled Medi-Cal dental (Denti-Cal) providers to utilize this alternative treatment modality. Effective July 2015, DHCS permitted the use of teledentistry for select dental services in an effort to increase access to care for underserved populations. In addition to legislative efforts, CMS approved California State Plan Amendment (SPA) CA-15-010[37], which approved the use of live transmissions as well as further guidance regarding clarified requirements and program coverage surrounding the use of teledentistry.

Tracking the use of teledentistry among Denti-Cal providers has remained difficult because current dental terminology codes do not include a specific code for teledentistry services. Dental providers submitting a claim for teledentistry instead submit using an unspecified, miscellaneous procedure code, which is commonly accompanied with narrative documentation.

In an effort to advance the utilization of teledentistry, the University of the Pacific, Arthur A. Dugoni School of Dentistry, developed and directed a six-year pilot project from 2010 to 2016 aimed at improving oral health for groups who do not receive dental care on a regular basis and have high rates of untreated dental disease. This project, called the Virtual Dental Home (VDH), utilized geographically distributed, telehealth-connected teams that provided preventive and early intervention treatment in a community setting. This community-based oral health delivery system reached people where they lived, worked, or received educational or social services and reduced the need for the patient to travel in order to receive dental care. The VDH received financial support from approximately 27 funding agencies and organizations, totaling over $5.5 million. Of the 11 communities and approximately 50 established sites in California, services were provided for 3,442 patients who received 7,967 visits. The system relied upon collaboration between dentists in dental offices and community-based dental hygienists and dental assistants. Through the partnership efforts, those patients in need of more complex treatment received referrals by the VDH to a dentist in the area. Results

[36] AB 1174 (Bocanegra, Chapter 662, Statutes of 2014). Accessed on: April 25, 2018

[37] California State Plan Amendment (SPA) CA-15-010. Accessed on: April 25, 2018

presented in the Virtual Dental Home Demonstration Report (June 2016)[38] cited that over 90% of patients seen were enrolled in the California Medicaid program and received Denti-Cal benefits. The reported results are indicative of children seen over the course of the VDH project. The VDH is now in its seventh year of delivering oral health services to California's vulnerable and underserved populations.

1.12 HEALTH INFORMATION EXCHANGE

In August 2006, President Bush issued an executive order stipulating that health care programs sponsored by the federal government should promote high quality and efficient health care through the adoption of health information technology and set the goal of nationwide use of electronic health records by 2014. In March 2007, California's governor issued an executive order (S-06-07) calling for extensive HIT adoption and set a goal of achieving 100 percent electronic data exchange within the next 10 years. In order to meet this goal as well as the needs of a diverse group of stakeholders, California leaders recognized that the development of information systems needed to be a collaborative effort between public and private sectors.

In 2007 and 2008, California submitted CMS Transformation Grant applications for the Medi-Cal Health eSolutions project. The project goals included improved quality of care, reduced medication errors as well as reduced costs through the exchange of standardized clinical information between Medi-Cal and its providers. While California did not receive grant funding, the state was included in the Multi-State HIT Collaborative and benefited from the lessons learned from the Transformation Grant awardees and best practices for MU. The Transformation Grant process also led to collaborative projects with the Northern Sierra Rural Health Network, the California e-Prescribing Consortium, Redwood MedNet, Long Beach Network for Health, California Regional Health Information Organization (CalRHIO) and numerous other HIE/HIT efforts throughout the state.

[38] University of the Pacific, Arthur A. Dugoni School of Dentistry, Report of the Virtual Dental Home Demonstration (June 14, 2016). Accessed on: April 9, 2018

1.12.1 STATE DESIGNATED ENTITY

In 2010, as part of the HITECH Act, CHHS was awarded a federal State HIE Cooperative Agreement grant of $38.8 million designated to support and expand the use of HIE technology[39]. As the State Designated Entity (SDE), CHHS and the California Office of Health Information Integrity (CalOHII) established a cooperative agreement. CalOHII served as the governance entity responsible for executing the strategic and operational plan for HIE. As a qualified SDE, CalOHII was responsible for developing and advancing mechanisms for information sharing across the health care system. As part of the strategic plan, the Cooperative Agreement focused on:

- Developing necessary technical and trust standards and agreements;
- Providing grants to local HIOs to expand and improve operations;
- Removing barriers to HIE interoperability;
- Coordination with Medi-Cal and other state and local public health programs to support meaningful use of electronic health records and population health management; and
- Convening, educating, and informing HIE stakeholders.

Much of the work in the strategic plan represented collaborative efforts of volunteer public and private stakeholders in the California healthcare community. Stakeholders had the opportunity to share ideas and feedback through committees, workgroups, webinars, and statewide summits. These collaborative efforts led to a culture change, which reflected a focus on patient needs. One such effort was the California Privacy and Security Advisory Board (CalPSAB). CalPSAB conducted an analysis of existing state laws in California and collaborated with the University of California, Hastings College of Law to develop the California Health Information Law Index (CHILI). The posted database cross sectioned all current federal and state statutes pertaining to health information, providing California's health care policy makers and stakeholders with a compendium of the relevant laws. CalPSAB recommended the adoption of affirmative patient consent (opt-in) for electronic exchange of health information in California, however this recommendation met with considerable opposition from stakeholders.

To help provide clarity in the policy debate, CalOHII awarded three State Health Information Exchange Demonstration project grants to examine issues of patient access to and consent to provide health information. Participants in the project grants included:

[39] CHHS, Health Information Exchange Archive. Accessed on April 25, 2018.

- San Diego Regional Health Information Exchange (SDRHIE) used a central policy of opt-in consent for sharing patient data through a HIO. Rady Children's Hospital was the only participating SDRHIE organization that had fully implemented an opt-in consent management process during the course of the Demonstration Projects.

- Santa Cruz Health Information Exchange (SCHIE) tested a process that automatically included patient data in the HIO while simultaneously notifying the patient of their right to opt-out of sharing that information. While at the physician's office, patients receive instructions and notification.

- Inland Empire Health Information Exchange (IEHIE) also tested a similar opt-out process that involved storing the patient's information and consent in the HIO. Additionally, patients receive an educational pamphlet by mail or during the registration process with the provider.

The projects found that:

- Lack of standard, consistent terminology is a barrier to successful HIE.
- When offered the choice, patients generally agree to share health information electronically.
- Previously-held beliefs about the consent management process may not be true.
- EHR and technology standardization is a barrier to electronic consent management.
- Lack of standardization among HIOs is a barrier to interoperability.
- Trust remains a critical component to successful HIE.

After a thorough evaluation and analysis of the findings from the Demonstration Projects, CalOHII recommended the following in order to successfully advance private and secure exchange of health information in California:

- Establish a common vocabulary and change the conversation to reduce confusion with terminology, create a standardized language, and move away from patient permission as a single policy lever.
- Continue to let HIOs determine the patient permission model that is most appropriate for the community they serve.
- Patients must be provided an opportunity to make a meaningful choice regarding the sharing of their protected health information.

- Technology solutions must evolve to support granularity and electronic permission capture.
- Governance of interoperability is needed to sustain efforts.

CalOHII also administered the Cooperative Agreement Grant Program to help create various programs throughout the state to promote and successfully exchange health information. Notable initiatives through the Cooperative Agreement Grant were:

- The California Immunization Gateway Service, developed for the California Department of Public Health, replaced the manual process previously used to register, test, and submit immunization data to the California Immunization Registry (CAIR). Electronic submission of immunization data assists providers meet MU requirements.

- Project INSPIRE, which focused on efficient and effective data capture at the point of care that is accessible to all of the patient's providers. The purpose of this demonstration project was to determine whether capturing data at the point of care beyond that in the cancer registry could be useful for cancer care or other conditions.

- The Partners in E program attempted to address low e-prescribing rates among independent pharmacies in California. Since many pharmacists did not feel prepared to handle continual electronic communication and technical dilemmas, a train-the-trainer program was developed in which students from California's eight schools of pharmacy provided one-on-one assistance to independent community pharmacists that serve Medi-Cal patients.

- CalOHII and the State Emergency Medical Services Authority (EMSA) collaborated in promoting the real-time exchange of health information in emergency settings. An environmental assessment found that while the state's 33 local EMS agencies were converting from paper to electronic patient care records, most were not able to transmit that information about the patient electronically to the hospital. The grant assisted Contra Costa, Monterey, and Inland Counties Emergency Medical Agency conduct demonstration projects to advance HIE in their service areas. The work conducted under this effort served as the foundation for a successful grant application from the ONC for HIE in EMS.

1.12.1.1 CAL ECONNECT AND CALIFORNIA HEALTH E-QUALITY

Starting in 2010, CHHS contracted with Cal eConnect to implement HITECH-funded programs in line with California's HIE strategy. Cal eConnect was responsible for establishing the ground rules for appropriately sharing health information among clinicians, hospitals, health plans, patients, and government agencies. Cal eConnect managed the procurement of HIE services, to establish the HIE Trust Framework and Connectivity Services, which included Entity and Individual-Level Provider Directories. This was intended to complement existing regional HIE services by facilitating the directed and secure exchange of electronic patient health information statewide and across state borders. The services and associated program designed by Cal eConnect were intended to enable Medi-Cal and Medicare providers to meet HIE-related MU criteria, beginning with e-prescribing, laboratory data exchange, and public health reporting.

In 2012, programmatic activities were transferred through an interagency agreement from Cal eConnect to California Health e-Quality (CHeQ), part of the UC Davis Health System's Institute for Population Health Improvement (IPHI). The CHEQ program played an integral role in the advancement of HIE in California and supported implementation of HIE programs across California by building a trusted exchange environment, improving public health capacity, accelerating HIE adoption, and monitoring HIE progress. CHeQ's California Trust Framework (CTF) documented policies and the technologies that facilitated exchange between HIOs without requiring point-to-point data sharing agreements. The CTF aligned with the efforts of the National Association for Trusted Exchange (NATE) and sharing provider directory information. Additional efforts included facilitating the electronic exchange of health information within a trusted environment, funded and supported regional HIE planning, infrastructure expansion, and interface development. CHeQ also promoted sharing immunization, laboratory and care information.

CHeQ developed the HIE Acceleration award, which provided funding for a variety of HIE related projects which increased HIE connectivity throughout the state. In 2013, CHeQ distributed $7.5 million throughout California for HIE activities to 20 dedicated organizations. CHeQ reported that recipients of the acceleration award established 270 connections between HIE participants (hospitals, clinics, and providers), increasing the ability to transmit health information electronically. From those efforts, 17 community HIOs were able to serve regions extending to the Oregon border and as far south as San Diego. The CHeQ report also found that community HIOs continued to expand and cited that clinical message traffic for Redwood MedNet increased by nearly 200 percent between 2011 and 2013. Following is a brief summary of several community HIE initiatives in California supported by HIE acceleration awards:

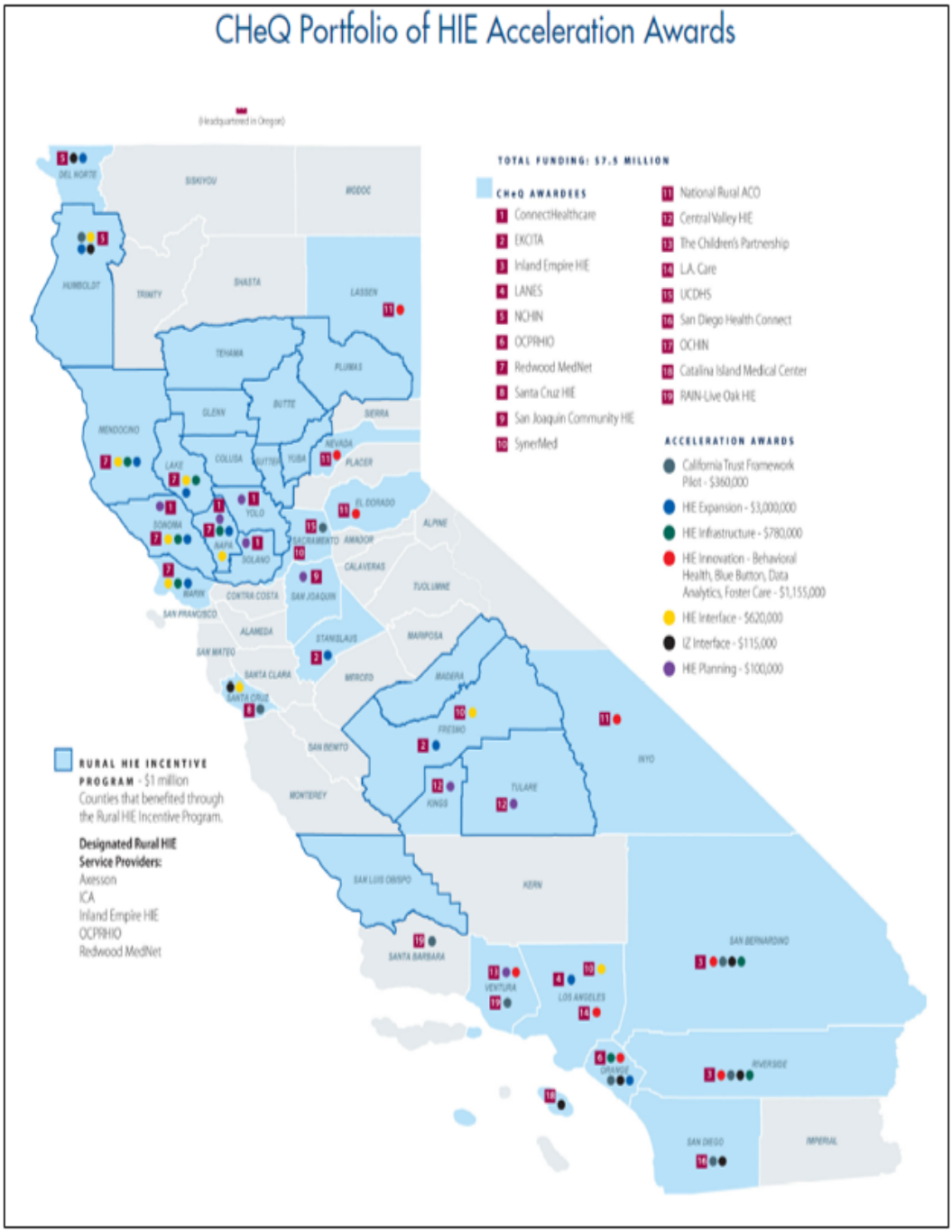
- Alliance Medical Center, a founding member of the Redwood MedNet community HIO, provides HIE services to more than 230 health care providers in the Mendocino, Sonoma, Marin, Lake, Napa and Colusa Counties. Redwood MedNet's expansion was accelerated when the community based FQHCs Mendocino Coast Clinics, Alliance Medical Center, and Sonoma Valley Community Health Center, combined with Mendocino Coast District Hospital, Healdsburg District Hospital, and Sonoma Valley Hospital. Redwood MedNet provides HIE services to more than 500 healthcare providers in Mendocino, Lake, Sonoma, Napa, and Marin counties.

- Tulare and Kings Counties received a planning grant from CHeQ to develop an HIO strategic plan. In 2013, both counties coordinated efforts with Fresno and Madera counties to form the Central Valley HIO. Central Valley HIO contracted with Inland Empire HIE to provide a new community HIO with HIE services.

- eConsult was created by L.A. Care Health Plan, Department of Health Services of Los Angeles County, Health Care Los Angeles, MedPOINT Management and the Community Clinics Association of Los Angeles County. eConsult is a web-based care coordination platform that enables primary care providers and specialists to share and discuss patient care electronically. In 2013, 2,000 primary care providers in 182 clinic/health center sites used eConsult across L.A. County.

- Orange County Partnership Regional Health Information Organization (OCPRHIO), founded by Monarch Healthcare, formed in 2012 with grants from CHeQ. OCPRHIO was created to improve coordination of care and integrate HIT/HIE into Orange County's health care delivery system. Providers are able to view patient information from a single access point.

FIGURE 7: CHEQ HIE ACCELERATION AWARDS (2013)[40]



[40] CHHS, California HIE Landscape (2013). Accessed on April 25, 2018.

CalOHII published *The State of California HIE, The Legacy of California's State HIE Cooperative Agreement Program*[41] in January 2014, which highlighted the opportunities offered by the $38 million Cooperative Agreement grant in California. The report stated that funding received from the grant further encouraged the adoption of health information exchange throughout the state and provided the impetus needed to launch large-scale health information exchange. It also allowed the state the opportunity to experiment with various models to determine which solutions would be best suited for specific environments and populations. Although the Cooperative Agreement grant ended on February 7, 2014, the program continues to have a positive impact in stimulating HIE in California. This final report can be found in Appendix 6.

1.12.1.2 CALIFORNIA ASSOCIATION FOR HEALTH INFORMATION EXCHANGE AND THE NATIONAL ASSOCIATION FOR TRUSTED EXCHANGE

Created in 2013, the California Association for Health Information Exchange (CAHIE) is a 501(c)3 organization and a statewide group comprised of individuals and organizations working together to advance the secure sharing of health information with the intent to improve health care quality and lower costs. CAHIE members include community and enterprise HIOs, care delivery organizations, health plans, emergency medical service agencies, government organizations (including DHCS), associations, and collaborating organizations, such as the NATE. The goals of the CAHIE are to:

- Promote a regulatory environment in California that enables providers, consumers, and other stakeholders to exchange and appropriately access health information.
- Create a collaborative environment that fosters and supports cooperation among members and other stakeholders to solve difficult problems as well as share lessons learned in health information exchange.
- Promote the growth of electronic information exchange through creating and supporting information exchange initiatives.
- Enable and support high-value information exchange among unaffiliated communities.
- Provide services in support of statewide health information exchange activities and initiatives.

The CAHIE supports statewide HIE through voluntary self-governance via the California Data Use and Reciprocal Support Agreement (CalDURSA) and the California Trusted

[41] The State of HIE: The Legacy of California's State HIE Cooperative Agreement Program (January 2014). Accessed on April 25, 2018.

Exchange Network (CTEN). The CalDURSA is a multi-party agreement developed by the CAHIE and modeled after the federal DURSA that defines and specifies policies, procedures, and processes establishing trust and the framework for organizations to exchange data through the CTEN. The CalDURSA allows organizations to participate in both the CTEN and the eHealth Exchange, a national network. The CTEN is a virtual network based on the policies, procedures and processes established by the CalDURSA. Unlike other trust frameworks, the CTEN is able to support any transaction that shares health information for purposes of treatment, payment, or health care operations. DHCS utilizes the CalDURSA and the CTEN participation as a requirement for the CTAP organizations to receive funding for assisting providers in meeting HIE milestones.

The NATE was created to help state HIE officials develop and establish standards and best practices. The NATE is a not-for-profit membership association focused on developing trusted exchange among organizations and individuals with differing regulatory environments and exchange preferences. Through its membership in the NATE, California continues to provide leadership through the identification of policy and governance drivers. Members of the NATE and stakeholders work together to find common solutions that achieve greater gains in the exchange of health information and improved patient outcomes while laying groundwork for safe interstate electronic transfer of secure health information. CAHIE is a member of NATE. In 2015, the NATE made the first release of NATE's Blue Button for Consumers (NBB4C) Trust Bundle[42]. Future plans include extending its trust community beyond direct secure messaging to include other consumer-centric technologies.

1.12.2 COMMUNITY HEALTH INFORMATION EXCHANGES

Given California's size and diversity, legislators and stakeholders have communicated a preference for a decentralized HIE infrastructure that combines public and private efforts. A decentralized model, or neutral connectivity model, allows the flexibility needed to adapt to California's complex healthcare ecosystem. Several regional or community HIOs have created exchanges that meet specific needs of providers within the communities or regions that they serve. Autonomy at the local level has allowed for the creation of innovative solutions to meet the needs of local users. These community HIOs carry out most of the HIE activities in their communities and are responsible for most of the

[42] National Association for Trusted Exchange. Accessed on: April 25, 2018.

interoperability between provider systems, and communicate with each other when the situation calls for health information outside of their own service areas.

Community HIEs have typically been independent, 501(c)(3) or state-recognized nonprofit organizations, in some cases initiated through grants or contributions from sponsoring or anchoring participants, but sustained through ongoing fees for provided services. CHeQ sought to identify the health information and interoperability needs of California generally, both within medical trading areas of community HIOs and statewide among HIOs, hospital systems, etc. Health care needs may be determined by the local or regional geographic operational boundaries, which reflect referral relationships, patterns of care, and the flow of patients among participating organizations. These efforts are often linked with the predominant provider organizations in the community that may focus special attention on the community's unique health needs (e.g. diabetes, behavioral health). Community HIOs:

- Serve a wide variety of provider types, including acute care hospitals, public health departments, primary care providers, specialists, ancillary services, payers, emergency medical service providers, home health, skilled nursing facilities, and others.

- Provide a wide variety of services, including Direct messaging, longitudinal community records, alerts, text-based reports, public health reporting, consumer access, quality measures, referrals, and others; and exchange a wide variety of data types, including allergies, lab results, admission, discharge, and transfer messages, text reports, discharge summaries, immunizations, prescribed and filled medications, radiology reports, care plans, eligibility information, claims, and others.

Currently, there are more than 14 community HIEs in 39 of 58 counties statewide. A significant amount of the state's HIE funding has been directed toward medically underserved populations and regions. California's rural areas face challenges related to access to health care, health information technology, and broadband access. Additionally, providers in rural areas may not have access to the health IT resources of a large hospital or health system.

FIGURE 8: COMMUNITY HEALTH INFORMATION ORGANIZATIONS IN CALIFORNIA (2016)

Notable activities of Community HIEs include:

- Recipients of CHeQ's HIE acceleration awards established a total of 270 connections between HIE participants (hospitals, clinics, and providers) to transmit health information electronically. Several of California's HIE efforts included participation in the Nationwide Health Information Network (NHIN) demonstrations and successfully tested the exchange of clinical information using NHIN standards and protocols. Participating organizations included Kaiser Permanente, Western Health Information Network (WHIN), ER Connect-Orange County, Redwood MedNet and Santa Cruz HIE. Some of these HIE efforts have not only demonstrated the capability to connect via the Nationwide Health Information Network gateway to other California HIE entities, but also to HIE entities outside of California. The participation of community HIEs in testing the Nationwide Health Information Network gateway demonstrated their commitment to interoperability and national data exchange standards.

- In April 2010, UC San Diego received $15.3 million in funds from the ONC, as one of the 17 Beacon Communities working toward building and strengthening local IT infrastructure. The San Diego Beacon Community (SDBC) identified the goal of expanding HIT availability among providers to improve medical care decisions and overall care quality. Additional goals included patient engagement of health management as well as a reduction in unnecessary and redundant testing. With a primary focus on San Diego and Imperial Counties, the SDBC worked in partnership with seven hospitals, two insurance carriers, and eleven FQHCs and community health clinics. In October 2012, four hospital health systems and two medical groups were participating in the HIE. This included over 175,000 unique patient records, over 2,500 unique users, and approximately 900 patients who consented to sharing medical records for treatment purposes. In 2013, the SDBC transitioned into San Diego Health Connect, which has continued HIE related efforts.

- In October 2013, Sharp HealthCare, a nonprofit integrated regional health care provider, expanded its HIE by joining San Diego Health Connect community HIO. The goal of joining the community HIO was to improve care by making health information available to other providers in the San Diego region. As of 2015, these include Scripps Health, University of California San Diego, Rady Children's Hospital San Diego, Kaiser Permanente, U.S Department of Veteran Services, Navy Medical Center of San Diego and 14 other community clinics.

1.12.3 ENTERPRISE HEALTH INFORMATION EXCHANGE ORGANIZATIONS

Several of California's integrated health systems currently exchange data between and among their affiliated physicians and hospitals. Many of these systems have multiple locations and facilities spread across Northern and Southern California, with some systems extending into neighboring states. While many of these systems offer a suite of HIT applications and modalities to their hospital-based clinicians, health systems vary in their provision of HIT outside of the hospital walls. Over the past decade, these health systems have made significant investments in their HIT infrastructure and staff. While technical approaches and vendors vary among health systems, all of the health systems follow national standards and many participate in technical workgroups at the state and national levels. Today health systems vary in their interactions with and participation in community HIE efforts, ranging from no involvement to robust participation in collaborative activities.

In 2015, DHCS contracted with researchers at UCSF to identify methods that Medi-Cal-focused HMOs and Independent Practice Associations (IPAs)/Management Service Organizations (MSOs) could use to encourage increased EHR adoption and progression toward MU among small practices. The study found that small practices need support for HIE and assistance with EHR software updates, patient portals, messaging, and reporting. Given the larger organizational structure of IPAs/MSOs, these organizations have greater access to resources that could benefit smaller practice types in efforts to advance adoption of an EHR, MU progression, and greater HIE participation. Many HMOs and some IPAs work collaboratively to develop community HIOs. One of the conclusions of the survey was that HMOs and IPAs/MSOs should assist small practices in establishing electronic connections to community HIOs which would help meet HIE-related MU objectives. This could also assist HMOs and IPAs/MSOs in meeting data needs related to notifications, care coordination, and analytics.

Health systems largely operate as closed networks and the information largely remains proprietary and locked within those networks unless addressed through statewide collaboration as exhibited by Manifest MedEx, formerly known as Cal INDEX. Founded in August 2014, through funding from Blue Shield of California and Anthem Blue Cross, Cal INDEX was a nonprofit organization working toward development of an HIE with services throughout the state. Initially, only containing Blue Shield and Blue Cross Records, in January 2017, Cal INDEX merged with IEHIE. The combined entity, called Manifest MedEx, contains 11.7 million claims records from Cal INDEX founding members Blue Shield of California and Anthem Blue Cross with the 5 million clinical patient records of IEHIE and its 150 participating partners.

The investments in these integrated systems should be leveraged as statewide HIE advances while, at the same time, encouraging sustainability models. Their implementations are being considered and incorporated into state HIE efforts in a collaborative and opportunistic way to ensure interoperability across all of California's providers. Many large health systems with hospitals and ambulatory care have developed information exchange networks, connecting affiliated hospitals and physicians using diverse EHR platforms.

1.12.4 HEALTH INFORMATION TECHNOLOGY GRANTS

CALIFORNIA STATE INNOVATION MODELS

On April 1, 2013, California was awarded $2.6 million to develop the State Innovation Model (SIM) Design Grant[43]. The SIM grant supported development of the State Health Care Innovation Plan which addressed all three aspects of the Triple Aim- better health, better health care and lower costs. The funding supported the following HIT activities:

- Identified best practices for HIE in support of care coordination and development of tool kits to facilitate use of HIE.
- Development and promotion of third party business case analyses illustrating the savings produced by technologies.
- Commissioned research regarding options for ensuring data collection to inform cost and quality of care improvement efforts on a statewide basis.

California leveraged activities undertaken during the Let's Get Healthy California (LGHC)[44] project. Since much of the project's work was in progress, California was able to utilize the network of stakeholders gathered for LGHC efforts to focus on SIM Design activities. The LGHC task force developed a 10-year plan, which envisioned a healthier California. While the period of the Innovation plan was three years, it provides the opportunity to focus on initiatives that can set in motion effective changes over the long term. Many of the initiatives built on current efforts or were in conjunction with other efforts that occurred in both the public and private sectors.

[43] CMS, State Innovation Models Initiative: Model Design Awards Round One. Accessed on: April 25, 2018.

[44] Let's Get Healthy California Task Force Finale Report (December 19, 2012). Accessed on: April 25, 2018.

California utilized existing state and national initiatives including capitated payment models, accountable care organizations, bundled episode payments, the Coordinated Care Initiative for dual-eligible Medi-Cal and Medicare beneficiaries, and the state's Section 1115 Waiver, called Medi-Cal 2020, to inform their model design. California's design process involved a broad range of advocacy groups that addressed its diverse and geographically spread population in order to develop a model that reflected California's complex health care and financing environment. CMS recently granted California's request to renew the waiver, thereby extending Medi-Cal 2020 activities until December 31, 2020. The extension supports the state's efforts toward adopting alternative payment methodologies and supporting integration of care.

CMS awarded the State of California $3 million for model design under the second round of the SIM initiative on December 16, 2014. The grant has further refined the development of the State Health Care Innovation Plan.

CALIFORNIA EMERGENCY MEDICAL SERVICES AUTHORITY

On July 28, 2015, the California Emergency Medical Services Authority (EMSA) received a two-year grant, titled PULSE +EMS from the Office of the National Coordinator for Health Information Technology for $2.75 million. The project established interoperability and exchange of clinically relevant patient information to aid in the response to widespread disasters between the Patient Unified Lookup System for Emergencies (PULSE) and the emergency medical services system (EMS). CAHIE served as the technical advisor to EMSA for integrating the PULSE and EMS components in the PULSE +EMS project.

The PULSE component of PULSE +EMS provides a means for volunteer healthcare professionals working in non-traditional health facilities, such as field hospitals and evacuation centers, to obtain critical health information on victims and evacuees during a large scale medical emergency. It works by retrieving care summaries and other health information from HIOs and health systems across the state using nationally recognized standards and leveraging the CTEN operated by CAHIE. Access to PULSE is controlled by EMSA's Disaster Healthcare Volunteers system, which is California's version of the Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP).

CAHIE was responsible for facilitating collaboration among the various participants to convene the PULSE Workgroup. The PULSE Workgroup, comprising stakeholders in California, defined the characteristics and requirements of PULSE, including any

recommendations regarding technical standards. National standards were selected for PULSE in order to share health information with minimal impact on participating organizations, while CTEN policies and procedures were selected to establish trust with participating organizations and systems. CAHIE used the recommendations of the PULSE Workgroup to document PULSE system requirements as well as the basis for conducting user acceptance testing.

CAHIE also took the lead in planning, conducting, and documenting the results of a table-top drill of PULSE in June 2017. PULSE project participants included Santa Cruz HIO, UC Davis Health, OCPRHIO, and Sutter Health.

EMS provides pre-hospital care and entry, typically through 9-1-1, into the emergency medical care system, providing evaluation, treatment, and transportation of patients to a hospital emergency department, trauma, heart attack, or stroke center. The +EMS component of PULSE +EMS expanded the capabilities of EMS by integrating them into an HIO, enabling exchange between ambulances and the HIO and hospitals. +EMS therefore created a paradigm in which EMS becomes a full participant in the HIO, with the capability to implement the Search, Alert, File, and Reconcile (SAFR) model defined by EMSA:

- **Search** a patient's health record for problems, medications, allergies, and end of life decisions to enhance clinical decision making in the field
- **Alert** the receiving hospital about the patient's status directly onto a dashboard in the emergency department to provide decision support
- **File** the emergency medical services patient care report data directly into the patient's electronic health record for a better longitudinal patient record
- **Reconcile** the electronic health record information including diagnoses and disposition back into the EMS patient care report for use in improving the EMS system

+EMS enabled EMSA to pilot new EMS workflows in two regions by connecting EMS providers with local hospitals in two different community HIOs. The pilot demonstrated the way EMS can share prehospital data with other providers as well as how HIEs can support quality and process improvement. San Diego Health Connect (SDHC) and OCPRHIO were selected as the participating HIOs. EMSA will use what was learned from these pilots to expand SAFR to more local EMS agencies across the state in future projects.

After the successful drill completion in June 2017, PULSE was moved into production. EMSA reported that the objectives of the PULSE +EMS ONC grant were met in July 2017. SAFR capabilities developed in SDHC and OCPRHIO are also functioning today.

More recently, in response to the fires in Southern California, CAHIE completed expedited on-boarding of eHealth Exchange. This allowed PULSE and other participants of CTEN to connect to and query eHealth Exchange members not yet participating in CTEN for health information of victims and evacuees of that disaster. CAHIE is exploring becoming a long-term participant in eHealth Exchange to make it possible for PULSE to query national systems such as the VA, DoD, and national pharmacy chains.

1.13 E-PRESCRIBING

The number of providers utilizing e-prescribing in California has steadily increased over the years. This expansion may be attributed to an increased demand for HIT, funding availability to acquire a certified EHR as well as incentive payments to providers for achieving MU through the Medi-Cal EHR Incentive Program. According to the latest data available from Surescripts, there were 9.7 billion e-prescribing transactions in 2015, which equated to a 48% increase over 2014[45]. An estimated 53% of physicians in California used e-prescribing EHR software in April 2014 compared to 3.5% in December 2008 according to the same data source. In April 2014, 94% of California community pharmacies were enabled to accept e-prescriptions compared to 75% in December 2008, representing an increase of 25%[46]. The percentage of new and renewal prescriptions sent electronically increased to 53% in 2014 from only 3% in 2008.

MEDI-CAL PROVIDERS AND PHARMACIES

Connection between utilization data and Medi-Cal claims data has been difficult to establish due to the lack of a common provider identifier. As a solution, OHIT and CHHS requested that the ONC work with Surescripts to include a National Provider Identifier (NPI) field in the standard dataset sent to states to link Surescripts data with Medicaid data. Several other states submitted a similar request. In 2010, DHCS matched Surescripts subscribers against Medi-Cal provider files and determined that approximately 9.3% of Medi-Cal providers were connected for e-prescribing. Medi-Cal providers connected to Surescripts represented only 5% of Medi-Cal's prescription claims volume. Unfortunately, the data needed to produce an updated comparison of e-prescribing utilization among Medi-Cal providers is not available.

[45] Surescripts, 2015 National Progress Report. Accessed on: April 25, 2018.

[46] ONC Data Brief No. 18, July 2014. Accessed on: April 25, 2018.

BARRIERS TO E-PRESCRIBING AND UTILIZATION

In June and July of 2012, CHHS surveyed 100 independent pharmacies with the highest volume of Medi-Cal claims to study perceived barriers and benefits of e-prescribing implementation and utilization. The report focused on barriers identified by independent pharmacies as well as assessed the needs for assistance with implementation and active use of e-prescribing. The survey collected comments from independent pharmacy managers, which allowed the state the opportunity to explore where further assistance could be offered. In addition, independent pharmacies were able to voice concerns and obstacles faced during implementation and utilization.

FIGURE 9: E-PRESCRIBING IMPLEMENTATION IN HIGH MEDI-CAL VOLUME INDEPENDENT PHARMACIES

Total Response Summary	
Number of contacted pharmacies	**100**
Completed Surveys	**44** **18 Connected** **26 Non-connected**
Incomplete Surveys	**30**
No response/Disconnected	**26**

Many pharmacists did not feel technologically prepared to supervise the processes of continual electronic communication or able to manage possible technical dilemmas presented during the workday. The survey found that independent pharmacies can benefit from additional training and further technical assistance beyond the initial training provided by software vendors. These independent pharmacies identified major obstacles during the adoption of e-prescribing as both financial and technical in nature. Software related issues, when associated with implementation or upgrade costs for new or existing systems, coupled with transaction fees and e-prescribing network costs were identified as the most frequently perceived barriers to e-prescribing implementation. These issues, when experienced on a daily basis, became a hindrance to implementation and continued utilization of e-prescribing technology.

E-PRESCRIBING EDUCATION AND TRAINING

Partners in E Program

The Partners in E program is an example of an innovative program that supported the expansion of e-prescribing across the state by educating pharmacy students about health IT. Modeled after two successful teaching programs developed by the UCSF Department of Clinical Pharmacy on both state and national levels, the Partners in E program was implemented as a strategy to increase the adoption and use of e-prescribing in California. Developers of the program recognized there was a need for health professional schools to include lectures on topics related to health information technology given the lack of available content experts. The curriculum provided pharmacy students training in key health information technology content areas while integrating e-prescribing into a normal workflow process.

An established train-the-trainer program model was used by the Partners in E program to disseminate the health IT curriculum in a standardized and consistent format across schools of pharmacy in California. Additional efforts included working with three California RECs to conduct the e-prescribing User Improvement project. This project, through collaboration with selected providers and pharmacies, focused on the identification and correction of causes for underutilization. Findings from the project identified that providers would benefit from additional technical assistance resources.

In fall 2012, the UCSF School of Pharmacy developed and piloted the Introduction to Pharmacy Informatics course. A total of 65 students enrolled and completed the elective course. These students also participated in evaluation surveys designed to assess attitudes and knowledge of HIE. The survey results helped to develop online teaching modules as well as revise existing course materials. Through the expansion to pharmacy schools, the curriculum become a statewide collaborative effort, as there was increased access to a variety of content experts. Twelve modules were developed due to the collaborative efforts.

In winter and spring 2013, UCSF piloted an experiential course for students who had completed the Introduction to Pharmacy Informatics course. Pharmacy students in the San Francisco Bay area were matched with independent community pharmacies not participating in e-prescribing. Students received instruction regarding available tools and terminology prior to begin onsite outreach with community pharmacies. In parallel to the UCSF experiential program, Partners in E began collaborative efforts with faculty from all accredited California schools of pharmacy, which was incorporated into course curriculum

in January 2013. By December 2013, approximately 1,000 students completed the course work. Faculty from all accredited California schools of pharmacy received training to implement Partners in E in the existing program. The following pharmacy schools participated in the train-the-trainer programs:

- California Northstate University
- Loma Linda University
- Touro University- California
- University of California, San Diego
- University of the Pacific
- University of California, San Francisco
- University of Southern California
- Western University of Health Sciences

Since participating in the train-the-trainer programs, all eight-pharmacy schools have implemented the Partners in E curriculum. By April 2015, faculty from over 70 colleges and universities had received access to the Partners in E program materials. Faculty from 25 colleges and universities have also attended the Partners in E train-the-trainer program. Through partnering with the Healthcare Information and Management Systems Society (HIMSS), the UCSF School of Pharmacy, was able to make all 14 Partners in E modules available online, enabling unified curriculum content for all schools of pharmacy. As course materials are available online, universities, hospitals, and healthcare organizations outside of California are able to review and use Partners in E program materials.

E-PRESCRIBING OF CONTROLLED SUBSTANCES

The finalization of the Electronic Prescribing of Controlled Substances (EPCS) Rule by the DEA in June 2010 did not immediately change e-prescribing practices for Medi-Cal providers. The regulations allowed providers the option to write prescriptions of controlled substances electronically. Implementation delays may have resulted due to a slow rate of EPCS certification. In fall 2012, the CHCF in an effort to understand implementation challenges surrounding EPCS, awarded grants to AltaMed Health Services, Rady Children's Hospital, and Shasta Community Health Center to develop an EPCS pilot project. The nine-month pilot allowed sites to establish the EPCS capability within the existing EHRs and encouraged the participation of local pharmacies. The final report, titled *Evaluation of the Electronic Prescribing of Controlled Substances Pilot (November*

2013)[47], detailed benefits and barriers to utilization of EPCS functions. Participants found that when the software worked as intended, there were significant benefits in using EPCS related to improved productivity and patient safety, potential cost savings, improved security when prescribing controlled substances, as well as an improved ability to track prescriptions and analyze physician prescribing habits. Barriers to more substantial use of EPCS included a lack of adoption among physicians and pharmacies, associated audit costs, reliability of EPCS technology, and registration requirements to identity-proof prescribers. Through analysis, the report concluded that the expansion of EPCS utilization is dependent upon adoption by prescribers and pharmacies as a collaborative effort.

Data from Surescripts reported that, in 2015, nationwide e-prescribing of controlled substances increased 667% (from 1.67 million in 2014 to 12.8 million in 2015). Data released by Surescripts for 2016 showed that California was among the top twenty states in the nation for EPCS. Previously, California was ranked in the top ten in the nation[48]. Despite the ranking change, reported utilization numbers of EPCS use increased in the state. For 2016, pharmacy enablement of EPCS was reported at 87.5%, when previously it was 74.5%. Prescriber enablement (10.9%) and EPCS transactions (14.3%) also showed increases when compared to the prior year. In 2015, the reported provider enablement was 7% and the percentage of EPCS transactions was reported at 9.6%.

The California Department of Justice (DOJ) developed the Controlled Substance Utilization Review and Evaluation System (CURES), a web based portal used to monitor the dispensing of Schedule II, III, and IV controlled substances. All California-licensed health care practitioners authorized to prescribe controlled substances and all pharmacists with an active license are required to be registered to use CURES. The requirement includes even those who do not actively prescribe or dispense. CURES 2.0 was implemented for use throughout the state in March 2017. Users of CURES 2.0 are able to access the system through a secure web browser. The updated system allows users to run patient report queries accessible by prescribers and dispensers, send peer-to-peer communications and receive patient alerts.

[47] Final Report: Evaluation of the Electronic Prescribing of Controlled Substances Pilot (November 2013). Accessed May 17, 2018.

[48] Surescripts, 2016 National Progress Report. Accessed on April 25, 2018.

1.14 PUBLIC HEALTH REPORTING AND SURVEILLANCE

1.14.1 CALIFORNIA PUBLIC HEALTH HIE INFRASTRUCTURE OVERVIEW

The CDPH and the 61 local health departments (LHDs) form a federated public health system in order to promote the health and well-being of Californians. Federal regulations incentivize EPs, EHs, and CAHs to send data to state, local and tribal public health agencies. As such, it is imperative that California's public health agencies are supported in the design, development, and implementation of a public health infrastructure for HIE and HIT that will enable EPs and EHs to meet public health objectives (i.e., electronic laboratory reporting, immunization registries, cancer registries, specialized registries, and syndromic surveillance) supporting MU. Since 2011, California's public health agencies collaborated and coordinated in statewide MU activities including:

- **Assessed state, local and tribal public health agencies' (PHA) capabilities to receive data for all MU objectives related to public health.** CDPH posted the "California Public Health Meaningful Use Capability" table[49] publicly for EPs and EHs to access. This added clarity for EPs and EHs by directing them to the appropriate PHA to register and send data for the various public health measures. The table is printable and can be used for documentation, as well as to identify where there is not a public health agency capable of receiving electronic data in order for EPs and EHs/CAHs to claim an exclusion for a particular measure.

- **Implemented statewide coordination for MU.** Public health services and programs are led and coordinated by CDPH. The 61 local PHAs are comprised of all 58 counties and 3 city health departments in Berkeley, Long Beach and Pasadena, which function to implement those services and programs. Multiple jurisdictions may cause confusion for EPs and EHs/CAHs who were not able to differentiate between the varying reporting requirements of: (1) current federal, state, and local public health reporting requirements, (2) MU reporting to PHAs, and (3) attestation requirements for CMS EHR Incentive Programs. Accordingly, CDPH developed a public website[50] for providers and hospitals to access clear information regarding the different public health reporting requirements.

[49] CDPH, *California's Public Health Meaningful Use Capability* (table). Accessed on: April 25, 2018.

[50] CDPH http://hie.cdph.ca.gov/. Accessed on: April 25, 2018.

- **Assessment of technology and resources to support a public health infrastructure for HIE/HIT.** CDPH and California's LHDs have incorporated various programs that support the EHR Incentive Program. The technical maturity that supports HIE/HIT varies greatly among LHDs, from small counties that rely on CDPH to assist with data collection for the public health measures to the more advanced LHDs that have developed HIE technology to support data exchange. To date, the ONC and CMS have supported the following public health projects in California:

  San Diego Beacon Community received $15 million from the ONC to expand electronic health information exchange through the San Diego Health Connect HIE.

  - CHHS, through funds form the ONC HIE Cooperative Agreement, supported the development of an immunization portal for the receipt of electronic data to the California Immunization Registry (CAIR).

  - The Medi-Cal EHR Incentive Program received 90/10 FFP funding to support development of CAIR v 2.0 which supports bidirectional exchange.

  - The Medi-Cal EHR Incentive Program also received 90/10 FFP funding to support the onboarding of EHs for electronic laboratory reporting to the California Reportable Disease Information Exchange (CalREDIE).

In order to meet MU Stage 2 requirements for PHAs to declare readiness for registration, onboarding, and acknowledgement of EHs, CAHs, and EPs, the CDPH launched the HIE Gateway in October 2013. Using limited state funding, CDPH developed a secure, web-based registration system and messaging portal, which allows EPs and EHs to fulfill their MU Stage 1, 2, and 3 requirements to send data to PHAs. The HIE Gateway was designed to provide EPs and EHs/CAHs with a centralized system to register the intention to submit data to multiple CDPH programs, electronically upload their credentials for verification, and transport data through an onboarding process for automated data exchange between CDPH programs and EHR systems. The system is able to receive HL7 messages in Simple Object Access Protocol (SOAP), an ONC and CDC recommended transport messaging protocol. CDPH successfully provided a registration system to the California Cancer Registry and CalREDIE, and has been able to onboard EHs successfully to CalREDIE for electronic laboratory reporting. Attempts at migrating the existing Immunization Portal to the HIE Gateway as an enterprise solution as well as further development and expansion of the Gateway to other CDPH programs have been delayed due to lack of funding. However, DHCS is examining the possible use of HITECH funding for these efforts.

In order to be more responsive to emerging federal requirements on Public Health Agencies, the CDPH has taken the lead to develop a Public Health HIE/HIT infrastructure that is sustainable and expandable to support Public Health's engagement in MU and the health care delivery system in order to improve upon the quality of care for patients and population health. As such, the CDPH has identified four high-level technology requirements to serve as enterprise solutions to enhance the HIE Gateway in order to support data exchange among the state and local public health registries.

- Store and Forward Message Switching System:
    - A fully functional store and forward message switching system is required to receive messages from any source and to securely preserve the message(s) until they are successfully transmitted to the authorized destination(s). Message switching systems are utilized throughout the government and extensively in the private sector. Message switching technology is also required for interoperability among state, federal, and regional HIE and HIO message switching 'hubs'.

- Message Transformation Software:
    - As many potential participants of HIE solutions use radically different technical approaches to data representation, message transformation software is required to correctly and expeditiously translate message content between legacy character encoding to newer standardized data definitions (examples: legacy to XML, ICD-9 to HL7, etc.) and translate between different versions of the same message representation (i.e., version x to version y, HL7 2.3.1 to HL7 2.5.1, etc.).

- High Capacity and Fault Tolerant Computing Platforms:
    - The message switching system must execute on high performance computing platforms in order to reduce latency in message switching capabilities, to support metadata extraction from messages without performance impact, to support the delivery of big data analytics output, and to support hundreds or thousands of potential concurrent connections.

- Integrated Enterprise Identity Management Solution:

    - Lastly, an identity management solution must be a fundamental component of the architecture in order to manage the multitude of security and credential management solutions employed by the provider and consumer communities, inclusive of federated identity management.

The San Diego Beacon Project has already successfully established an HIE framework for interconnecting various local healthcare facilities and services. While interoperability between and with the more mature regional solutions is a top priority for the CDPH, the State and PHAs have begun to discuss opportunities provided by the EHR Incentive Program for collaboration and coordination as a mutually beneficial partnership to establish and maintain a statewide public health HIE framework. The establishment of a statewide framework is not without challenges, from legal authority to collect and store data, to sustainability; however, there has been progress since the commencement of the EHR Incentive Program.

1.14.2 LABORATORY AND DISEASE REPORTING

In developing capacity to support MU requirements, DHCS partnered with the CDPH to improve electronic laboratory reporting. Current systems and infrastructure were modified to adapt to new federal standards for data transmission. A brief description of public health systems and applicable MU requirements are described below.

- The Division of Communicable Disease Control (DCDC) through CalREDIE supports the electronic submission of laboratory results for reportable diseases via the Electronic Laboratory Reporting (ELR) system, as well as web-based Confidential Morbidity Reporting. CalREDIE has specifically targeted the eighty reportable diseases and conditions cited under Title 17 of the California Code of Regulations. State legislation (AB 2658) requires laboratories to electronically transmit laboratory reports to the State of California. CalREDIE was designed to improve the efficiency of surveillance activities and the early detection of public health events through the collection of accurate and timely surveillance information.

    As of March 2017, CalREDIE had nearly 350 submitters, primarily hospital laboratories, in ELR production. Approximately 68% of reportable disease incidents in CalREDIE are electronically submitted by one or more labs. On average, CDPH receives approximately 37,500 production ELRs per week that are

incorporated into CalREDIE or provisioned to the Office of AIDS, Los Angeles County, San Diego County, or San Francisco County. The CDPH will continue to assist EHs in achieving both MU requirements as well as compliance with state laboratory reporting regulations.

While CalREDIE electronically receives data from laboratories, confidential morbidity reports (CMRs) are currently manually entered into CalREDIE by providers through the CalREDIE provider portal. The CDPH is actively planning to receive electronic CMRs from providers, to satisfy the MU Stage 3 electronic case reporting measure. Electronic case reporting (eCR) is the electronic transmission of potential cases of reportable conditions from provider electronic health record (EHR) systems to relevant state and local public health authorities for review and action. The capacity to receive eCR in CalREDIE will be similar to the process for receiving ELR and will facilitate an increase in data completeness, accuracy, timeliness and quality. The CDPH is planning to accept into production electronic initial case reports to public health in support of Stage 3 of the HITECH MU program. The CDPH, in partnership with the UC Davis Health System and EHR vendor, Epic, has been selected as a pilot implementation site by the Digital Bridge initiative, and expects to receive technical assistance and support for implementing eCR. CDPH received additional HITECH funding to support eCR and onboarding efforts.

- The Childhood Lead Poisoning Prevention Branch (CLPPB), through its web-based reporting system (WebCollect), currently receives over 700,000 blood lead tests per year from over 300 laboratories, with the majority being by an HL7 format. CLPPB developed and maintains WebCollect, which supports both the CLPPB's childhood lead poisoning prevention Response and Surveillance System for Childhood Lead Exposure (RASSCLE II) data application and the Occupational Lead Poisoning Prevention Program's (OLPPP) Elevated Lead Visual Information System (ELVIS). The CLPPB and the OLPPP are participating in ongoing discussions with departmental programs and committees on optimizing receipt of laboratory samples and results from eligible professionals and laboratories.

- The Cancer Surveillance and Research Branch manages the California Cancer Registry (CCR) which collects information about all cancers diagnosed in California (except basal and squamous cell carcinoma of the skin and carcinoma in situ of the cervix). The CCR has expanded their technical capacity to receive physician reports in compliance with MU Stage 2 requirements. The CCR plans to expand electronic reporting of cancer pathology and to adapt EHR-lab

interoperability and connectivity specification (ELINCS) laboratory specification guidelines into their existing system. Funding is needed for the program to: (1) support the technical capability for data receipt from EPs for cancer case reporting as stated in MU Stage 2 and proposed Stage 3, (2) onboard EPs, (3) adapt HL7 2.5.1 laboratory specification guidelines into their existing system, and (4) capture structured data for the improvement in quality of care to cancer patients. CCR also has plans to coordinate with the San Diego Beacon Community to expand electronic health information exchange through the San Diego Health Connect HIE. Areas of focus within the San Diego Beacon Community include coordination with the Beacon Education, Analytic and Collaboration Hub (BEACH) to integrate and exchange diagnostic and clinical data relative to the hospital cancer case abstract for CA legislative mandated reporting.

In addition to receiving laboratory results, public health also receives specimens and generates results. Public health programs that provide results are described below.

- The Lab Field Services (LFS) provides oversight for clinical and public health laboratory operations and for the licensed and certified scientists and other testing personnel who perform testing in clinical laboratories. To assist department-wide and statewide efforts to meet MU requirements, LFS is working to disseminate information regarding these federal regulations to California laboratories and to collaborate with interagency efforts to administer lab assessments.

- The California Laboratory Information Management System (CalLIMS) implements a common data structure and user interface across CDPH laboratories in order to centralize tracking of patient records and laboratory specimens. This system has the capacity to send HL7 messages although there have not been resources to implement this functionality to date.

1.14.3 SPECIALIZED REGISTRIES

CDPH supports a number of specialized registries to receive information about prevention and treatment of specific diseases and conditions.

- Tobacco Control Program, California Smoker's Hotline:

  California's Tobacco Control Program (CTCP) improves the health of all Californians by reducing illness and premature death attributable to the use of tobacco products. The CTCP has developed a telephone program called the

California Smoker's Helpline[51] (1-800-NO-BUTTS) to help the public quit smoking. This program offers free telephone counseling, coaching, referral, mailed materials and training to healthcare providers. In 2011, CMS approved of provider referrals to the California Smoking Helpline in order to meet NQF Measure Number 0027 for smoking and tobacco use cessation. As such, the CTCP has been working with EHR vendors as well as the University of California healthcare systems to develop an interface for electronic referrals to the Helpline. CDPH has determined that the helpline, meets the "Other Specialized Registry" MU measure. Further funding could expand the EHR interface to other provider clinics, hospitals and healthcare systems.

- Genetic Disease Screening Program- A Registry for Genetic Disorders:

  The Genetic Disease Screening Program[52] (GDSP) which includes the Prenatal Screening Program and Newborn Screening Program (NSP) screens newborns and pregnant women for genetic and congenital disorders in a cost-effective and clinically effective manner. The screening programs provide testing, follow-up and early diagnosis of disorders to prevent adverse outcomes or minimize the clinical effects. The GDSP is working towards the electronic submission of screening results in HL7 v.2.5.1 messaging standards to hospitals and clinicians as well as the receipt of clinical provider order entries for newborn and prenatal screenings. Currently, there are 27 hospitals and one physicians' group receiving all their newborn screening results electronically. The GDSP is undergoing planning efforts to use the HIE Gateway for outbound message submission to hospital and provider EHR systems.

  The CDPH is also responsible for maintaining California case registries of the disorders detected by the Newborn and Prenatal Screening Programs. With respect to newborn screening, the registries include metabolic, endocrine and hemoglobin disorders. The registries also include affected newborns that were born in military hospitals, residents that were born in facilities outside the State and individuals diagnosed that did not participate in the California Newborn Screening Program. De-identified data from these registries have been used in a variety of epidemiological studies. With respect to the prenatal screening program, two additional registries include newborns diagnosed with chromosome abnormalities and neural tube defects. These registries include both prenatally diagnosed cases

[51] California's Smokers Helpline. Accessed on: April 25, 2018.
[52] Genetic Disease Screening Program. Accessed on: April 25, 2018.

as well as infants up to one year of age. The registry includes both cases that were screened and not screened by the program. The information in the registries is used for a variety of purposes, including estimating program detection rates and overall impact on birth defect prevalence rates.

Lastly, California Code of regulations, Title 17, Section 6529 authorizes the CDPH to collect information from maternity hospitals on newborns diagnosed with Rh Hemolytic disease. This information is collected manually using a standardized form. As a potential clinical registry, data collected from EHRs could provide information in real-time to promote health and surveillance of genetic disorders.

- Occupational Health Branch:

  The CDC, the ONC, and the National Institute for Occupational Safety and Health have promoted the collection of patient work information into EHRs. The CDPH Occupational Health Branch (OHB) is devoted to improving worker health and safety through prevention activities. OHB works to prevent injury and illness on the job before they happen by: 1) identifying and evaluating workplace hazards, 2) tracking patterns of work-related injury and illness, 3) developing training and informational materials, and 40 providing technical assistance to others to prevent work-related injury and illness. The day collection of the OHB also encompasses reporting of pesticide poisonings, Coccidioidomycosis, Hepatitis B needle sticks, workplace fatalities, occupational asthma, carpal tunnel syndrome, and heavy metal poisonings. Currently, information is collected via paper-based *Doctor's First Report of Occupational Illness or Injury*[53] and forwarded to the California Department of Industrial Relations. With the possible inclusion of patient work information into EHRs for MU stage 3, the OHB will need funding and resources to develop a registry and HIE interfaces that are capable of electronic data collection from EHRs.

- Stroke Registry:

  The California Stroke Registry / California Coverdell Program (CSR/CCP) aims to: 1) reduce the rate of premature death and disability form acute stroke, 2) increase public awareness of stroke treatment and prevention, and 3) reduce disparities in acute stroke care by providing underserved populations with better access to

[53] California Department of Industrial Relations, *Doctor's First Report of Occupational Illness or Injury*. Accessed on April 27, 2018.

treatment. The CSR monitors the quality of acute stroke care across clinical settings, including pre-hospital care, provided via emergency medical services (EMS) and in-hospital care. Registry data are used to help hospitals and EMS partners close the gap between stroke care guidelines and practice. As noted in the CHHS HIE Plan 2012-2014 submitted to the ONC under the HIE Cooperative Agreement, electronic capability to receive real-time information about patients with suspected or confirmed stroke cases into the CSR from hospitals and local EMS agencies would assist in assessing the quality of care and care coordination to patients. Even more so, the capability to send information electronically from the CSR to EMS agencies will support improvements in effective emergency treatment and response.

- California Parkinson's Disease Registry:

  Legislatively established in 2004, the California Parkinson's Disease Registry was intended to be a confidential database that contains information about the extent and characteristics of Parkinson's disease (PD) in California. Information collected from local physicians, pharmacists and health care facilities (designated as reporting sources in the statute) will include demographic information (such as name, birth date, address) about people with PD, their health care providers (such as physician specialty), as well as basic clinical information (such as date of diagnosis, medications, disease features). Although implementing legislation was passed, funding is needed to support further development.

- Oral Health Program:

  The California Oral Health Program (OHP) was established in July 2014 to promote oral health by reducing the prevalence of dental decay and tooth loss, periodontal disease, and other chronic diseases through prevention, education, and organized community efforts. The OHP will provide recommendations to address the burden of disease, increase access to oral health services for high risk populations, and increase the oral health status of all Californians. In this effort, the OHP is required to develop a surveillance system. As a component to the surveillance system, an oral health registry is needed to collect data from dental providers beyond paper-based surveys. The OHP may serve as a public health registry under MU stage 2 and stage 3 regulations and allow for electronic data reporting to public health from eligible dentists who are participating in the EHR Incentive Program.

1.14.4 SYNDROMIC SURVEILLANCE REPORTING

CMS regulations for MU encourage EHs and EPs working in urgent care settings to submit electronic syndromic surveillance data to PHAs. Currently, the CDPH does not have a statewide syndromic surveillance system. California state law does not explicitly grant the CDPH the authority to collect syndromic surveillance data; however, 14 LHDs have the authority and capabilities to receive electronic syndromic surveillance data: Alameda, El Dorado, Fresno, Humboldt, Imperial, Kern, Riverside, Sacramento, San Diego, San Mateo, Solano, Stanislaus, Tulare, and Ventura.

1.14.5 IMMUNIZATION REGISTRIES

The California Immunization Registry (CAIR) provides secure, electronic exchange of immunization records to support the elimination of vaccine-preventable diseases. CAIR allows users to see patient demographic data, immunization history, immunization forecasting, contraindications, overdue immunizations and other functions. CAIR provides users with copies of standard immunization record cards, usage reports, appointment reminders and inventory management. At the present time, there is no interoperability between CAIR and public health surveillance reporting databases, although both state and county surveillance staffs are able to access patient information in CAIR.

Electronic HL7 data submission to CAIR began in 2012 with the installation of add-on software (HL7Jump) that was able to translate HL7-formatted immunization messages into the CAIR software's native 'flat file' format.

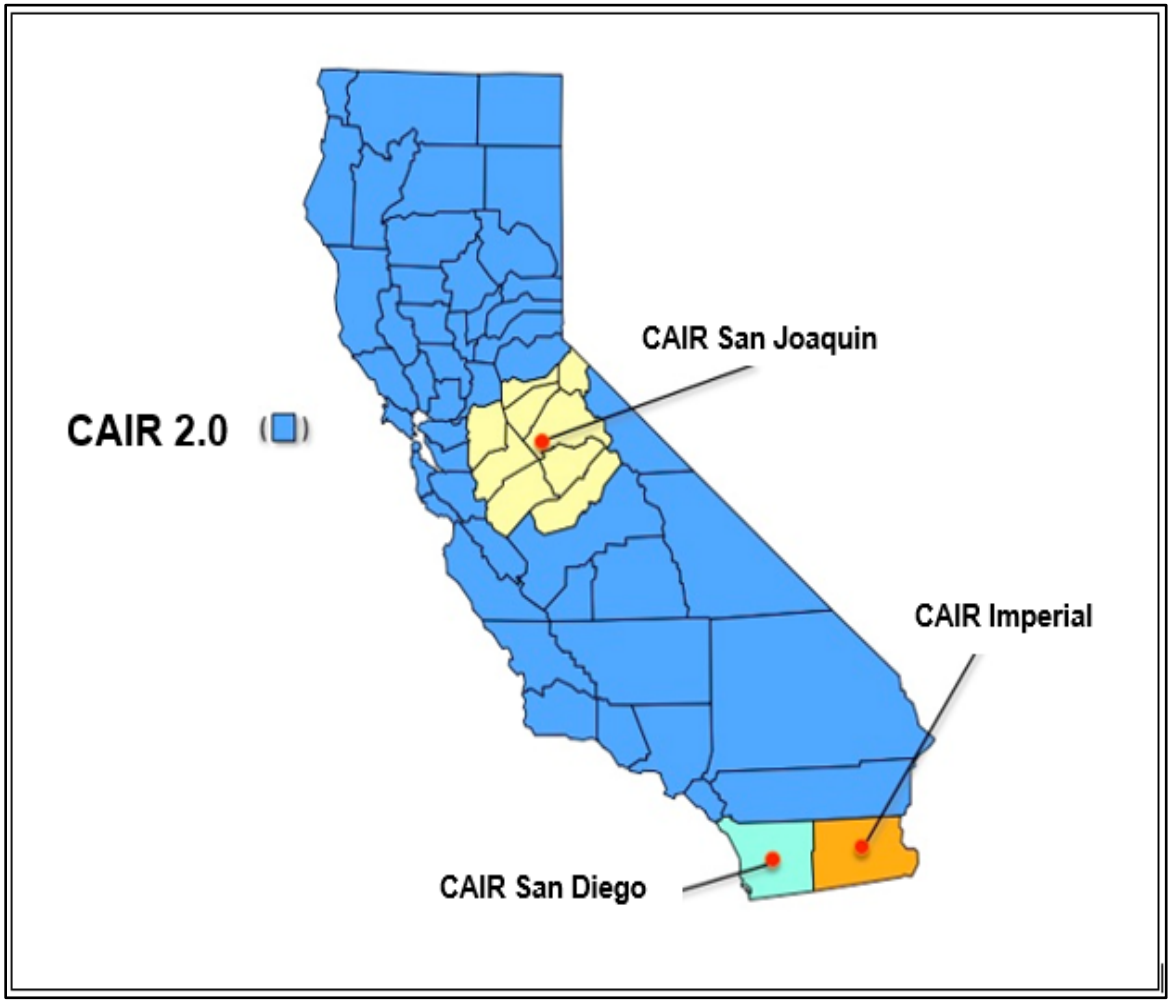
Additionally, in preparation for MU Stage 2, the ONC HIE Cooperative Agreement with CHHS funded the development of an online web application known as the CAIR Immunization (IZ) Portal to automate and manage registration for provider clinics, hospitals, and HIEs/HIOs) via HL7 message testing, and onboarding of sites to full production immunization data submission. The IZ Portal was first launched on August 2013 and since that time, the Portal has received and imported more than 40 million vaccination records into the registry.

More recently, with the implementation of a California-customized version of the Wisconsin Immunization registry (WIR) software in October 2016, CAIR is now fully capable of receiving and sending HL7 messages in compliance with the federal MU program.

In 2017, California completed the first stage of the immunization registry consolidation project (CAIR2.0). The project combines data from 7 of the 10 CAIR regional registries (comprising 87% of CA's population) into a single statewide CAIR2.0 registry hosted by CDPH. The second stage of the project, which began in late 2017, involves the transfer of historical data and ongoing daily uploads to CAIR2.0 from the three remaining CAIR regional registries, such that the entire state becomes consolidated into CAIR2.0. This will allow statewide patient lookup of immunization records. The three regions listed below (and shown in **Figure 10)** will continue to use their own software locally but will be connected to CAIR2.0 via a web service connection.

- CAIR Imperial (locally known as ICIR)
- CAIR San Joaquin (locally known as RIDE)
- CAIR San Diego (locally known as SDIR)

FIGURE 10: STATEWIDE INTEGRATION OF THE CALIFORNIA IMMUNIZATION REGISTRY



As noted in Table 10 below, CAIR2.0 currently has nearly 5,400 sites submitting 'production' patient data in HL7 format to CAIR and qualifying for 'ongoing submission' (terms are defined below the table). With respect to the range of EHR solutions being used, registrants at the Portal have identified at least 172 different EHR solutions, and 67 of those are represented among the 5,400 sites in production. Furthermore, 92 percent of the registered sites are using an EHR that has already achieved data exchange with CAIR2.0.

TABLE 10: CURRENT CAIR IZ PORTAL PARTICIPANTS AND STATUS * (EXCLUDES SAN DIEGO, IMPERIAL, AND SAN JOAQUIN REGIONS)

Site Type	Total	Data Submission Status	
		# Testing	# 'Production'
Direct submission to CAIR	**597**	**273**	**324**
Submits indirectly via the HIEs in the row below	**6,244**	**1,302**	**4,942**
HIEs	**174**	**60**	**114**
TOTAL Registrants	**7,015**	**1,635**	**5,380**

*As of 12/31/2016. Definitions:

- Testing: When provider clinics, hospitals and HIE/HIOs register at the IZ Portal, they move immediately into testing. For each test message sent, the Portal sends automated replies back to the submitter with diagnostic information that allows each submitter to remedy any failed messages.
- Production: Sites that attain consistent submission of correctly formatted messages (> 50-100 successful) are moved to production.

While the majority of MU submissions are to CAIR2.0, each hospital or provider in San Diego County, San Joaquin County, and Imperial County is required to submit information to the immunization registry in their jurisdiction. CAIR2.0 has declared readiness for MU Stage 3[54] and has established the capacity to receive National Drug Codes (NDCs), and in late 2017 implemented new software that allows bi-directional, real-time HL7 messaging.

[54] California Department of Public Health, Health Information Exchange Gateway. Accessed on: April 25, 2018.

1.15 INFORMATION TECHNOLOGY INFRASTRUCTURE AND MEDICAID INFORMATION TECHNOLOGY ARCHITECTURE

DHCS is the state agency responsible for administering Medi-Cal. Using the CMS Medicaid Information Technology Architecture (MITA) Framework as the foundation, DHCS has defined California's Medicaid Enterprise System (MES) as the business processes that support the administration of Medi-Cal and other DHCS programs. Consistent with the language in 42 Code of Federal Regulations, Section 43.111, the MES is the collection of systems and other technical components used in the management of the enterprise. California's MES is composed of traditional MES components, such as fee-for-service claims adjudication systems managed by fiscal intermediaries, and other systems that support provider enrollment and verification, data analysis, premium payments, payment integrity, cost reporting and settlement, plan administration, and the other business processes. A primary objective of the MITA activities at DHCS is to ensure that changes to any of these components will support the economical, efficient, and effective administration of Medi-Cal.

1.15.1 MEDICAID ENTERPRISE SYSTEM

Conduent, previously Xerox, had developed a Medicaid Management Information System (MMIS) based on the Medicaid Information Technology Architecture (MITA) 2.0 Framework Initiative of the Center for Medicaid & State Operations (CMSO). In April 2016, DHCS acknowledged that the pace of technological change for health enterprise data systems has significantly accelerated in the years since DHCS began procurement work in 2007 to replace the existing CA-MMIS system. Many states, as well as CMS, have adjusted their strategies on modernizing Medicaid management information systems to embrace a modular approach to procurement, design, and implementation. These changes created an opportunity for DHCS to reevaluate the nearly decade-old design, development, and implementation strategies of the replacement system and to reconsider the best course to ensure that California has a modern, robust, and sustainable system. Conduent shall continue to operate and maintain the CA-MMIS System until September 2019 or an earlier time when DHCS has secured the FI services and support necessary to achieve the goal of implementing a replacement system that meets both CMS modular procurement requirements and the Medi-Cal needs of Californians.

In November 2017, DHCS solicited information for healthcare payer modular solutions from both private sector and Medicare/Medi-Cal providers commercially available. The Request for Information (RFI) was issued to gather information in planning the modernization of the CA-MMIS through replacement of the current system with modular system solutions. As specified in the RFI, the proposed modular solutions must meet the

MITA framework and consist of modular product packaging aligned with the MITA Maturity Model. CMS has released multiple rules that require states to implement the MMIS as modules designed using modern software design principles. In addition to functional business practices outlined by CMS, DHCS has interpreted the CMS directive to mean that the proposed solutions should support interoperability, be scalable so that a collection of business functions can be grouped onto one or more computer servers, and include flexible computing power. Based on CMS' definition of functional business processes, the following MITA business areas have been identified:

- Financial Management
- Care Management
- Operations Management
- Provider Management
- Plan Management
- Member Management
- Performance Management

The products used should have an elastic scalability so that the servers can be deployed on a cloud computing infrastructure as well as scale up and down in response to changing demand. Given that this is a more modern approach, the software should have the ability to rapidly change functionality in response to new legislation and new technology. Additionally, a cloud-optimized software is included in the definition of a modern software as it can rapidly reduce the costs associated with system operations. Additional key benefits of a modular approach include a system that:

- Delivers a high level of provider satisfaction.
- Demonstrates competence and consistent compliance with State and/or Federal requirements.
- Providing quality clinical oversight resulting in appropriate and cost-effective care for Medi-Cal participants.
- Provide financial services in a timely, efficient manner which includes accurate resolution to financial issues.
- Ensure confidentiality of processes related to rebates for outpatient drugs dispensed to Medicaid beneficiaries.
- Administer a centralized records repository to electronically store, distribute, and allow access to CA-MMIS records.
- Improved maintenance, enhancement, and operational efficiencies.

The CA-MMIS Health Enterprise leverages HIE and HIT to improve health care effectiveness and efficiency. This will also improve health outcomes and quality services for Medi-Cal beneficiaries. The Enterprise System provides a solution that supports unification of the financial and clinical data by bridging the traditional split between these health care data sources. Improvements as a result of the transition will enhance Medi-Cal program automation, standardization, and interoperability. The new technology will provide business value and improvements to providers and beneficiaries while enabling new levels of MITA business maturity.

1.15.2 MEDICAID INFORMATION TECHNOLOGY ARCHITECTURE

The State Medicaid HIT plan will be implemented in accordance with the MITA principles as described in the Medicaid Information Technology Framework 3.0. DHCS submits an annual MITA State Self-Assessment (SS-A) for the Medi-Cal program, identifying the "as-is" and "to-be" maturity levels of the Medi-Cal program across all major business processes. DHCS is using the SS-A today to support major projects across DHCS enterprise. Current SS-A goals transition Medi-Cal to a service-oriented program with enhanced capabilities for its customers and business partners. DHCS MITA Roadmap, which documents how DHCS intends to advance along the maturity continuum, is included in the annual SS-A. As part of the MITA SS-A, DHCS identified intrastate health information exchange capabilities as a key to achieving increased MITA maturity, and support of the Care Management business domain. MITA has the following goals:

- Develop seamless and integrated systems that communicate effectively to achieve common Medicaid goals through interoperability and common standards.
- Promote an environment that supports flexibility, adaptability, and rapid response to changes in programs and technology.
- Promote an enterprise view that supports enabling technologies that align with Medicaid business processes and technologies.
- Provide data that is timely, accurate, usable, and easily accessible in order to support analysis and decision making for health care management and program administration.
- Provide performance measurement for accountability and planning.
- Coordinate with public health and other partners to integrate health outcomes within the Medicaid community.

MITA AND HIE/HIT

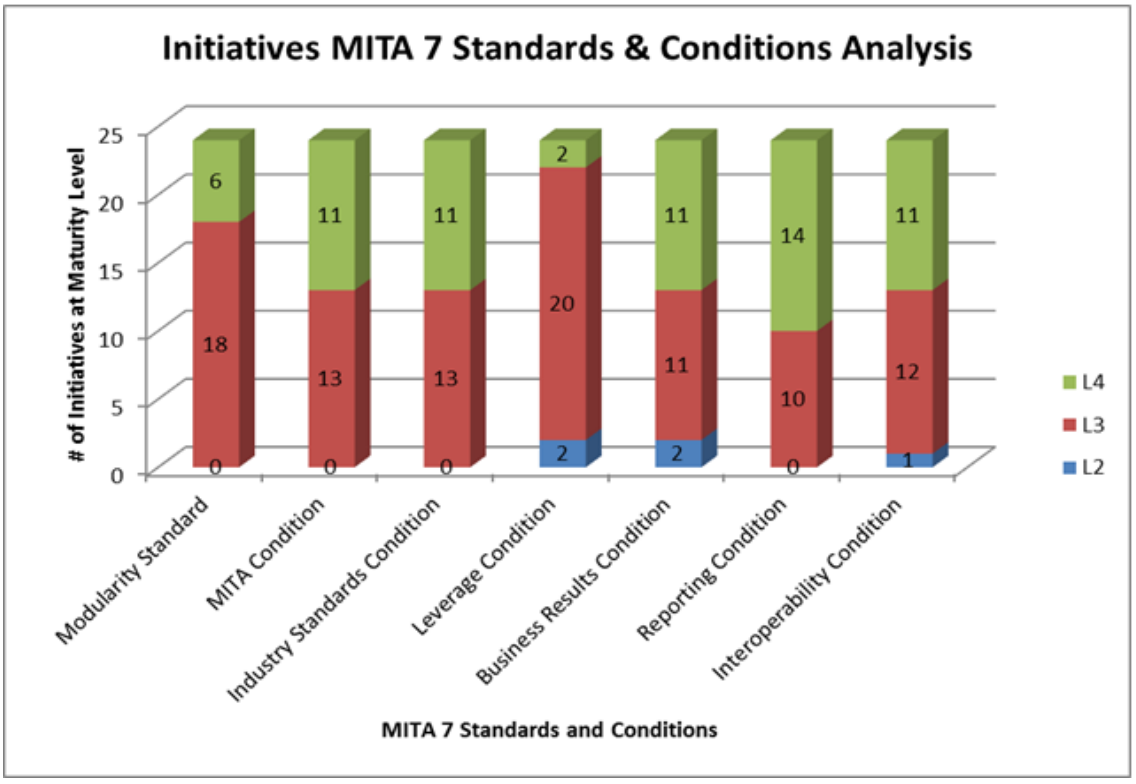
The goals for MITA's "business-driven enterprise transformation" require the ability to easily and readily exchange health data electronically, the key connection between MITA

and HIE/HIT. In 2014, CHHS and DHCS completed an HIE/HIT Architecture Roadmap to define and provide the actionable roadmap for the "To-Be" for HIE at DHCS. The HIE/HIT Roadmap aligns with MITA goals as it identifies the capabilities that are needed to:

- Achieve MITA Maturity Level 3 for Business, Information and Technology Architectures across the Medi-Cal organization.
- Increase HIE utilization for intra-agency (CHHS), intra-state, CMS, healthcare providers and members supporting care management.

The HIE/HIT Roadmap identified 24 potential initiatives (Appendix 7) that, once completed, will have achieved most of the department's current HIE/HIT goals. The HIE/HIT initiatives were evaluated against the MITA Seven Standards and Conditions and assigned a maturity level for each of the seven areas based on expected functionality at delivery. The graph below identifies the 24 initiatives evaluated against the 7 Standards and Conditions, and the distribution of maturity level assessments within each.

FIGURE 11: POTENTIAL INITIATIVE MITA 7 STANDARDS AND CONDITIONS MATURITY DISTRIBUTION (FROM CHHS DHCS HIE/HIT ARCHITECTURE ROADMAP)

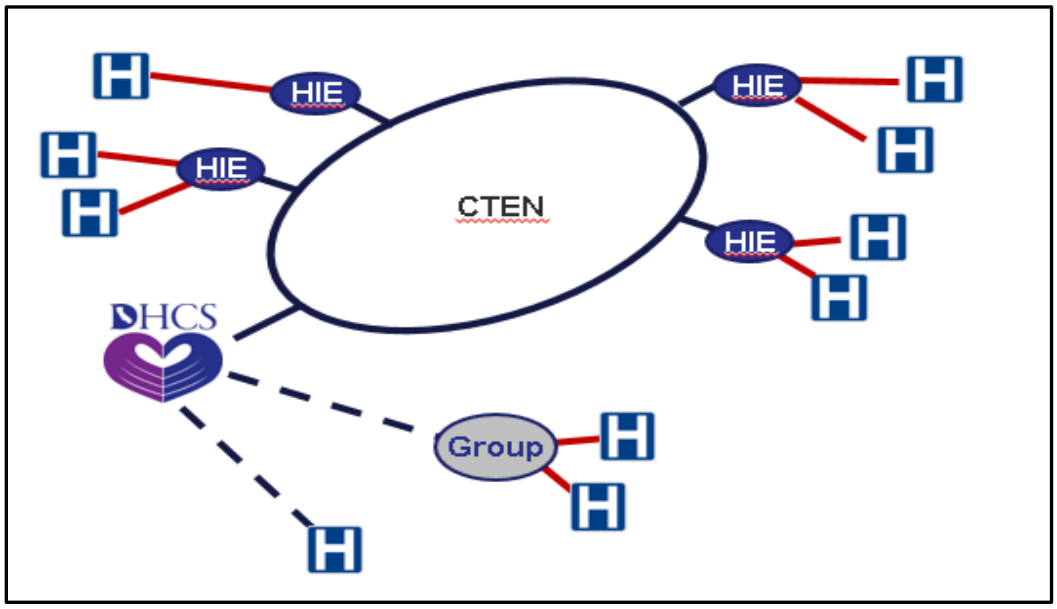


Planning activities are underway for DHCS 2018 SS-A which includes a re-evaluation of the HIE/HIT Roadmap to better integrate initiatives into the appropriate MITA roadmaps. This will give more visibility to how the HIE/HIT initiatives support intrastate exchange of health care data.

MITA AND ELECTRONIC CLINICAL DATA

The use of clinical data by DHCS is a critical component for improving the quality, efficiency, and cost-effectiveness of care delivered to Medi-Cal members. Through the evaluation of data collected by clinical quality management programs, it becomes possible to identify gaps and areas for improvement as well as identify high-risk patients and disease or risk-specific programs. Within DHCS, as allowed by the Superior Systems Waiver (SSW), the Clinical Assurance & Administrative Support Division performs utilization review and post-claims oversight for services provided to FFS Medi-Cal members. This oversight includes the determination of specific types of services which do not require a Treatment Authorization Request (TAR). Additionally, the SSW specifies how non-designated public hospitals and private hospitals can transition from the current use of TARs to the use of their own utilization management systems. Through the TAR-Free process, participating hospitals provide access to the electronic medical records to DHCS clinical staff to facilitate claims review. This allows DHCS to more efficiently collect the information needed to implement a TAR-free process through the use of clinical data obtained from hospitals. In the future, DHCS proposes to automate clinical data collection through HIEs and leveraging the existing CTEN.

FIGURE 12: PROPOSED APPROACH



Effective intrastate data exchange processes and protocols utilized by electronic data collection will lay the groundwork for leverage within California across hospital trading partners. The storage mechanisms to be built as part of electronic data collection will be sophisticated enough to better share data with CHHS and its associated departments, including DHCS, CDPH, and CDSS. DHCS has convened a CHHS-level workgroup to address the specific issue of leverage, since so many California State departments under the CHHS umbrella have business needs and existing investments in the area of health information management.

MITA AND PUBLIC HEALTH

CDPH understands the importance of the public health inclusion in MITA, which places it in alignment with the EHR Incentive Program and ONC rules. Key benefits of CDPH involvement in MITA includes:

- Facilitation of collaboration, communication, and coordination with providers, hospitals, health systems, laboratories, local public health agencies, state agencies, and federal agencies.
- Increased standardized data collection in real-time to public health registries for a quicker public health response to emerging threats and disease prevention.
- Meaningful use of public health data for public health surveillance, quality of care, care coordination, and reduction of health care costs.
- Standardized data collection for analytics.
- Facilitation of interoperability within Public Health systems and with other state, health and medical systems.

A list of the CDPH registries, as well as other CDPH programs that may be included in the HIE/HIT Architecture Roadmap were noted in Section 1.14. These programs may be included under the various business areas as outlined by the HHS and the CMS. The development of a public health HIE infrastructure with supportive technical solutions would allow the CDPH and the 61 LHDs to further data exchange with the State Medicaid Agency.

1.16 INFORMATION TECHNOLOGY WORKFORCE DEVELOPMENT

As the HIT landscape evolved, DHCS actively worked through outreach, education efforts, and workforce development programs to encourage and employ this transforming workforce. California's health care industry is composed of approximately 1.4 million

individuals[55] working to provide care to more than 39 million Californians. Two initiatives, the Western Region Health IT Program (WRHealthIT) and the California Health Workforce Alliance (CHWA), advanced workforce capabilities in HIT and HIE to supplement and assist health care professionals.

Funded by the ONC, the program targeted one of five regions in the two-year national project. The WRHealthIT was comprised of community colleges from Arizona, Nevada, California and Hawaii[56]. Overall project goals included preparation of the Health IT workforce to assist hospitals, clinics, and doctors' offices with the installation, maintenance, and deployment of EHR systems. Member colleges within the consortium created certificate programs that developed skillsets related to practice workflow/information redesign, clinician/practitioner consultant needs, implementation support specialists, implementation managers, technical/software support staff, and trainers. Within the WRHealthIT, a total of 2,641 students received training. In California, 2,122 students were trained by the state[57]. After the grant ended in 2013, five of the ten participating colleges continued the Health IT education and training. Those colleges include Cosumnes River College, East LA College, Orange Coast College, San Diego Mesa College, and Santa Barbara City College. The programs offer an Associate of Science in Health Information Technology in support of career opportunities in the Health IT industry.

1.17 INTERSTATE EXCHANGE ACTIVITIES

California shares borders with Oregon, Nevada and Arizona. For EHR Incentive Program eligibility purposes DHCS allows hospitals and professionals to choose between counting only discharges or encounters for California residents, or discharges for residents of both California and another state – whichever will result in the highest percentage of Medicaid discharges or encounters for the hospital or professional. The CMS Cost Reports are used to capture data on out-of-state discharges from hospitals. Since cost reports do not break out data by state, in the case where a hospital chooses to establish patient volume only using California patients and cost report data do not correspond to that reported by the hospital, DHCS requires the hospital to submit other supporting documents such as audited annual hospital disclosure reports. It is important to note that the CMS National

[55] CHCF, *California's Health Care Workforce (August 2017)*. Accessed on April 25, 2018.

[56] Health IT Buzz (March 30, 2011). Accessed on April 27, 2018.

[57] ONC Health IT Dashboard, HITECH Workforce Development Programs (2013). Accessed on April 25, 2018.

Level Registry (NLR) does not allow hospitals or professionals to claim EHR incentive funds in more than one state for each program year. DHCS has not experienced a significant number of providers using beneficiaries across state lines to establish eligibility. On the rare instances when this has occurred, DHCS has reached out to the other states to confirm the provider's credentials as well as reported patient volumes.

WESTERN STATES CONSORTIUM

Established in October 2011, the Western States Consortium (WSC) was comprised of eight core states (Oregon, California, Arizona, Hawaii, Utah, Nevada, Alaska, and New Mexico) and two satellite states (Washington and Idaho). Five other states; Colorado, Florida, Georgia, Michigan, and Ohio, later joined the consortium. The goal of the WSC was to establish policies and technical solutions to support direct exchange and advance HIE across state borders. California and Oregon participated in two proof-of-concept pilot demonstrations to show how local agreements and trust structures could be established to support interstate HIE. Additional states were included as the scope of the pilot expanded. Over the course of the demonstration pilot, the WSC found that trust bundle development remained easiest when focused on the minimum requirements. Additional findings included the need to further develop the infrastructure to facilitate the exchange of health information. Variances in state law or regulation and practice were identified as a possible barrier to the statewide expansion of direct exchange. At the end of the demonstration pilot, the WSC incorporated as NATE in May 2013 to continue to efforts of HIE exchange across state borders. In October 2015, CAHIE and NATE announced an effort designed to increase effective sharing of health information among providers and between providers and consumers. As part of this collaboration, NATE transitioned the Provider-to-Provider Trust Bundle to CAHIE[58]. The bundle enabled exchange across the nation and included California, Oregon, Utah, and Alaska. During the transitionary period, CAHIE agreed to establish a new national forum to develop policies and procedures to manage this trust bundle. From the forum discussions, it was determined that, due to the prevalence of existing DirectTrust accredited organizations, the effort to develop procedures would have been duplicative of those already in place. CAHIE has since decided to discontinue CTEN trust bundles published for DirectTrust.

[58] CAHIE, *NATE to Transfer Administration of Nation's First Trust Bundle for Provider Systems to CAHIE (October 7, 2015)*. Accessed on: April 25, 2018.

1.18 THE LEGAL LANDSCAPE

In October 2009, California passed Senate Bill (SB) 337[59]. The bill emphasized that the full benefits of health information technology could not be completely utilized unless electronic health record systems were supported by secure exchange of health records and used by health care providers and others throughout the state and across state boundaries. The ARRA of 2009 (Public Law 111-5) and its included HITECH Act, provided California the opportunity to improve its health care system through development of a statewide health information technology infrastructure. Federal grant funds provided by Section 3013 of the ARRA were used to expand the use of health information according to nationally recognized standards. SB 337 authorized CHHS, or a department under its jurisdiction, to apply for federal health information technology and exchange funding made available through the ARRA. An included provision allowed for the selection of a qualified nonprofit to act as the state entity should CHHS not submit an application for federal funds. In that instance, the state-selected entity would facilitate and expand the use and disclosure of health information electronically among organizations while protecting individual privacy and confidentiality of electronic medical records. All related funds received through the ARRA would be stored in the California Health Information Technology and Exchange Fund and used solely for the purposes of health information technology and exchange.

Assembly Bill (AB) 278[60], enacted in 2010, stated that the Office of Health Information Integrity (CalOHII) as a department within CHHS, was able to apply for federal funds available through ARRA. The identified role of CalOHII was to enforce state law as related to confidentiality of medical information and to impose administrative fines for the unauthorized use of medical information. Additionally, the bill allowed CalOHII to annually approve a maximum of four demonstration projects, or Health Information Exchange Privacy and Security Demonstration Projects, to evaluate possible solutions to facilitate HIE that promote quality of care and maintain the privacy and security of personal health information. The demonstration projects identified and examined barriers preventing the implementation of HIE, tested security and privacy policies for the secure exchange of health information, and identified and addressed any differences between state and federal laws surrounding the privacy of health information.

Approved in October 2011, SB 945[61] required DHCS to establish and administer the Medi-Cal EHR Incentive Program. Program administration duties included providing federal

[59] SB 337 (Alquist, Chapter 180, Statutes of 2009). Accessed on: April 25, 2018.
[60] AB 278 (Monning, Chapter 227, Statutes of 2010). Accessed on: April 25, 2018.
[61] SB 945 (Committee on Health, Chapter 433, Statutes of 2011). Accessed on: April 25, 2018.

incentive payments to Medi-Cal providers for the implementation and use of electronic health records systems. Additionally, SB 945 required DHCS to accept applications from and make incentive payments to eligible professionals and hospitals to adopt, implement, upgrade, and meaningfully use certified electronic health records technology. The incentive payments made to eligible professionals and facilities must meet all standards included in the Medicaid EHR Incentive Program and used federal funds made available through Section 4201 of the ARRA (Public Law 111-5). The bill also required DHCS to develop the State Medicaid Health Information Technology Plan for federal approval. The bill included language that it would become inoperative on July 1, 2021, and would be repealed on January 1, 2022 unless a later enacted statute deletes or extends the dates on which it becomes inoperative.

In September 2011, DHCS submitted SPA 11-017 for CMS review. Included in the SPA was the request to add optometrists as an eligible provider for purposes of the EHR incentive program. Approved in January 2013, the SPA allowed optometry services to be inclusive of services that a physician is authorized to perform. After receiving approval, DHCS designated optometrists as eligible providers, as indicated in CFR 495, Subpart B, section §495.100.

SB 870[62] was approved in June 2014 for the 2014-15 fiscal year. The bill approved appropriation of $3.7 million to DHCS to support the California Technical Assistance Program (CTAP) in accordance with the State Medicaid Health Information Technology Plan as specified in Section 14046.1 of the WIC.

In September 2016, the California Legislature enacted Senate Bill 482[63] to amend Sections 11165 and 11165.1 of, and to add Section 11165.4 of the Health and Safety Code. These changes required providers to both report and consult the Controlled Substance Review and Evaluation System (CURES) database before and after prescribing controlled substances. The expanded role of CURES has the potential to increase the role of health information exchange widely in California.

[62] SB 870 (Committee on Budget and Fiscal Review, Chapter 40 Statutes of 2014). Accessed on: April 25, 2018.

[63] SB 482 (Lara, Chapter 708, Statutes of 2016). Accessed on October 30, 2018.

1.19 CLINICAL QUALITY

As described in the 2017 *DHCS Strategy for Quality Improvement in Health Care (Quality Strategy)*[64], DHCS is committed to continual improvement in population health and health care in all departmental programs. The *Quality Strategy* identifies goals, priorities and specific programs developed to advance population health and high-quality health care. The *Quality Strategy* was developed to align considerations from the National Strategy for Quality Improvement as well as state QI initiatives as much as possible.

DHCS identified improving patient safety as a critical issue for health care systems. Part of this effort includes strengthening the ambulatory care infrastructure to prevent errors such as missed/delayed diagnoses, delay of proper treatment or preventive services, medication errors/adverse drug events, and ineffective communication and information flow. Advances in information technology, including those related to EHR systems, may aid in an improved and more efficient safety infrastructure. DHCS hopes to achieve this goal through identifying proven models that effectively improve workflows in the ambulatory care setting and exploring methods for implementation across the state.

The efforts to improve the ambulatory infrastructure complement those undertaken to advance the adoption of health information technology and health information exchange essential to delivery of efficient care. By following the Medicare model, DHCS plans to develop the capacity for members to view personal health information. The adoption of EHRs assists in facilitating health care decisions at the point of care. Through partnerships with other HITECH programs in California and across the nation, DHCS has supported the development of HIE capacity in the state.

Thus far in the Medi-Cal EHR Incentive Program, DHCS has not had the ability to collect CQMs electronically. Like most other state programs, providers input aggregate CQM data into the SLR. Appendix 8 displays CQM data for program years 2011 to 2016. DHCS has recently begun to share this aggregate data with public health programs and managed care plans. Appendix 4 displays an information flyer developed by the CDPH to promote the reporting of 4 CQMs addressing diabetes, hypertension, colorectal cancer screening and immunizations.

[64] Department of Health Care Services Strategy for Quality Improvement in Health Care. Accessed on: April 25, 2018.

2 CALIFORNIA'S FUTURE HIT LANDSCAPE

DHCS' original SMHP delineated an ambitious plan for promoting the use of health IT throughout California. This plan concentrated mainly on promoting the adoption of certified EHRs. The goals specified in DHCS initial 5-year plan (2011-2016) have been largely attained or surpassed. The specific goals and results of the initial 5-year plan are detailed in Appendix 10. As described in Section 1, EHR adoption is now widespread for both professionals and hospitals. The goals of DHCS' new 5-year plan 2017-2021 are presented and discussed in Section 2.1. This new plan targets meaningful use of EHRs and the promotion of interoperability through HIE.

2.1 CALIFORNIA'S NEW 5-YEAR PLAN (2017-2021)

2.1.1 MEANINGFUL USE

California has been very successful in promoting AIU by professionals and hospitals. To date, 25,412 EPs and 330 EHs have received AIU payments—the most of any state. AIU payments will no longer be made during and after 2017 because 2016 was the last program year in which new providers could join the program. DHCS will now concentrate on improving the MU rates of its already participating providers. As delineated in Section 1.2, EHs have been quite successful in attesting to MU, with a rate of 92% (302/3). EPs have been less successful, with only 36% overall attesting to MU. As delineated in Section 1.1, all professional types have achieved an MU rate of at least 45% except dentists (11%) and optometrists (29%). Excluding these two professional types, overall 48% of professionals have attested to MU.

In the next five years DHCS will strive to achieve an MU rate for all EPs of at least 75% and 100% for EHs. To achieve this, DHCS will provide assistance to all EP types, through working with CTAP organizations and other stakeholders, with particular targeting of dentists. DHCS will set a goal of 50% for MU attestations from dentists. To begin this targeting, DHCS recently completed a survey of dentists who received AIU payments but have not yet attested to MU. The results of this survey described in Section 1.1.2 revealed a number of barriers to MU for dentists. DHCS has recently addressed barriers due to lack of knowledge about MU and the program by sending respondents a "Tip Sheet" for dentists (Appendix 14) about achieving MU. Other interventions to address knowledge and other barriers are being planned.

2.1.2 HEALTH INFORMATION EXCHANGE

While EHR adoption and meaningful use among providers is still an important focus, over the next five years DHCS' goals progress towards the next phase of efficiency: health information exchange (HIE). As identified in the state's most recent MITA SS-A, developing seamless and integrated systems that communicate effectively and provide data that is timely, accurate, usable, and easily accessible. This will support analysis and decision making for health care management and program administration as a necessary foundation that will support the flow of HIE throughout the state. DHCS has identified specific goals to improve infrastructure to support HIE at the state, county, and community levels.

The CMS State Medicaid Directors (SMD) Letter #16-003 has expanded the scope of state expenditures eligible for the 90% matching funds for health information exchange and encouraged the adoption of CEHRT by certain Medicaid providers. The funding provides for implementation and onboarding costs related to HIE and interoperability for EPs who will often transition care to other Medicaid providers that are not eligible for Medicaid EHR incentive payments. This will significantly increase the support for transitions and coordination of care for Medicaid beneficiaries through interoperability.

The state is developing a process for vetting and managing a variety of proposals from state, local and non-profit entities for projects in support of this interoperability. DHCS held a HIE Summit in November 2017 for all stakeholders and will use this platform to inform our strategy to vet and manage such proposals. The HIE Summit also provided stakeholders a forum for feedback, concepts and additional projects. Additionally, DHCS has provided guidelines for the submission of HIE proposals potentially eligible for enhanced federal funding under SMD# 16-003 in *HIE Funding Opportunity* (Appendix 19). These processes for establishing HIE proposal vetting and management provide a methodological approach to reduction of waste and duplication of effort in the funding of these programs, while ensuring alignment with the requirements of SMD# 16-003.

2.1.2.1 DHCS HIE INITIATIVES

The state is investigating the use of enhanced funding as described in SMD #16-003 for collection of electronic clinical data, onboarding of emergency services personnel, public health providers, pharmacies and laboratories. In addition to the statewide and regional proposals for HIE interoperability currently before the department, DHCS is also

examining its *2017 Strategy for Quality Improvement in Health Care*[65] and the department's 1115 Waiver[66] (Medi-Cal 2020 Waiver[67]) for opportunities to further enhance their strategies with the available HIE infrastructure and onboarding funding.

ELECTRONIC CLINICAL DATA

As described in Section 1.15.1, DHCS has identified that the capture and use of clinical data is a critical component to improve health care for Medi-Cal members. As efforts surrounding clinical data collection continue to evolve, the proposed collection process would have the ability to electronically receive clinical data as well as validate and store the clinical data from hospitals. As a first use case, DHCS will support a Treatment Authorization Request (TAR)-free process based on electronic collection and review of clinical data from hospitals. The collected data will be viewed by DHCS staff through secure access. This solution is scalable and will be leveraged to receive electronic clinical data supporting clinical quality improvement and monitoring activities.

FIGURE 13: CLINICAL DATA PROJECT TIMELINE

Assessment	Gap Analysis	Alternatives	Implementation

• CAASD TAR-Free business process
• HIE landscape
	• DHCS resources
	• Clinical Document Templates
		• Technical requirements
		• Data requirements
		• Business requirements
			• Exchange capability
			• Trust network
			• Trading partner rollout
			  • HIEs
			  • Groups
			  • Hospitals

Complete	**Complete**	**In Progress**	**Planned Q4 2018**

The proposed approach is to utilize national standards for data structure and exchange. This includes using Consolidated-Clinical Document Architecture (C-CDA) templates as well as eHealth Exchange specifications. The existing HIE infrastructure can be leveraged through CTEN agreements, thereby connecting with community HIEs and other large

[65] DHCS Strategy for Quality Improvement in Health Care. Accessed on: April 25, 2018.

[66] DHCS Section 1115 Medicaid Waiver Resources. Accessed on: April 25, 2018.

[67] DHCS Med-Cal 2020 Demonstration. Accessed on: April 25, 2018.

hospital systems. The use of existing community HIEs supports the expansion of local HIE initiatives. Possible future phases include:

- Further interaction with health plans.
- Bi-directional data exchange for treatment purposes.
- Development of longitudinal medical history for Medi-Cal members.
- Provide Medi-Cal members with access to data.
- EHR Incentive Program MU reporting.

HIE ACTIVITIES IN SUPPORT OF THE DHCS QUALITY STRATEGY

- Infrastructure and onboarding of foster care facilities to improve data collection and analytics to improve immunization saturation and medication safety.

- Facilitate the California Virtual Pediatric Intensive Care Unit (PICU) Database to improve care of critically ill infants and children by implementing a shared and interoperable PICU database for patients with chronic pain.

- Support the HIV/AIDS Waiver to improve continuum of care and quality of life for mid- to late-stage patients through health information access and infrastructure.

- Support the Home and Community Based Services Waiver for persons with developmental disabilities to remain in their homes through home-based HIE infrastructure and onboarding.

- Improve access to quality palliative and end-of-life care and practices through HIE infrastructure and onboarding of patients and care facilities such as hospice.

HIE ACTIVITIES IN SUPPORT OF THE DHCS MEDI-CAL 1115 WAIVER

The California Medi-Cal program is advancing integration and use of health information technology across multiple programs. This includes specific programs as part of the waivers with CMS as well as efforts to directly advance MITA maturity for the organization. The range of programs includes but is not limited to:

- **Community-Based Adult Services (CBAS):**

Support the continued operation of the CBAS program through infrastructure and onboarding to enhance skilled nursing care, social services, therapies, personal care, family/caregiver support, nutrition services, care coordination, and medical transportation to eligible State Plan beneficiaries.

- **California Children's Services (CCS)**: Support the continued operation of the project in achieving the desired outcomes related to timely access to care, improved coordination of care, promotion of community-based services, improved satisfaction with care, improved health outcomes and greater cost-effectiveness through funding of infrastructure, network connectivity and onboarding services.

- **Managed Care Delivery for the Coordination Care Initiative (CCI):** Support the continued operation of CCI Multipurpose Senior Services Program (MSSP) for health care management services. These services include a personal emergency response system, information technology and a communications methodology tailored to accommodate the needs of the beneficiary who is otherwise frail and certifiable for placement in a nursing facility but who wishes to remain at home."

- **Quality Oversight and Monitoring of the Coordination of Care Initiative:** Provide network infrastructure and onboarding support for the initiative, which requires each plan to submit encounter data at least monthly on all service utilization by impacted beneficiaries. This reporting allows the State to ensure that sufficient mechanisms and infrastructure are in place for the collection and analysis of encounter data provided by the plans.

- **Public Hospital Redesign and Incentives in Medi-Cal (PRIME):** Provide network infrastructure and onboarding support for PRIME, which requires integration across settings in order to transform patient care systems to create strong links between different settings in which care is provided. These settings include inpatient and outpatient settings, institutional and community based settings, and importantly behavioral and physical health providers.

- **Dental Transformation Initiative (DTI):** Provide network connectivity, infrastructure and onboarding for data collection and analysis for the DTI.

The DTI requires that the state measure the impact on the utilization of preventive services and monitor actively participating service office locations. Monitoring efforts include changes in the number of, and percentage change in, restorative services and preventive dental services; reduction of caries risk levels; the use of emergency rooms for dental related reasons; and any changes in the number and proportion of children receiving dental surgery under general anesthesia.

- **Whole Person Care (WPC):** Provides funding to implement the infrastructure and network connectivity for the WPC program in order to increase integration and coordination among county agencies, health plans, providers, and other entities. Improved integration throughout the specified entities will improve data collection and sharing amongst local entities to support ongoing case management, monitoring, and strategic program improvements.

- **Drug Medi-Cal Organized Delivery System (DMC-ODS):** Provides funding to the DMC-ODS to implement the infrastructure and network connectivity needed to facilitate the secure exchange of information among DHCS Certified Outpatient Intensive Outpatient Facilities, DHCS Licensed and DHCS/ASAM Designated Residential Providers, DHCS/ASAM Designated Chemical Dependency Recovery Hospitals, DHCS/ASAM Designated Free Standing Psychiatric hospitals, DHCS Licensed Opioid Treatment Program Maintenance Providers, DHCS Certified Outpatient Facility with Detox Certification and Licensed Prescribers.

- **Health Homes Program (HHP):** The Health Home Program (HHP) is an ongoing initiative to develop a network of providers that will integrate and coordinate primary, acute, and behavioral health services for the highest-risk (top 3-5%) Medi-Cal enrollees. CMS supports the implementation of Health Homes for the underserved, which are intended to "Change the Health Trajectory" of the beneficiary over time such that outcomes are improved and costs reduced. A key component of care within Health Homes is the exchange of health information between the homes and primary care physicians, hospitals and tertiary care facilities. HHP services such as Care Coordination, Health Promotion, and Comprehensive Transitional Care will be enhanced by the use of EHR and HIE.

- **Superior Systems Waiver (SSW):** The SSW (approved by CMS and effective for a two-year period, October 1, 2015 through September 30, 2017) describes the utilization review process for acute inpatient hospitals that serve fee-for-service Medi-Cal patients. It specifies how the non-designated public hospitals and private hospitals will transition from the current use of treatment authorization requests (TAR) for most hospital stays to the use of their own utilization management systems using nationally recognized, evidence-based medical criteria. DHCS plans to roll out the new process incrementally, in a pilot project fashion, beginning with a small group of 11 hospitals. This measured implementation plan will help DHCS ensure that appropriate processes and system changes are in place so that hospital claims can be paid in a timely manner. DHCS will be implementing HL7 templates as new data standard in existing systems and will assess the need receive HL7 messages through a real-time interface in place of SFTP methods of data transfer.

Based on the advancements of the Provider Application and Validation for Enrollment (PAVE) and Management Information System/Decision Support System (MIS/DSS) (discussed in Section 2.2.1), the following opportunities are also being investigated:

- Develop an application that can interface through application programming interfaces (APIs) between PAVE and MIS/DSS to enable providers to view patient information in the absence of other information when they are seeing the patient.
    - Specific use cases include populations that may be mobile or displaced (foster care, homeless, etc.) as well as disaster events.
    - Connect to methodologies used for presumptive eligibility to develop criteria to be met for providers to look up a patient's information

- Develop alerting functionality to support delivery of admission, discharge, and transfer (ADTs) events to HIEs for hospital and other facility use. Support statewide directory of providers that can be used to support alerting.

- Enable information that can be consumed through an application allowing patients to manage their information between providers.

- Enable connections with other state systems to allow views of data while maintaining data in the secure Medi-Cal repository through secure APIs.

- Support care coordination with social services (Child Welfare Digital System).
- Support integration of care with other care providers such as Department of State Hospitals and Department of Corrections.

- Integrate case management systems with provider EHRs both directly and through HIEs using HL7 standards for CDA templates to support care.

- Leverage HL7 standard implementation to support receipt of Quality Reporting Document Architecture (QRDA) messages for quality monitoring.

- Work with Patient-Centered Scalable National Network for Effectiveness Research (pSCANNER) to leverage data models and make data available through a node for research and quality assessments.

While advancing the maturity of DHCS's information systems as guided by the MITA initiative, California is investigating the potential to leverage the MMIS infrastructure to support improved care coordination.

2.1.2.2 EXTERNAL HIE INITIATIVES

As described in earlier SMHPs, California's health information exchange (HIE) landscape has evolved through private non-profit initiatives, resulting in several enterprise and community-based health information organizations. Today more than 15 private, non-profit, stakeholder-driven HIEs connect communities in 39 of California's 58 counties. However, just over 270 of California's 400+ acute care hospitals are connected to a community-based HIE currently, leaving a significant gap in hospital connectivity to support coordinated care for Medi-Cal's most vulnerable and highest cost patients.

As Medi-Cal health plans and the hospital industry shift business practices to align with Medi-Cal 2020, they have recognized the need for advances in primary care, cross-system integration and coordination, and data analytics. DHCS is collaborating with Medi-Cal health plans and stakeholders to develop a broad-scale connectivity program that will provide the funding and momentum needed to rapidly close the gaps in hospital and ambulatory connectivity across the state, strengthen existing HIEs as "critical infrastructure," and seek to deepen the level of integration and interoperability among all participants. The hospital data contribution requirements and HIE service requirements envisioned for the connectivity program, which include notification services and

standards-based care summary exchange, will help eligible hospitals and professionals more readily achieve health information exchange objectives, while simultaneously building more comprehensive longitudinal patient records to support the Medi-Cal 2020 waiver and associated programs such as PRIME and Whole Person Care.

The connectivity program will aim to have 100% of California's acute care hospitals connected to a qualified California HIE within a year of the program's initiation. After the first phase of the program is completed, DHCS will seek additional funding for a second phase focused on statewide ambulatory and long term care connectivity.

On-boarding of providers to regional HIEs is necessary to facilitate MU for eligible providers. Different types of providers have varying issues that need to be addressed. California is proposing a set of onboarding initiatives and evaluating other methodologies that will provide HIE support for the extended set of providers with which eligible providers need to exchange health information in order to meet MU.

Each of the following areas have unique HIE issues to be addressed with technical assistance and on-boarding support:

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH (CDPH)

Federal regulations incentivize providers and hospitals to send data to state, local and tribal public health agencies. As such, it is imperative that our public health agencies are supported in the design, development, and implementation of a public health infrastructure for HIE and HIT that will enable EPs and EHs to meet MU public health objectives (i.e., electronic laboratory reporting, immunization registries, cancer registries, specialized registries, and syndromic surveillance). Section 1.14 details the registries and reporting capabilities within California. CDPH is proposing a three-phased approach to advance its capacity to exchange data with EHRs to create fully functional, secure, and confidential information systems for public health surveillance. In addition, DHCS will promote approaches that leverage HIEs:

- Phase 1 – Establish a unified, efficient approach for on-boarding EHRs of targeted Medi-Cal providers to increase communicable disease reporting (CalREDIE), and immunization reporting (CAIR).
- Phase 2 – CDPH received MU public health data reporting across applicable public health programs and improves quality of care for Medi-Cal patients.
- Phase 3– Improved informatics capacity in CDPH for other public health surveillance systems (beyond MU reporting).

PUBLIC HEALTH REGISTRIES

California operates a series of registries to capture public health information.

- California Immunization Registry (CAIR) is a collaborative, decentralized system of eight regional and two county web-based immunization registries. As of July 2017:
    - 3,977 sites (73%) are actively submitting data electronically. By July 1, 2018, CDPH hopes to see this number increase to 80% (or 4,342 sites).
    - 86% (3,482,368) of new doses are being submitted electronically, CDPH's goal is for 90% of new doses to be submitted electronically by July 1, 2018.
    - 7% (276) of sites are engaged in bidirectional messaging. By July 1, 2018 the goal is for this to increase to 50% (2,170) of sites.

- CalREDIE supports the electronic submission of laboratory results for reportable diseases via the ELR system, as well as web-based Confidential Morbidity Reporting. Over the next five years, CalREDIE aims to achieve the following goals:

    - Develop procedures and tools to establish a unified, efficient approach for onboarding EHRs of targeted Medicaid providers so they can address Objective 8 of the Medicaid EHR incentive program, Stage 3 Public Health Reporting Measures, specifically Measure 3: electronic case reporting, by submitting electronic initial case reports (eICR) for state reportable conditions to the CalREDIE.
    - Install, configure and implement capacity to receive eICR into CalREDIE.
    - At least 25% of Eligible Providers will transition from paper case reporting or manual entry of case reports into CalREDIE to electronic case reporting, by submitting electronic initial case reports (eICR) for state reportable conditions from the Eligible Providers' EHR system to the CalREDIE.
    - At least 40% of state reportable cases will be received into CalREDIE via electronic case reporting (eCR).

EMERGENCY MEDICAL SERVICES AUTHORITY (EMSA)

EMS is often referred to as part of the healthcare safety net. EMS provides entry into the emergency medical care system with response to medical and trauma emergencies (typically through 9-1-1) and prehospital evaluation for approximately four million patients each year. Of those, EMS provides initial stabilization and treatment, and transportation

of about three million patients to emergency departments at acute care hospitals in California each year.

When emergencies and disasters occur, individuals may require medical attention from hospitals and other medical providers that do not have any previous history treating that patient. Consequently, the victim's health information, including medications, allergies, major illnesses, etc. is often unavailable to disaster volunteers, emergency responders and emergency facilities caring for them during or after a disaster, leading to suboptimal care and potential patient safety issues.

Leveraging previous HIE progress and lessons learned from the PULSE +EMS pilot funded by the ONC grant for Health Information Exchange in EMS (discussed in Section 1.12.4), EMSA has proposed a Health Information Technology for Emergency Medical Services (HITEMS) project. This will continue the work to create a model for interoperability between EMS electronic records and health information systems, including EHRs, by leveraging HIOs. The model aims to enable paramedics to query patient information and medical history via the HIO, and to promote real-time data exchange from the ambulance-based EHR to the receiving hospital's emergency department via existing HIO exchange capabilities. The technical best practice sets that will be developed from this project will ultimately assist programs to implement onboarding for EMS EHRs to become full participants of HIOs, on par with hospital EHRs, ambulatory EHRs, and behavioral health EMRs.

Disaster response is another area that EMSA proposes to improve through the HITEMS project. The PULSE +EMS pilot provided a limited capability in California for disaster healthcare professionals (including providers who are working outside of a hospital setting, in a mobile field hospital or alternate care site) to exchange or access patient information with HIOs and health systems during disasters.

The HITEMS project aims to produce an interoperable model that will enable bidirectional clinical data exchange between multiple health information organizations in time of widespread emergency or disaster. The bidirectional exchange of health information between field EMS providers and hospitals will lead to improved clinical decision making by paramedics, clinical decision support by hospitals, promote longitudinal electronic health records, and improve population health and transitions of care from paramedics to emergency physicians during emergency situations.

BEHAVIORAL HEALTH

As described in Section 1.9.3, behavioral health providers in many counties throughout California use EHRs acquired through funding from the Mental Health Services Act (MHSA). DHCS remains committed to working with counties on the potential use of MHSA funds to promote HIT/HIE through 90/10 funding opportunities. Although one of the major goals of the MHSA has been the promotion of data sharing between behavioral health and medical health providers, a major barrier has been confusion regarding how such information can be shared within the context of existing state and federal laws. Much of this confusion has been recently resolved with the publication of the *SHIG* by the California Health and Human Services Agency[68]. DHCS is considering ways to expand the application of the guidance offered in the *SHIG*. Based upon feedback obtained from the November 2017 HIE Summit, stakeholders found the guidance offered in the *SHIG* to be greatly beneficial, requesting additional updates to current *SHIG* documentation as well as future guidance for other program areas and further support tools.

DHCS believes that the sharing of a limited mental health data set through a community HIE with patient opt-in consent, as demonstrated in San Joaquin County, represents a practical model that should be considered for deployment widely. DHCS plans to work with state and county behavioral health authorities, HIEs, and other stakeholders to develop a proposal for using SMD #16-003 funding for this purpose.

SUBSTANCE USE DISORDERS

As described in Section 1.4, DHCS identified the need for a full array of SUD services in AI/AN communities, as many of these communities are impacted by SUD-related issues. As the IHP-ODS creates the need, fuller implementation will allow IHP-ODS to contract with providers in a managed care environment to deliver a full array of SUD services consistent with the American Society of Addiction Medicine (ASAM) Treatment Criteria, including recovery supports and services. Designing an IHPODS for treatment of SUD will enhance service coverage, access, program integrity, monitoring, evaluation, quality of care and care coordination for AI/AN Medi-Cal beneficiaries while increasing opportunities for Medicaid reimbursement for tribal 638 and Urban Indian providers. In order to provide oversight of the IHP-ODS, an Administrative Entity will be established which will enable care coordination, provide network adequacy, and oversee the system.

[68] CHHS State Health Information Guidance (SHIG) on Sharing Behavioral Health Information. Accessed on: April 30, 2018.

DHCS proposes a project to connect the current urban and tribal EHRs with the new SUD benefit established by the IHP-ODS. The University of California at Los Angeles is creating the data set needed for the IHP-ODS. This project would take this data set and provide technical support to integrate the SUD data set into existing EHRs. It would also explore the need to create or expand a current Health Information Exchange. This would enable providers to share physical health, mental health and SUD information for the AI/AN population at the urban and tribal clinics. The project would create SUD provider directories, enable secure electronic messaging that is compliant with 42CFR requirements, query exchanges by the Administrative Entity and providers, and support care plan exchange.

PHARMACIES

The electronic communication of prescription information from acute care hospitals, children's hospitals and eligible professionals to pharmacies is a strategic component of Whole Person Care (WPC)[69] for Medicaid beneficiaries; and especially historically underserved populations. The state expects to entertain supportable HIE funding requests from EP and EH organizations and consortia for onboarding of community-based pharmacies to existing HIEs because of documented deficiencies in Section 1.12.

LABORATORIES

The electronic communication of lab data is a key component of MU requirements. EHs and EPs are required to incorporate lab test results into their EHRs as structured data. In addition, hospitals will be required to provide electronic submission of reportable lab results to public health agencies. These requirements represent some of the biggest challenges for ambulatory providers and hospitals to achieve MU as many smaller laboratories are not prepared to send structured electronic laboratory data to outpatient physicians. DHCS has identified the need to implement a lab solution that benefits Medi-Cal providers and other stakeholders.

PATIENT MATCHING

Patient safety is critically dependent upon accurately identifying a patient, and associating the patient with all of their health records, and not with the health records of another patient. A number of approaches have been proposed to address identification and matching of patient records, such as:

[69] DHCS Whole Person Care Pilots. Accessed on: April 30, 2018.

- Master patient/person indexes (MPIs) using deterministic and probabilistic algorithms to match on limited demographics.
- Various query-based standards used by initiatives such as CommonWell and eHealth Exchange to match demographics across organizational boundaries.
- Big-data approaches that use non-healthcare information, such as previous addresses or nicknames for a patient, to better associate a person with their health information.

Despite these efforts, national networks such as eHealth Exchange and state registries such as CAIR remain unable to identify more than half of the records available for a given individual.

The landscape in California may be unfavorable to a traditional statewide MPI solution. However, the matching of correct health information to patients remains problematic. DHCS is interested in working with stakeholders to identify methods to improve patient matching and the appropriate association of health information with patients that can be used by community HIOs, health systems, and state agencies.

SOCIAL DETERMINENTS OF HEALTH

Health information exchanges have made significant progress in support of eligible providers' sharing of clinical information for their patients; including medical history, recent lab work, current prescriptions, recent procedures, etc. The exchange of this information has generated efficiencies and improved clinical practice, thus benefiting patient care. However, there is growing recognition that health is impacted by every aspect of a person's life, and the social determinants of health (income, education, transportation, personal safety, employment, food, housing, etc.) are the primary drivers of long-term health improvement. This transformative project seeks to enhance health information exchange by integrating social determinants data into EHRs in order to better equip Eligible Providers with a robust/holistic view of their patient's needs.

The project will integrate data from what are currently considered non-covered entities within the HIE lexicon to augment EHR data for whole person care. Supplementary data sources would include data from social services agencies, housing authorities, mental and behavioral health facilities, correctional facilities, schools, census data, public health data, and targeted referral entities: pharmacies, physical therapy, legal, financial, patient navigation, etc. This enhanced view of the totality of the patient's needs will better inform the EP in meeting transitions of care and continuity of care core measures.

Implementation will leverage existing HIE entities, beginning with a large urban environment and a smaller rural environment, from which expansion will promulgate to all interested HIEs in the state. Specific tasks will include identifying the relevant social determinant data sources, examination of their data models, obtaining data use agreements, development of interoperability with secure transmission protocols, reconciliation of each data repository's Enterprise Master Patient Index (EMPI), and development of a consolidated view of the data for access by eligible providers' electronic health record systems.

SPECIALIZED REGISTRIES

Specialized registries require the ability for bi-directional exchange with EHRs, either through interfaces or secure API that supports the virtual integration of systems for the providers and ensures accurate patient matching and advance interoperability through the involvement of HIEs. California intends to work with specialized registries to provide support for further registry development, on-boarding of providers to support MU measures, and to advance interoperability. Specialized registries that will be evaluated for this support include:

- California's Controlled Substance Utilization Review and Evaluation System (CURES 2.0) is a database of controlled substance prescriptions dispensed in California serving the public health, regulatory oversight agencies, and law enforcement. Exchange between CURES 2.0 and EHRs would support medication reconciliation and enhance patient care. DHCS is also interested in helping to support the development of bi-directional exchange for CURES 2.0.
- The California Parkinson's Disease Registry is a project to develop a confidential database that contains information about the extent and characteristics of Parkinson's disease (PD) in California. Information collected from local physicians, pharmacists and health care facilities (designated as reporting sources in the Registry Act) will include demographic information (such as name, birth date, address) about people with PD, their health care providers (such as physician specialty), as well as basic clinical information (such as date of diagnosis, medications, disease features). The legislation was passed to improve knowledge about the causes and treatment of PD. Little is known about how common PD is among different population groups, what the causes are and where the patterns of the disease change over time. There is growing evidence among researchers that the disease is triggered by an environmental cause. The registry will provide the best opportunity to identify those triggers. California is the only state that has tracked the use of pesticides and other toxic chemicals since the 1970s. As a potential clinical registry pursuant to the MU Stage 2 and 3 regulations, funding

would allow for the design, development and implementation of a PD registry as well as the resources to receive electronic data from EHR systems.

- The California Stroke Registry (CSR) is a collaborative effort with the American Heart Association (AHA)/American Stroke Association (ASA) and the California Emergency Medical Services Authority. It is part of a national, federally-funded, data-driven quality improvement system to collect, use and report data related to the treatment of acute stroke across the care continuum (pre-, in-, and post-hospital settings). The CSR is in the testing stage for pre-and in-hospital components, with user acceptance testing underway through 2019. To operate optimally, participating local Emergency Medical Services Agencies (LEMSAs) must ensure that EMS providers are reporting pre-hospital data at 100%, in order to facilitate the patient data linkage across the pre- and in-hospital settings. The CSR in-hospital component leverages the data already collected through *Get with the Guidelines (GWTG) Stroke*[70] by the AHA/ASA. CDPH CSR/CCP is working with its key partners to establish a mechanism to collect post-hospital data. Once this is established, the CSR will be able to link data across the care continuum. One important use of the CSR is to evaluate specific measures of quality of stroke care, such as time-to-treatment for stroke, medications prescribed, and patient disposition at the time of discharge. Furthermore, for the Centers for Medicare and Medicaid Services, the CSR is an acceptable stroke registry for the hospital attestation structural measure of participating in a qualified registry for stroke. Aims for the CSR include:

    - A validated data platform available to CDPH and all participating hospitals statewide.
    - Features to maintain confidentiality standards and data security.
    - Data generated by the stroke database to identify potential interventions to improve stroke response and treatment.
    - Real-time hotspots generated to ensure response to issues related to early identification, triage, treatment, and transport of possible acute stroke patients.
    - Information and data sharing among healthcare providers on ways to improve the quality of care of stroke patients in the State.

[70] Office of Disease Prevention and Health Promotion. Accessed May 10, 2018.

- Strategy development and implementation to improve stroke early identification and treatment, including identifying specific hospital capabilities to receive, treat, and transfer stroke patients.

It is anticipated by 2020 that the CSR may be fully functional, with local users (e.g., hospital staff, providers, emergency medical service workers) able to measure, track, and improve the quality of care for acute stroke patients and strengthen collaboration between state and local Emergency Medical Services Agencies (LEMSAs) and hospitals to improve stroke systems of care.

- The CCR collects information about all cancers diagnosed in California (except basal and squamous cell carcinoma of the skin and carcinoma in situ of the cervix). DHCS is exploring working with CCR to expand the amount and types of clinical information it collects through HIEs and other sources with the objective of linking patients and their providers with potentially helpful clinical trials.

- County Mental Health Client & Service Information (CSI) System is a reporting system that collects client-level service utilization data about California's county mental health programs. Data are provided monthly by county mental health programs (MHPs) and summarized at the state level, allowing for improvement in health care management and program administration. The DHCS is in discussions with CSI regarding its possible designation as a specialized registry.

- Physician Orders for Life-Sustaining Treatment Registry (POLST) is a standardized form that records a patient's treatment wishes at the end of life into actionable medical orders, giving seriously-ill patients more control over their medical treatment. Completion of the POLST is always voluntary. Currently, the California POLST eRegistry pilot is underway in Contra Costa County and San Diego. When a patient residing in one of the pilot counties voluntarily completes the POLST form, a copy is scanned or uploaded to the POLST eRegistry. The pilot project is scheduled to run through February 2019 and is designed to test the feasibility, functionality, quality, and acceptability of an electronic POLST registry. The overall pilot goal is to support the development of statewide electronic access to POLST. DHCS is interested in supporting the development of a statewide bi-directional POLST registry that would be accessible not only to acute care but long-term care facilities, including skilled nursing facilities and hospice. DHCS is interested in supporting the development of a unified approach to accessing POLST forms regardless of where they reside.

- Consent is an important element to be considered in health information exchange. DHCS is considering assisting in the creation of a Patient Consent Registry. Patient information may include mental health, substance-use disorder, family planning, sexually transmitted diseases, and other issues. This also might include consent for clinical research and the sharing of information with social service agencies. DHCS is considering developing a specialized registry in which consent information can be stored and easily accessed by HIEs and other entities sharing information.

2.2 IT ARCHITECTURAL CHANGES

To support HIE goals and objectives, DHCS has developed several strategies, initiatives and activities that directly shape the DHCS IT System Architecture landscape. DHCS fully realizes it has a role in the promotion of EHR adoption and health information exchange, and continues to work to advance the business, information, and technical functionality required to support these capabilities.

The broader context of HIE in California is largely supported by other California state government entities (such as CHHS, CalOHII, CDPH), as well as private sector organizations such as CAHIE, thus much of the planned State Medicaid Agency activities during the next five years involve aligning Medi-Cal processes, data, and technology to support the guidelines and directives proposed by these and other organizations. In addition, the state anticipates providing financial support to further these efforts.

2.2.1 MITA ARCHITECTURE

MITA BUSINESS ARCHITECTURE

In terms of business processes, DHCS primarily collects administrative data related to claims and encounters, member eligibility and enrollment, and provider enrollment. This administrative data is used by DHCS to support the programs administered. Clinical data from EHRs provides a more complete view a member's medical history and, when merged with administrative data, would allow DHCS to improve the quality, efficiency, and cost-effectiveness of care delivered to Medi-Cal members. Merging the data would allow DHCS to do the following:

- Meet federal goals for program improvement and delivery system redesign, such as Medicaid Information Technology Architecture (MITA) and the Medi-Cal 2020 Waiver.

- Improve care for members through care coordination, case management, and quality monitoring.
- Help advance interoperability and health information exchange across the heath care ecosystem.

Since 2013, DHCS has been developing a strategy to incorporate clinical data into the Medi-Cal enterprise and participate in the electronic exchange of health information. This strategy includes sending and receiving data from EHRs and HIE organizations, providing data to members, and exchanging data with state and county departments to support members. As CMS requires all states to advance in MITA maturity, DHCS has set an overall target goal of a MITA Level 3 maturity across all business areas. The use and exchange of clinical data across DHCS business processes improves the efficiency and effectiveness of decision-making, while also promoting national standards for interoperability. Under the direction of the MITA Governance Team, DHCS formed the Clinical Data Workgroup to document high-level business needs for clinical data as well as prioritizing and recommending work efforts for the next three to five years.

MITA INFORMATION ARCHITECTURE

DHCS has already succeeded in advancing Medi-Cal information architecture to many MITA Maturity Level 3 goals. It has documented the Medi-Cal Conceptual and Logical Data Models, at both the enterprise and the business area levels. In addition, DHCS now has a documented Enterprise Data Management Strategy as well as an Enterprise Data Standards and Management Plan. Over the next five years, further architecture advancements will involve extending these standards into true adoption enterprise-wide, including where possible to the Medi-Cal business partners. Specific Medi-Cal 2016 MITA State Self-Assessment information architecture goals include:

- Standardize structure and vocabulary data in support of automated electronic intrastate interchanges and interoperability.
- Adopt industry standards and other nationally recognized standards in support of intrastate exchange of information.
- Target the adoption of an intrastate metadata repository where Medi-Cal defines the data entities, attributes, data models, and relationships sufficiently to convey the overall meaning and use of Medi-Cal data and information.
- Adoption of Medi-Cal's Logical Data Models that identify data classes, attributes, relationships, standards, and code sets in support of regional data exchange including clinical information.
- Adoption of an information governance process and structure.

- Adoption of statewide standard data definitions, data semantics and harmonization strategies.
- Adoption of a Conceptual Data Model that depicts the business area high-level data and general relationships for intrastate exchange.

DHCS is also in the exploratory stages of developing a Master Data Management plan and expects to have initiated projects advancing this within the next five years. Related to this is work to develop standards with respect to patient identification and a consolidated master Medi-Cal Provider directory.

MITA TECHNICAL ARCHITECTURE

Overall, DHCS has committed to implement the MITA Framework, industry standards and other national recognized standards for intrastate exchange of information. DHCS technical architecture goals for the next five years expect the following to be achieved:

- Standards established for enterprise content management (ECM), business process management (BPM), and identity access management (IdAM) to provide enterprise solutions.
- Standard ECM, BPM technologies adopted with built-in performance measures
- Enterprise Innovation Technology Services (EITS) developed and using standard requirements for new modernization projects (such as MEDS).
- EITS adopted and using a standard CMDB tool set, with systems cataloged and infrastructure baseline established.
- Utility capabilities for Level 3 supported by new technology (ECM / BPM / IdAM)

2.2.2 STATE LEVEL REGISTRY

California's State Level Registry (SLR) accepts the registration data for Medi-Cal providers from the CMS NLR using Secure File Transfer Protocol Software (FTPS). The interface file is processed and loaded into the SLR**.**

Medi-Cal providers interface with the SLR via the web portal user interface. The application is designed for manual entry of data, with providers directed through a simple set of screens where information is entered that provides the state with the data necessary to determine Medi-Cal EHR Incentive Program eligibility for EPs and EHs, and payment calculations. By the end of 2018, modifications will be made to support automated payment processes and payment offsets to ensure providers are paid appropriately and in a timely manner. In the interim, DHCS continues to perform quarterly reconciliations.

Conduent hosts the application in a secure data center and manages the development of functionality to ensure that the system remains in compliance with CMS rules for the incentive program. Conduent will continue to operate and enhance the SLR under the existing contract which ends September 2019. The DHCS is working on successfully transitioning the SLR from Conduent to a new vendor, or bringing the system in-house no later than September 2019.

2.2.3 EXISTING PAPER FORMS AND ELECTRONIC HEALTH RECORDS

DHCS still has some forms that professionals are required to use that are only available in a printed format. This requires that Medi-Cal professionals maintain both paper and electronic medical records. The best example of this is the Staying Healthy Assessment (SHA)[71]—a behavioral risk questionnaire that is required to be administered periodically to all Medi-Cal beneficiaries and stored for clinical use in the medical record. See Appendix 17 for an example of the SHA. Medi-Cal professionals, health plans, and some local health authorities would like the SHA incorporated into electronic health records. DHCS held discussions with some EHR vendors but it quickly became apparent that a vendor-agnostic approach is needed. DHCS is currently cooperating with a community HIE (Redwood MedNet) which is developing software that will enable the electronic collection for the SHA and other currently printed forms that is vendor-agnostic and allows sharing of information with providers, the health plan, and the local health department. See Appendix 18 for a description of the Redwood MedNet plan.

DHCS intends to sponsor efforts that will support and expand similar efforts. The exact mechanism for this has not yet been developed, but may include providing competitive grants to software developers, HIEs and others. DHCS believes that the availability of health risk information in an electronic format will be very useful in developing clinical and public health interventions, which will significantly contribute to the meaningful use of EHRs.

2.3 EDUCATION AND OUTREACH

2.3.1 PROVIDER EDUCATION AND OUTREACH PLAN

DHCS intends to improve upon the original provider education and outreach plan through the addition of a data driven approach to target specific provider groups. AIU outreach

[71] DHCS Staying Healthy Assessment. Accessed on: April 25, 2018.

efforts have been successful and AIU is now closed. However, there are provider groups that require additional assistance with MU. Outreach efforts will focus on those provider groups having difficulty attaining and progressing through MU.

Current outreach efforts are performed primarily though the Medi-Cal EHR Incentive Program website, email distributions, Twitter, and the bi-weekly stakeholder calls, which include representatives of many groups and clinics. DHCS will add to these outreach methods as follows:

- Perform outreach to groups/clinics and EPs that have not submitted a subsequent application beyond AIU.
- Work with CTAP program organizations to better define barriers to MU.
- Provide one-on-one support to specialists, groups, and clinics with emails and calls when requested.
- Create a streamlined checklist for prequalified groups illustrating group eligibility requirements and use of the SLR.
- Develop a training webinar on MU specifically dedicated to prequalified groups, made available on the Medi-Cal EHR Incentive Program website and advertised through social media. The webinar will address provider concerns specific to MU and HIE, including utilization of patient portals and specialized registries.
- Develop FAQs/tip sheets for all Stage 2 and Stage 3 MU measures.
- Develop a survey specifically for specialty groups to gather insight into barriers in progressing along the stages of MU.
- Provide certificates for attaining MU that providers can post in their offices. See Appendix 11.

Specifically, outreach efforts will consist of a coordinated campaign with the existing network of healthcare stakeholders. This network includes medical and trade associations, clinics, managed care plans, and other stakeholder groups. Much of the MU outreach efforts will be handled by the CTAP program, which was developed to focus on the provider populations that RECs were previously unable to assist. This includes specialists and large groups. The efforts of the CTAP program are discussed in Section 1.8.

GEOGRAPHICAL AREAS WITH LOW EHR-USAGE

DHCS believes that geo-mapping will provide additional insight into the areas of the state that have low utilization or usage of an EHR. While providers are no longer able to submit an application for AIU, it may be possible to target providers and hospitals in these rural

or underutilizing populations and provide support related to MU and encourage activities related to interoperability.

ELIGIBLE PROVIDER TYPES WITH LOW MU PARTICPATION RATES

As discussed in Section 1.1.1, the number of dentists meeting MU is substantially lower than other provider types. The survey of dentists conducted by DHCS in 2017 (Appendix 13) revealed a number of actual and perceived barriers to attaining MU. The primary goal of DHCS' targeted outreach to dentists will attempt to ameliorate these barriers. DHCS' ongoing education and outreach plan to dentists will include:

- Working with the California Dental Association (CDA) and other dental stakeholders.
- Attendance and participation in the annual CDA conventions, both in Northern and Southern California.
- Articles and print advertisements targeted to dentist-specific publications.
- Informational articles included with the monthly bulletins posted on the Denti-Cal website for dental providers.
- Follow-up surveys of dentists regarding attaining MU.
- Distribution of the Dental MU tip-sheet (Appendix 14).

Optometrists also had low rates (29%) of MU participation. However their low program participation numbers, probably do not justify extensive outreach efforts. DHCS will provide outreach via an Optometrist MU tip-sheet.

2.3.2 HOSPITAL EDUCATION AND OUTREACH PLAN

EHs progressed through the stages of MU more quickly than EPs in California. Over 70% of participating EHs are in Year 3 or Year 4 of the program. EH outreach will focus on assisting EHs progress through the stages of MU, particularly Medicaid only hospitals. In this regard, DHCS will:

- Update the EH Quick Start Guide, workbook, and other informational documents as needed for pending changes to the Final Rule.
- Create new training webinars to accommodate changes to the Final Rule.
- Develop user-friendly MU guidance tools, particularly targeted at Stage 3.

2.4 THE FUTURE LEGAL LANDSCAPE

DHCS has identified several areas in which state laws regarding health information exchange could be potentially improved, including eliminating areas of conflict between state and federal laws. The code sections listed below do not represent a comprehensive

list and should be considered only as additional information to better understand the future legal landscape in California.

California Health and Safety Code section 11845.5[72] seems to be more stringent than 42 CFR Part 2. Originally when enacted, this section mirrored the confidentiality protections of 42 CFR Part 2 for substance use disorder records and information. However, federal law has evolved over time while this state statute did not change accordingly. State statute does not authorize some of the releases without signed patient authorization that are now allowed by federal law. For example, this statute does not authorize communications between substance use disorder treatment/prevention programs. HIEs may feel that they have liability concerns regarding the adequate collection and maintenance of authorizations because of restrictions in the state statute that do not exist under federal law.

Currently, California Health and Safety Code section 120980[73] protects HIV test results from release without a signed patient authorization. It does not block the release of other information that would identify the patient as a person living with HIV /AIDS. For example, a treatment note that lists the HIV/AIDS diagnosis and medications is not covered by this statute. As with substance use disorders discussed above, this statute may also lead HIEs to have concerns regarding collection and maintenance of authorizations for patients with HIV/AIDS.

California Welfare and Institutions Code section 4514[74] specially protects developmental services information and records. This statute does not have an exception for release to business associates, which are outside entities that perform a health care related function for a health care provider/health plan. This means that developmental services treatment information and records cannot be released without an authorization to a professional person who is not employed by the regional or state developmental center. With treatment

[72] California Health and Safety Code Section 11845.5, https://california.public.law/codes/ca_health_and_safety_code_section_11845.5 . Accessed October 18, 2018.

[73] California Health and Safety Code Section 120980, https://california.public.law/codes/ca_health_and_safety_code_section_120980 . Accessed October 18, 2018

[74] California Welfare and Institutions Code Section 4514, https://california.public.law/codes/ca_welf_and_inst_code_section_4514. Accessed October 18, 2018.

being moved from the state to outside facilities, it may be beneficial to patients to have this information available without an authorization to flow through HIEs.

While not currently in statute, it might be helpful if California had a statute that expressly authorized electronic signatures on a patient release of information form. This would make the collection less burdensome and would create a record in an EHR that could be uploaded to an HIE. There are not any California or federal laws that expressly permit electronic signatures for authorizations. Currently, paper signatures are collected and scanned but unless certain methods are used in scanning, the text is unrecognizable by search applications.

In order to continue to educate providers about changes in state and federal laws, DHCS plans to support the revision and expansion of the State Health Information Guidance (SHIG) on Sharing Behavioral Health Information to include guidance on sharing health information regarding minors, HIV/AIDS, foster children, informed consent, authorizations, surrogate decision making, electronic signatures, and developmental disabilities.

3 ADMINISTRATION & OVERSIGHT OF THE PROGRAM

The following information documents California's administration and oversight of the Medi-Cal EHR Incentive Program. California has implemented a robust program to ensure eligibility of the maximum number of providers in accordance with the Final Rule, while ensuring that incentive payments are timely, proper, and without fraud or abuse.

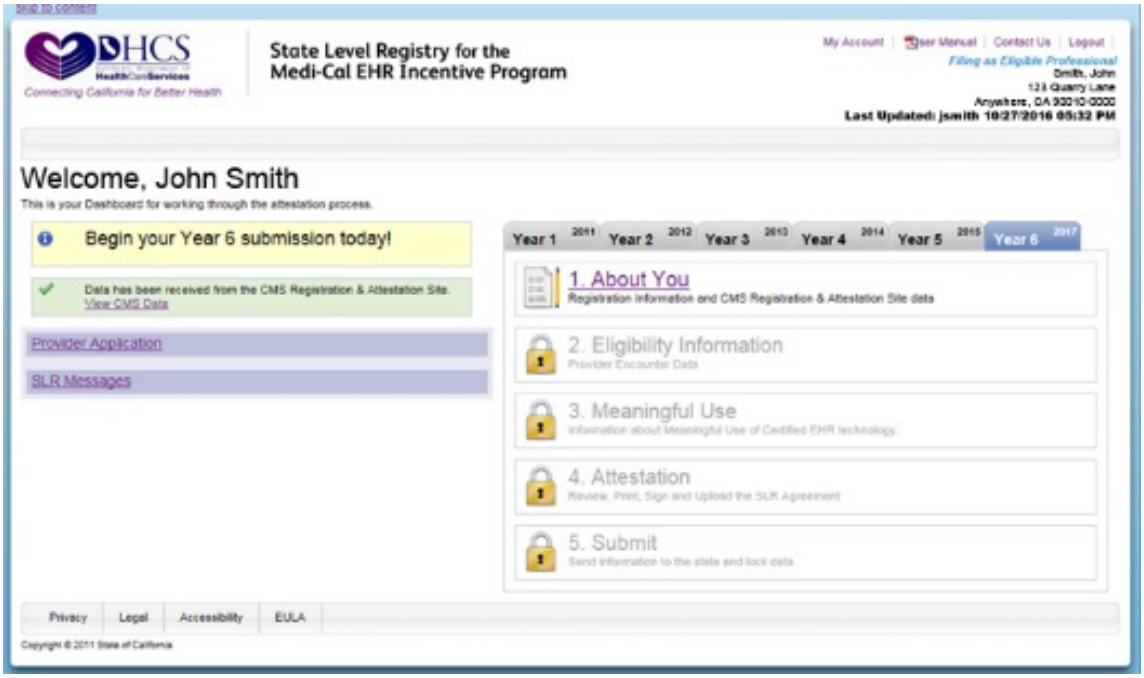
3.1 STATE LEVEL REGISTRY

3.1.1 OVERVIEW

The State Level Registry (SLR)[75] is a web-based portal utilizing a Software-as-a-Service (SaaS) solution developed through collaborative work between DHCS, Conduent, and program stakeholders.

With a focus on delivering a user-friendly application, the home page of the SLR has a series of status fields organized in a single view.

FIGURE 14: SLR WELCOME SCREEN



[75] DHCS State Level Registry. Accessed on: April 25, 2018.

The SLR accommodates a wide range of users and allows providers access to a complete set of tools for state-level registration, attestation, and centralized user management of their SLR account.

The core functions of the SLR application can be categorized into the following:

- Registration (Account Creation)
- Step 1: About You
- Step 2: Eligibility Information
- Step 3: AIU or MU
- Step 4: Attestation
- Step 5: Submit

REGISTRATION (ACCOUNT CREATION)

Participation in the Medi-Cal EHR Incentive Program requires the provider to register through CMS' National Level Registry (NLR) before registering in the SLR. NLR registration data is delivered to the SLR and verified against the state's Provider Master File (PMF) and other data sources to confirm the provider's legitimacy as a Medi-Cal provider. Upon authentication of the provider's credentials, the provider is able to create an account in the SLR.

STEP 1: ABOUT YOU

Users are prompted to enter contact information which includes an email address and telephone number. Additionally, providers will enter their professional license information which is validated with the appropriate licensing board before the provider is able to proceed to the next step.

STEP 2: ELIGIBILITY INFORMATION

Once the user completes Step 1 they proceed to Step 2 where they are prompted to enter eligibility data. The system verifies that the data entered meets the program's eligibility requirements, such as the Medicaid patient volume, before the user is able to proceed to the next step.

STEP 3: AIU OR MU

Once eligibility is confirmed, the provider then continues on to enter AIU or MU data. The option to do AIU was only available during the provider's first year of participation and only through Program Year 2016. As required by CMS guidelines, the AIU option required the provider to provide legal and/or financial binding documentation showing AIU of

certified EHR technology. Providers attesting to MU are prompted to enter MU data directly into the SLR. If the provider fails to enter any of the required information or does not meet the requirements of a particular measure, they are notified with system messaging and will be unable to proceed to the next step.

STEP 4: ATTESTATION

Once the provider successfully completes Step 3, they proceed to Step 4 where they are prompted to print, sign, and upload their attestation form. The attestation form is populated with the data the provider entered in Steps 1 through 3. The user may review all content prior to signing and uploading the form to the SLR.

STEP 5: SUBMIT

To complete the process, providers must then submit their application to the state. After the user completes Step 5, the application is then ready for state review.

3.1.2 STATE LEVEL REGISTRY USER ASSISTANCE & RESOURCES

The Medi-Cal EHR Incentive Program rules and regulations, as defined by the Final Rule and interpreted within CMS rulemaking, are complex and can be a barrier to participation by providers and the healthcare community. In order to minimize this impediment and maximize the provider experience, DHCS has provided various tools to assist users in the attestation process.

In the SLR, “Tool Tips” and on-screen directions guide users through each screen and field, showing users an immediate description, definition, or direction for the specific field being completed. Also, in the SLR, users can access the SLR User Manual.

The SLR homepage[76] also notifies providers of SLR updates and changes. In addition, the website provides links to resources that help users understand the program and prepare prior to applying in the SLR. Listed below are some the many resources available on the SLR homepage:

- **Workbooks:** Hospital users are able to enter their eligibility information into Excel-based workbooks to determine if they qualify prior to applying in the SLR. The hospital workbooks not only calculate eligibility, but also collect information to calculate the hospital incentive payment amount over four years.

[76] DHCS State Level Registry. Accessed on: April 25, 2018.

- **Quick-Start Guides:** These guides walk the user through each step of the SLR registration process, and include screenshots and relevant information for each step of the SLR.

- **FAQs:** Frequently asked questions from our stakeholders and participants have been compiled for easy reference. DHCS continues to update the FAQs as the program evolves and the need for additional FAQs arise.

- **SLR Help Desk:** Providers are able to contact a help desk associate by phone or email for assistance. The hours of operation are from 8am to 5pm PST Monday through Friday, and includes a 24/7 Voice Response System.

3.1.3 SLR/NLR INTERFACES

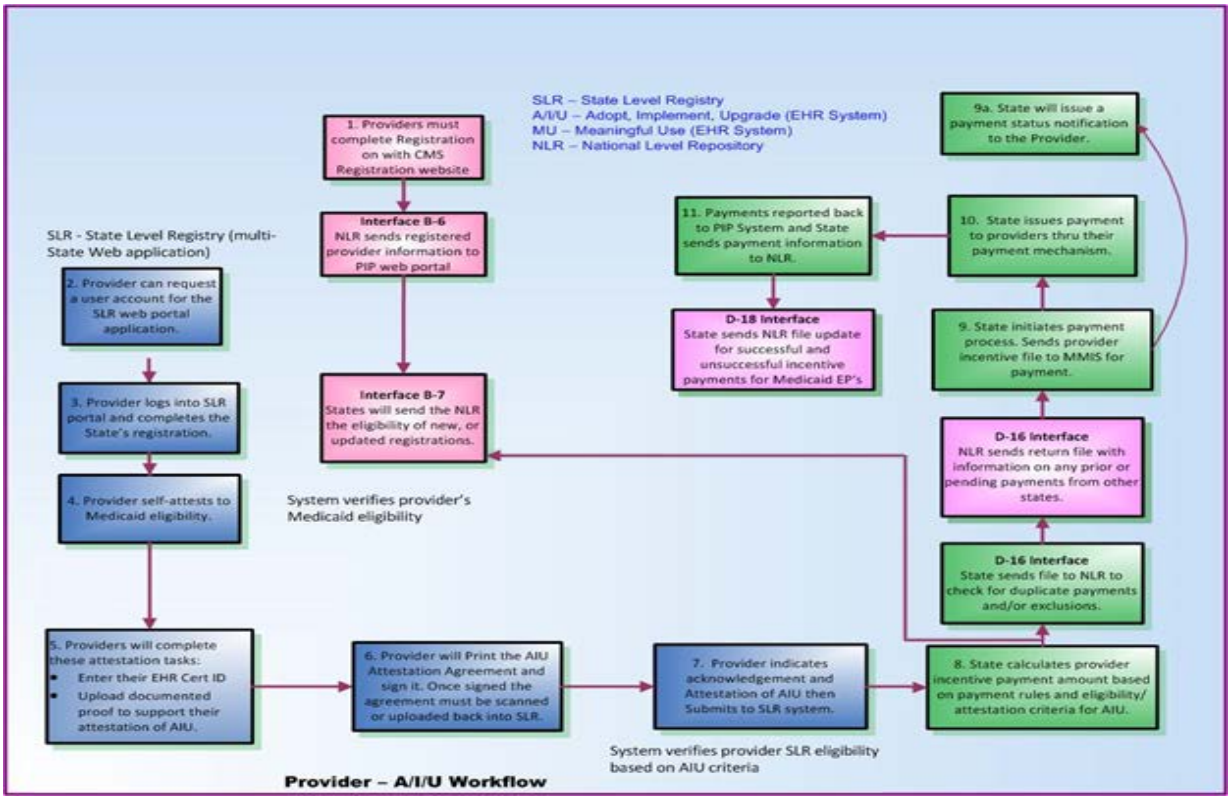
The SLR interacts with the NLR through designated interfaces designed to exchange pertinent information regarding provider status and payment details.

Communication of the payment cycle is achieved through the following transactions and information exchanges between the state and CMS:

- A D-16 transaction transmits the calculated payment file from the SLR to the NLR to check for duplicate payments, etc. and request approval to pay.
- A responsive D-16 transaction from the NLR identifies any processed or pending payments and exclusions from other states. The D-16 response either approves or rejects the state's request to pay.
- If D-16 approval is received from the NLR, the state will pay the incentive to the provider. Following the payment, the state sends a D-18 transaction to the NLR. The D-18 includes payment information including year, incentive amount, and attestation type (AIU or MU).

The exchanges between the SLR and NLR are illustrated further in the figure below:

FIGURE 15: PROVIDER AIU WORKFLOW



The NLR sends the state a nightly B-6 transaction file containing information on newly registered professionals and hospitals, updated registrations, and cancelled registrations. The NLR captures the email address of each eligible provider and passes that value in the nightly file along with other registration information.

After logging into the SLR, providers may select a sub-menu option for "NLR Data" to open a screen with their NLR information displayed in a read-only format. In addition to the registration details, the NLR Data screen contains the following statement:

"The data on this screen was provided by the National Level Repository (NLR) and contains the information that you provided to the NLR. If any of the information is incorrect, please update your registration information in the NLR. Updates to the NLR data may take up to three days before they can be viewed here."

The link to CMS' Registration and Attestation Site is made available to users should they wish to update their NLR registration information.

3.1.4 PROGRAM UPDATES AND SLR FUNCTIONALITY

The Medi-Cal EHR Incentive Program continues to grow and change as additional guidance and requirements are provided by CMS. DHCS communicates changes to stakeholders through the SLR homepage, email notifications, and via bi-weekly calls with the RECs and CTAP contractors who disseminate information to their providers. The following lists the updates and additional functionality made available in the SLR since the initial launch in October 2011:

- **SLR Launch**: October 2011 – SLR accepting hospital AIU attestations
- **Group and Clinic attestations accepted**: November 15, 2011
- **Provider attestations accepted**: December 2011
- **Stage 1 MU attestations accepted**: September 27, 2012
- **2013 Changes to Stage 1 MU:** October & November 2013 - The SLR was modified in two steps to allow both hospitals and professionals to incorporate 2013 changes in Stage 1 eligibility and MU criteria (delineated in the Stage 2 Final Rule).
- **2014 Changes to Stage 1 MU**: June & September 2014 - The SLR was modified to incorporate 2014 changes in Stage 1 eligibility and MU criteria on June 6, 2014 for hospitals, and September 2, 2014 for providers.
- **Stage 2 MU attestations accepted (hospitals):** June 6, 2014
- **Stage 2 MU attestations accepted (providers):** September 2, 2014
- **Flexibility Rule Changes:** April 1, 2015 **–** The SLR was modified for Program Year 2014 to allow providers to apply under the parameters of the Flexibility Rule (delineated in the Sept 4, 2014 Final Rule).
- **2015-2017 Modification Rule Changes:** The Modification Rule made many changes to MU requirements for both EPs and EHs and defined Stage 3 objectives.

  For EPs, the updates were available as follows:
  - Program Year 2015, Stage 2
    - AIU: 1/1/2015 – 12/12/2016
    - MU: 8/30/2016 – 12/12/2016
  - Program Year 2016, Stage 2
    - AIU: 1/1/2016 - 5/23/2017 (*first year EP deadline 7/25/2017)
    - MU: 12/13/2016 – 5/23/2017 (*first year EP deadline 7/25/2017)

      **Since 2016 was the last year that a provider could begin participation in the program, CMS approved DHCS' request to extend the deadline for first-time attesters through 7/25/2017. Providers utilizing this extended deadline were still required to meet all program requirements by 5/23/17.*

- Program Year 2017, Stage 2
  - MU: 5/23/2017 – 5/8/2018
- Program Year 2017, Stage 3
  - MU: 3/6/2018 – 5/8/2018
- Program Year 2018
  - MU: 6/21/2018 – 3/31/2019

For EHs, the updates were available as follows:

- Program Year 2015, Stage 2
  - AIU: 10/1/2014 – 12/12/2016
  - MU: 8/30/2016 – 12/12/2016
- Program Year 2016, Stage 2
  - AIU: 10/1/2015 – 5/23/2017
  - MU: 8/30/2016 – 5/23/2017
- Program Year 2017, Stage 2
  - MU: 5/23/2017 – 5/8/2018
- Program Year 2017, Stage 3
  - MU: 3/6/2018 – 5/8/2018
- Program Year 2018
  - MU: 6/21/2018 – 3/31/2019

- **2017 IPPS Final Rule Changes:** The number of hospital CQMs were reduced from 29 to 16. This update was implemented into the SLR with Program Year 2017, Stage 2 on 5/23/2017.
- **MACRA/MIPS/QPP Final Rule Changes:** The definition of meaningful user was updated and providers were required to attest to supporting health information exchange. This update was implemented into the SLR with Program Year 2017, Stage 2 on 5/23/2017.
- **OPPS Final Rule Changes:** The MU reporting period for 2016 and 2017 was reduced to 90 days for all applicants and allowed all providers to attest to Stage 3 in 2017.
- **2018 IPPS Final Rule Changes:** Effective 10/2/17, the following changes were made in the SLR: the number of EP CQMs required was reduced from 9 to 6 and CQM domains were removed, 11 EP CQMs were removed (from 64 to 53), CQM reporting period was reduced to 90-days (Program Year 2017 only).

3.2 ELIGIBLE PROFESSIONALS

The SLR validates provider data to ensure that providers are eligible to participate in the program prior to any payment being issued. The SLR contains enrollment information from the Medi-Cal Provider Master File (PMF). As providers register for user accounts in the SLR, their national provider identifier (NPI) and tax identification number (TIN) are verified against the PMF to determine if the provider is enrolled in Medi-Cal before the user account is created. Since California does not require all Medi-Cal providers, such as those in managed care, to enroll with Medi-Cal, DHCS staff verify eligibility for providers that do not appear in the PMF. This includes researching other data sources and may include lists of providers from managed care plans. Once verified, these providers are entered into the PMF. If a provider is permanently sanctioned in the PMF, the provider is not allowed to create a user account in the SLR. Providers under temporary sanction, or a status that requires review, are allowed to create an account and provide their information for the program but will be flagged for further review to determine their specific eligibility.

The SLR contains information on provider licensing from all the licensing entities within California. During the SLR application process, providers are required to enter their license information. The license data is verified against the provider license master data from the California licensing entities. Providers that practice in Indian Health Clinics or other federal clinics may be eligible for the incentive program but are not required to be licensed in California. The SLR provides the ability for providers to indicate if they practice in an Indian Health Clinic or other federal clinic as well as provide the license number and state in which they are licensed. This information is verified manually by DHCS. In addition, providers are asked to attest to the fact that they do not practice 90% or more of the time in a hospital inpatient or emergency room setting as part of their registration for the state. Beginning in Program Year 2013, providers who attest that they do practice 90% or more of the time in a hospital or emergency room setting are able to apply for a waiver of this exclusion if they provide proof that they use a certified EHR in the hospital/ER setting for which they have provided the funding for acquisition (including hardware and software), implementation and maintenance. Providers upload this documentation in the SLR.

After the state validates the provider's eligibility and approves payment, the B-7 eligibility transaction is sent to the NLR confirming the provider's eligibility. This approval occurs when the provider has cleared the automated eligibility checks described above, as well as the manual verifications done by the state. DHCS considers a provider as eligible to participate in the incentive program if the provider is free of sanctions, is properly licensed and credentialed, is a valid provider type under the HITECH act, is not hospital based

(unless applying for a waiver of this exclusion), and has documented the minimum percentage of Medi-Cal encounters required by law within the prescribed period.

3.2.1 ELIGIBLE PROFESSIONAL TYPES

California recognizes the provider types designated in the Final Rule as eligible for the Medi-Cal EHR Incentive Program: physicians, nurse practitioners, certified nurse midwives, dentists, and physician assistants. In addition to these provider types, DHCS has designated optometrists as eligible providers as of January 2013, since California's State Plan contains the proper language for this designation as specified in CFR 495, Subpart B, section §495.100 of the Final Rule. The SPA, submitted and approved by CMS is included in Appendix 15.

Physician assistants (PAs) must practice in a PA-led FQHC or RHC in order to be eligible for the Medi-Cal EHR Incentive Program. According to the Final Rule "PA-led" can be established in three ways:

1. The PA is the primary provider in a clinic (for example, when there is a part-time physician and full-time PA, the PA would be considered as the primary provider).
2. The PA is a clinical or medical director at a clinical site of practice.
3. If the PA is an owner of an RHC.

DHCS recognizes a PA as the primary provider when compared to other providers in the clinic the PA is either: assigned the most patients, has the most patient encounters, or has the most practice hours. See Appendix 16 for the PA-led form.

Every PA applicant is required to attest as to which of these criteria qualifies the clinic as PA-led. PAs in California are not permitted by law to have majority ownership in a clinic. Thus, California does not anticipate applicants from PAs under the third criteria.

Pediatricians are eligible to receive reduced incentive payments at the 19.5%-29.4% Medi-Cal encounter volume level. Per CMS directive, the definition of pediatrician should be consistent with its usage in the Medicaid program. Based on the direction provided by CMS, DHCS uses the criteria for a pediatrician as established by its Child Health and Disability Prevention Program (CHDP), which requires board certification or board eligibility with the American Board of Pediatrics. For verification purposes, the SLR directs pediatricians qualifying at the 19.5-29.4% encounter volume level to upload documentation supporting their eligibility, such as a board certificate or a diploma specifying completion of a residency in pediatrics.

3.2.2 ELIGIBILITY FORMULAS FOR PROFESSIONALS

In order to be eligible for the Medi-Cal EHR Incentive Program, EPs must demonstrate that at least 29.5% (19.5% for pediatricians) of their encounters during a 90-day representative period in the previous calendar year were Medi-Cal encounters. Beginning in Program Year 2016, California expanded this definition and gave providers the option to derive encounters from the previous calendar year **or** the 12 months prior to attestation (see Appendix 21 for the SMHP Addendum approved by CMS on October 3, 2016).

As California has both fee-for-service and managed care programs under Medi-Cal, DHCS allows eligible professionals to choose the eligibility formula that is most advantageous for achieving the minimum threshold for participation in the program.

- **Formula 1:**

  Total Medi-Cal Encounters*
  Total All Patient Encounters

  * Note: Medi-Cal encounters may only be counted once for services received from the same provider on the same day. Medi-Cal encounters must be paid for in part or whole by Medi-Cal or a Medi-Cal demonstration project, including payment in part or whole of an individual's premiums, co-payments, and cost sharing. For this reason Medi-Cal encounters without federal financial participation (not covered by Title 19) may not be counted. This excludes counting encounters for services in Medi-Cal aid codes— 2V, 4V, 65, 7M, 7N, 7P, 7R, 71, 73, 81. (See **Appendix 22** for a detailed description of these aid codes). In Program Year 2013 DHCS expanded the definition of a Medi-Cal encounter for EHR Incentive Program purposes to be any billable service provided to a Medi-Cal enrolled patient regardless of whether the service was paid for by Medi-Cal. See discussion of billable service above.

- **Formula 2:**

  Total Patients Assigned to a Medi-Cal Panel* + Total Medi-Cal Encounters
  Total Patients Assigned to a Panel* + Total Patient Encounters

  * Note: In order to be counted in either the numerator or denominator, panel patients must participate in managed care, a medical or health home program, or similar provider structure with capitation and/or case assignment. Panel members must have had at least one encounter in the 12 months preceding the 90-day representative period. Beginning in 2013 the "look-back" period was expanded so that panel members can be counted if treated by the provider at least once in the 24 months preceding the 90-day representative period.

EPs practicing with at least 50% of encounters in an FQHC or RHC during a 6-month period in the preceding calendar year can add other needy individual encounters to the

numerator of either formula in order establish the 29.5% (or 19.5% for pediatricians) Medicaid patient volume. Beginning in 2013, California exercised the option to change the 6-month look back period for practicing predominately to occur either in the 12 months preceding the date of attestation or the prior calendar year. California's SLR defines other needy individuals as patients enrolled in the Healthy Families Program (HFP), or patients receiving uncompensated care, or no cost or reduced cost care based on a sliding scale determined by the individual's ability to pay. Because children in California's HFP began transitioning to Medi-Cal in 2013, some HFP encounters were included as Medi-Cal encounters in 2014 and all were included in later years for the purposes of establishing eligibility for the Medi-Cal EHR Incentive Program. While the Final Rule defines needy individuals as including Medi-Cal patients, for clarity and to avoid duplicate counting, information on Medi-Cal patient encounters are entered separately from encounters for other needy individuals in the SLR. This change in terminology from the Final Rule does not affect the validity of eligibility calculations as Medi-Cal encounters and other needy individual encounters are added together in the numerator of the eligibility formulas, thus remaining in line with the Final Rule. This approach was discussed with and approved by CMS staff.

3.2.3 GROUP/CLINIC ELIGIBILITY

The Final Rule allows providers in groups and clinics to qualify for incentive payments based on the total patient volumes for the group/clinic. In this way, providers who may not have attained 29.5% Medicaid volume based on their own practice are eligible for incentive payments if the group/clinic practice as a whole attains the 29.5% threshold. Encounters for all providers, not just those eligible for incentive payments, must be counted and if any provider elects to establish eligibility separately based on his/her encounters in the group/clinic practice, then the entire panel of EPs in the group/clinic cannot use the group/clinic patient volumes to qualify for incentive payments. A provider must have had at least one Medicaid encounter with the group in the previous calendar year or, beginning in 2016, the 12 months prior to attestation in order to be considered a member of the group.

The Final Rule is silent as to the parameters for what constitutes a group or clinic. Additionally, CMS had instructed DHCS that establishing specific parameters that designate a group or clinic is at the state's discretion. With CMS approval, DHCS adopted the following three parameters for defining groups and clinics:

- Clinics – All clinics that are licensed by the California Department of Public Health ("1204a clinics") are considered clinics for the purposes of the Medi-Cal EHR Incentive Program (see Appendix 23 for definition of 1204a clinics).

- Groups – A group of providers that operates as a unified financial entity and has overarching oversight of clinical quality can be considered a group for the purposes of the Medi-Cal EHR Incentive Program. The group must have a single federal employer identification number (FEIN), but subgroups of providers can have separate national provider identifiers (NPIs). As dictated by federal regulations, the encounters of all providers under the FEIN must be counted in determining the patient encounter volumes for the group for the 90-day representative period. Any provider with at least one Medicaid encounter with the group during the previous calendar year or, beginning in 2016, the 12 months prior to attestation can be considered a member of the group for eligibility purposes. Providers practicing predominately in an FQHC or RHC during a 6-month continuous period ending in the program year can be considered members of the group even if they did not have encounters with the clinic during the previous calendar year.

- Designated Public Hospital (DPH) Systems – These systems often utilize one TIN to bill for the services of a large number of providers and data systems and clinical oversight may be divided into separate regions. For these reasons DHCS will consider exceptions, on a case by case basis, that all providers under the single TIN must be registered as a single group. DHCS will assess requests from DPH systems to create multiple groups to ensure that such requests follow operational and clinical oversight lines of authority and that the encounters of all providers under the TIN are captured appropriately. See Appendix 24 for a group definition proposal from LA County that was approved by CMS and DHCS.

DHCS implemented the SLR's group/clinic module on November 15, 2011. This allowed group/clinic representatives to enter information about groups/clinics before the EP module was implemented on December 15, 2011. Group/Clinic representatives are able to enter identifying information about the group/clinic including: name, address(es), NPI, the names and NPIs of group/clinic EPs, group patient volumes, and CMS Certification ID for EHR Technology. They are also able to upload documentation to assist EPs in demonstrating AIU (contracts, vendor letters, etc.). Group/Clinic representatives are not able to attest for providers nor to enter information about their hospital-based or practice predominantly statuses. EP's will provide this information and attest when they subsequently enter the SLR through the EP module.

When providers enter the SLR they are notified that a group (or groups) has identified them as a member and are given the option of qualifying using the patient volumes of the group, or using their own patient volumes (whether derived from the group or another practice site). If the provider opts to apply as a member of a group, they will inherit the information that was previously entered under the group's SLR application. These providers will be able to change the EHR Certification ID information and AIU documentation if they wish, but are not able to change the group patient volumes that they have inherited. If a provider chooses to qualify for the program using his/her own patient volumes from the group/clinic, they will have the option to "opt-out" of the group in the SLR. If the provider elects to "opt-out" of the group, the group/clinic will be closed and group EPs who enter the SLR after that will be instructed that they must establish eligibility based on their individual (not group) patient volumes. Group EPs who have attested before the "opt-out" occurs will not have their eligibility affected.

To date, DHCS' experience with clinics and groups has demonstrated the effectiveness of the group eligibility option. Of the applications to the program through June 2015, approximately 65% were submitted by providers using clinic or group patient volumes to establish eligibility. This greatly facilitates the prepayment verification process for these providers.

3.2.4 PREQUALIFICATION OF PROFESSIONALS AND CLINICS

DHCS and its stakeholders believe that using existing state data sources is a feasible method to identify a large number of providers and clinics eligible for the Medi-Cal EHR Incentive Program before submitting an application through the State Level Registry. The identification of eligible providers and clinics has greatly decreased the amount of work related to prepayment verification. Annual lists of prequalified EPs and clinics can be accessed through the SLR splash page[77]. This approach has enabled DHCS to do targeted outreach to prequalified providers and clinics. The CMS approved methodologies for "prequalification" of providers and clinics are described below.

PROVIDER ENCOUNTER METHODOLOGY

Encounter volume: The basic approach to "prequalification" of providers is to use their Medicaid encounter volume for the entire preceding calendar year. Providers who attain or surpass the number of Medi-Cal encounters that would be expected of a full-time primary care physician with 30% Medi-Cal volume during the preceding calendar year are considered prequalified for incentive payments (if they are not hospital-based). This

[77] DHCS State Level Registry. Accessed on: April 25, 2018.

determination is made for individual providers by DHCS staff by analyzing claims and encounter data in the state's MIS/DSS data warehouse.

Why primary care physicians? The threshold is based on primary care physicians as this provider group sees more patients than non-primary care physicians. In general, specialist physician visits are longer in duration due to the higher complexity of issues addressed. Visits by other EP types also tend to be longer, but for different reasons. Visits to dentists are longer in duration due to the complex procedures that dentists perform. The visits of physician assistants and nurse practitioners tend to be longer, perhaps because they require physician supervision or because they work based on a salary.[78]

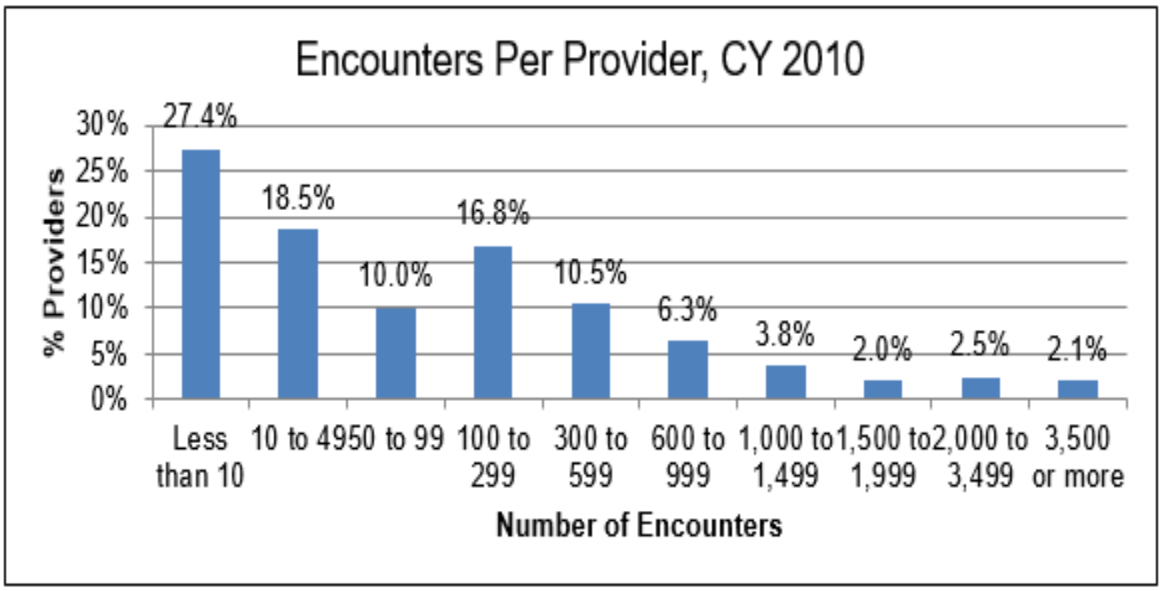
Minimum number of Medi-Cal encounters expected of a full time provider: The American Academy of Family Physicians Practice Profile Study (June 2008) found that in the Pacific Region, family physicians have 74.9 office visits, 3.9 hospital visits, 1.9 nursing home visits, and 0.4 home visits per week--for a total of 81.1 visits per week (Appendix 25). From this, it is possible to extrapolate that the total number of expected outpatient encounters in a 46-week work year for a full time physician would be 3,721. A provider would need to then deliver 1,116 encounters in order to attain a 30% Medicaid volume. A threshold set at this level is quite high as the demonstration of services to Medicaid patients is sustained over the entire year, not just during a 90-day period. Setting the threshold high for prequalification does not disadvantage provider types that may find it harder to prequalify than primary care physicians. Providers unable to prequalify can apply for the program through the usual channels using the two formulas specified in the Final Rule. An indirect benefit of prequalification is that DHCS has more time and resources available to assess provider applications, as prepayment encounter volume verification does not have to be conducted for prequalified providers.

Impact of Prequalification. Analysis of 2010 Medi-Cal data indicated that approximately 10.4% of Medi-Cal providers would be prequalified using a threshold of 1,000 encounters (see **Figure 16)**.

[78] Hooker, RS. Physician assistants in occupational medicine: how do they compare to occupational physicians. *Occupational Medicine* 2004, May; 54(3): 153-8). Accessed on May 21, 2018.

Taylor LG. Comparing NPs, PAs, and Physicians. *Advance for NPs & PAs 2007*, Vol. 15(1), 53-54, 57-58. Accessed on May 21, 2018.

FIGURE 16: ENCOUNTERS PER PROVIDER, CY 2010



This represents roughly half of the 20% of Medi-Cal providers projected by the Lewin Group and McKinsey & Company analysis to be eligible for the incentive program. The break out by provider types is as follows: physicians—10%, dentists –12%, nurse practitioners –10%, and nurse midwives –13%. Some part-time practice providers will not be "prequalified" using this methodology, but will still be able to establish eligibility under Formulas 1 or 2 by submitting practice volumes. Similarly, some pediatricians eligible at the 20-29% practice level can establish eligibility based on submitted practice volumes but cannot be prequalified using this methodology. DHCS cannot prequalify pediatricians at the 20-29% level due to the inability to identify pediatricians in its claims and encounter databases.

Safeguards: It is possible that there may be some EPs who are wrongly prequalified using this methodology because of practicing more than full time and treating few Medi-Cal patients during this additional practice time. However, this methodology does ensure that EPs have attained the minimum number of encounters expected of a full time provider with 30% of patients covered by Medi-Cal for the entire year. This methodology will not result in fewer providers being eligible as providers who are not prequalified are able to use Formulas 1 and 2. The prequalification methodology may be more accurate than Formulas 1 and 2 in that it does not rely on "all payer" denominators reported by providers that cannot be verified against Medi-Cal claims or encounter data. As an additional safeguard, a special attestation form is required for all providers utilizing the prequalification option that includes the following language:

"I have been prequalified by Medi-Cal for the EHR Incentive Program based on having at least 1116 encounters with Medi-Cal patients in [insert prior calendar year] documented in claims and encounter data held by Medi-Cal. I attest that I personally delivered the services for at least 1116 Medi-Cal encounters in [insert prior calendar year]."

To deal with the probability that some providers may improperly bill for services rendered by other professionals despite this being illegal in California, prequalification is not permitted for providers with more Medi-Cal encounters than would be expected for full time practitioners. Based on the American Academy of Family Physicians survey this number would be 3,721. As some providers may work more than full time treating Medi-Cal patients, DHCS plans to set the upper limit of Medi-Cal encounters for prequalification purposes slightly higher at 4,000. This will reduce the percentage of Medi-Cal providers offered prequalification by less than 2% (see **Figure 16**).

Potential Advantages: As mentioned above, this prequalification methodology has the potential advantage of being an effective outreach tool for providers. Providers identified through prequalification receive notification letters or e-mails regarding their status, educating them about the program and encouraging them to apply for incentive payments. Providers, particularly those in small offices with manual billing systems, are more likely to apply for the program if they do not have to go to the work of generating the encounter data needed for Formulas 1 and 2. Such providers are probably the ones most in need of the help that the Medi-Cal EHR Incentive Program has to offer. The prequalification methodology also assists DHCS by substantially decreasing the number of prepayment verifications required.

PANEL METHODOLOGY

Panel Volume: The methodology for prequalification of managed care providers is largely derived from the encounter volume methodology. Data from various sources indicate that panel patients have 3.2 to 3.5 encounters per year on the average[79]. DHCS decided to adopt the more conservative 3.2 number for the purposes of prequalification, which results in a higher threshold than using a higher number of encounters per year. Discussions with the Managed Care Eligibility Workgroup convened by DHCS revealed that 3.2 encounters per year is supported by the data and experience of the participating Medi-Cal health plans.

[79] Davies, MM, Davies M, Boushon B. Panel size: how many patients can one doctor manage? Family Practice Management. April 2007, 14(4):44-51. Accessed on May 21, 2018.

Using 3.2 encounters per year per panel patient and 3,721 total encounters per year, a provider who treats only managed care patients would be expected to treat approximately 1,060 different managed care patients in a year. To achieve a 30% Medi-Cal threshold, the provider would be expected to treat 318 Medi-Cal patients in a year. This number represents a high threshold since non-active patients (those not seen in the previous 12 months) are not excluded from the calculation methodology. DHCS would rather set the threshold too high than too low to prevent improper prequalification of some providers. The methodology for identifying panel members was prepared by DHCS' MIS/DSS contractor, Optum and is described in detail in Appendix 26. This document was prepared based on identifying providers with at least 300 Medi-Cal panel patients per year, but the same methodology would apply to the higher threshold of 318. As with the other methodologies, hospital-based providers will not be prequalified.

DHCS does not directly track which Primary Care Physicians (PCPs) are selected by Medicaid enrollees. However, this prequalification methodology essentially accomplishes this by using managed care encounter data to link patients to providers. Only PCPs are expected to have a sufficient number of unique managed care patients linked to them to qualify for prequalification. DHCS set a higher bar for prequalification for managed care providers by allowing prequalification either based on panel members or encounters (see Patient Encounter Methodology above), but not based on panel members plus encounters.

Potential Impact: Analysis of encounter data for 2010 in the MIS/DSS data warehouse indicates that approximately 6% of Medi-Cal providers were identified as having treated at least 300 Med-Cal managed care patients in 2010.

TABLE 11: MEDI-CAL PANEL PATIENTS

	Physician		Dentist	
	No.	**%**	**No.**	**%**
Number of Patients Per Provider				
Less than 10	17,577	56%	238	71%
10 to 49	7,271	23%	52	16%
50 to 99	2,343	7%	13	4%
100 to 299	2,479	8%	18	5%
300 to 599	921	3%	4	1%
600 to 999	403	1%	2	1%
1,000 to 1,999	355	1%	2	1%
2,000 or More	199	1%	4	1%
Total Providers	31,548	100%	333	100%
Providers with 300 or more patients	1,878	6%	12	4%
Patients Per Provider				
Mean	88		65	
Median	7		2	
Min	1		1	
Max	25,381		3,220	

*Includes providers with at least 1 patient served under Program Code 02 or 04 in 2010.

This methodology identifies only slightly more than half the number of providers as the encounter methodology. However, it may accurately reflect the reality that fewer managed care providers are high volume providers of care for Medi-Cal patients.

Safeguards: This methodology has the same difficulty as the patient encounter methodology in dealing with the very high volume providers. It is possible that some providers have healthier panel patients who are seen less frequently than 3.2 times per year. It seems unreasonable that any provider could see a Medi-Cal patient panel more than 2 times the number of 1,060 expected for a full time practitioner seeing only Medi-Cal panel patients. Also, the California Code of Regulations (Title 28, Division 1, Chapter 1, §1300.67.2) specifies that there shall be at least one full time equivalent primary care

physician for each 2000 enrollees in a health plan. For these reasons, DHCS plans to set an upper limit of 2,000 panel patients for the purposes of prequalification. This would eliminate the top 1% of Medi-Cal panel providers from prequalification. Also, similar to the patient encounter methodology, providers are required to sign an attestation form including the following:

"I have been prequalified by Medi-Cal for the EHR Incentive Program based on having treated at least 318 Medi-Cal panel patients in [insert prior calendar year] documented in claims and encounter data held by Medi-Cal. I attest that I personally delivered the services for at least 318 Medi-Cal panel patients in [insert prior calendar year]."

Potential Advantages: The patient panel prequalification methodology has advantages similar to the patient encounter prequalification methodology. Both methodologies limit the amount of prepayment verification conducted by DHCS. Medi-Cal managed care plans are supportive of the panel prequalification methodology.

CLINIC METHODOLOGY

The basic approach to prequalifying clinics involves using data from the Office of Statewide Health Planning (OSHPD) Annual Utilization Report of Primary Care Clinics to determine which clinics in the preceding calendar year had 30% or more of encounters attributable to Medi-Cal patients and needy individuals. Licensed clinics in California, including FQHCs, are considered 1204(a) clinics as defined by the California Health and Safety Code that governs them (see Appendix 23). 1204(a) clinics are either community clinics or free clinics and all are required to be non-profit and treat patients for free or charge based on their ability to pay. All 1204(a) clinics, including FQHCs, are required to report the same data annually to OSHPD. For this reason, it is justifiable to treat community and free clinics equally for the purposes of prequalification with the exception that clinics that are not FQHCs or RHCs would not be eligible for prequalification based on needy individual encounters. The OSHPD database is very robust with regard to payment sources, allowing easy delineation of Medicaid encounters from needy individual encounters. This report contains all of the information needed for determination of clinic-wide patient volumes and, unlike claims and encounter data, contains accurate data on all payer sources that can be used to generate all-payer denominators. The data in the OSHPD report tends to be highly accurate since it is generated by electronic practice management systems in over 90% of the clinics. The payment source categories in the OSHPD report and their relevance to eligibility for the Medi-Cal EHR Incentive Program are listed below:

- Medicare
- Medicare Managed Care
- Medi-Cal (Medi-Cal/ Needy)
- Medi-Cal Managed Care (Medi-Cal/ Needy)
- County Indigent/ CMSP/ MISP (Medi-Cal/Needy)
- Healthy Families Program (California CHIP) (Needy Pre-2014; in 2014 transitioned to Medi-Cal)
- Private Insurance
- Self-Pay/ Sliding Fee (Needy)
- Free (Needy)
- Breast Cancer Programs (Medi-Cal/Needy)
- Child Health and Disability Prevention Program (Medi-Cal/ Needy)
- EAPC (Expanded Access to Primary Care) (Needy)
- Family PACT (Medi-Cal/ Needy)
- PACE Program (Medi-Cal/Needy)
- LA County Public Private Partnership (Medi-Cal/Needy)
- Alameda Alliance for Health (Medi-Cal/Needy)
- Other County Programs
- All Other Payers
- Total

Some Indian health programs in California are exempt from licensure and OSHPD reporting requirements as they operate on tribal land. These clinics would not be able to be prequalified using the OSHPD methodology outlined above. As such, DHCS has gained approval from CMS to use an alternate approach for prequalifying Indian health programs who do not report to OSHPD. Using the Resource Patient Management System (RPMS), the Indian Health Service California Area Office (IHS CAO) runs reports for those exempt Indian health programs using the same parameters used by the Indian health programs that are required to submit annual reports to OSHPD. These reports are submitted to DHCS on a yearly basis to determine if the Indian health program has met the minimum criteria to be prequalified based on Medicaid encounters or Medicaid with needy individual encounters.

Impact of Prequalification: Analysis of the 2010 OSHPD data indicates that approximately 83% of FQHC clinic sites would be prequalified at the 30% Medi-Cal volume level and 97% at the 30% needy individual level (see **Table 12**). For the non-FQHC sites, 194 would be prequalified, representing approximately 50% of all non-FQHCs.

TABLE 12: 2010 OSHPD ENCOUNTERS

2010 OSHPD Encounters				2017 OSPHD Encounters			
FQHC Total	563			*FQHC Total*	868		
	466	30% Medi-Cal	83%		805	30% Medi-Cal	93%
	544	30% Needy	97%		820	30% Needy	94%
Non-FQHC Total	394			*Non-FQHC Total*	440		
	194	30% Medi-Cal	49%		218	30% Medi-Cal	50%

Potential Advantages of Prequalification: One of the hallmarks of primary care clinics is that operations are conducted on a team based care model and bill by the entity, not by the rendering provider. This billing model poses difficulties because Medi-Cal cannot easily confirm through the claims and encounter data that a specific provider at a clinic was responsible for a particular encounter. Prequalification using OSHPD data overcomes this problem for the vast majority of clinic providers and makes use of claims and encounter data unnecessary for confirming patient volumes. This methodology also provides a rich source of information about needy individual encounters and commercial payer encounters that is not available from Medi-Cal claims and encounter data. The clinic community in California is highly supportive of prequalification of clinics using OSHPD data.

DHCS believes that prequalification of clinics is a necessary adjunct to prequalifying providers. Providers who receive notification that they have been prequalified based on their individual encounters may see little motivation to qualify for the program as a member of their group or clinic. If high volume providers do not participate as group or clinic members, many group or clinic providers with less than 30% patient volumes may not be able to qualify for the program. Prequalification of clinics will enables the proactive education of their providers and enrollment for group eligibility.

3.3 ELIGIBLE HOSPITALS

To be eligible for incentives, hospitals must demonstrate that at least 10% of discharges during a 90-day representative period in the previous federal fiscal year (FFY) are

Medicaid discharges. Beginning in Program Year 2016, with CMS approval, California has expanded this definition to allow hospitals to derive encounters from the previous FFY **or** the 12 months prior to attestation. Additionally, the average length of stay must be 25 days or less.

To determine the number of Medicaid discharges, hospitals can include fee-for-service and managed care inpatient discharges, and emergency room encounters. Hospitals are instructed to use any auditable data source to derive their encounter data and must upload the backup documentation used for state review and verification. To calculate average length of stay, hospitals are instructed to enter the Total Inpatient Bed Days and Total Discharges from the hospital cost report ending in the prior FFY.

Children's hospitals are not required to meet 10% Medicaid discharge eligibility threshold and are automatically eligible to apply if they meet the average length of stay threshold of 25 days or less. Children's hospitals are identified in the SLR using the hospital's CCN number.

In 2016, DHCS secured CMS approval to allow hospitals submitting a new application to the program for the first time to apply with auditable discharge data from the most recent 12-month continuous period that ends before the end of the federal fiscal year that serves as the first payment year. Previously, DHCS had required the 12-month continuous period to end before the start of the federal fiscal year that serves as the first payment year.

3.4 ATTESTATION REQUIREMENTS

3.4.1 ADOPT, IMPLEMENT, OR UPGRADE (AIU)

Through 2016, providers and hospitals in their first program year were given the option to attest to adopting, implementing, or upgrading (AIU) to a certified EHR technology instead of attesting to MU.

- **Adopt:** to acquire and install a certified EHR system
- **Implement:** to begin using a certified EHR system
- **Upgrade:** to expand a certified EHR system that is already in use

As a component of attestation for AIU, the provider or hospital must have provided signed documentation demonstrating a legal and/or financial binding commitment to adopt, implement, or upgrade certified EHR technology.

The provider was not limited to submission of a contract and may submit other documentation for attestation such as a receipt, software license agreement, purchase order, service order, lease agreement or a services contract in the case of a remotely hosted certified EHR solution. In addition, the provider could upload a completed copy of a vendor letter signed by a vendor representative and including the pertinent information of the binding agreement for AIU of CEHRT between the vendor and the EP. While the submission of the latter was not required or sufficient, it assisted DHCS in assessing the validity of AIU commitments. Providers and hospitals were for AIU and currently are for MU required to upload a copy of the page from the ONC website that shows the EHR technology and its corresponding certification ID. The SLR validates that the certification ID entered is valid, and from an acceptable year before allowing the user to proceed. For example, those attempting to enter a 2011 CEHRT ID or a 2011/2014 CEHRT ID in Program Year 2014 and beyond were stopped by the SLR.

3.4.2 MEANINGFUL USE

Providers and hospitals in their second year and beyond are required to attest to meaningful use (MU) of a certified EHR technology in order to continue receiving incentive payments. For professionals and Medicaid-only hospitals, the SLR routes users to the appropriate MU objectives and measures, which are determined by the year and MU stage the provider is in. The information for each objective and measure, as defined by CMS, is collected in the SLR. Users must input their data and meet the minimum thresholds or claim the appropriate exclusions for all required objectives in order to be deemed a meaningful user. The SLR guides users through the process by providing descriptions and definitions for each objective and measure, as well as providing users with an immediate “pass” or “fail” response after their data is entered and saved. Users who “fail” MU requirements are not be able to complete the attestation process in the SLR. Users who “pass” MU requirements must sign and submit an attestation to the state that includes all of the MU data entered into the SLR. The SLR will not collect MU data from dual-eligible hospitals as they are required to report their MU data directly to CMS. The SLR allows but does not require providers to upload supporting documents for MU objectives and CQMs.

Listed below are the final rules published by CMS that have defined the MU requirements for the Medicaid EHR Incentive Program. See Appendix 27 for specific MU requirements for each program year.

STAGE 1 FINAL RULE

On July 28, 2010 CMS published the first of many Final Rules[80] that would define the requirements for the Medicaid EHR Incentive Program. In this initial Final Rule, requirements for Stage 1 MU were defined.

STAGE 2 FINAL RULE

On September 4, 2012, CMS published the Stage 2 Final Rule[81] which in addition to defining requirements for Stage 2, also revised the requirements for Stage 1 in 2013, and Stage 1 in 2014.

FLEXIBILITY FINAL RULE

Beginning in 2014, providers and hospitals that completed at least two years of Stage 1 MU were to progress to Stage 2 MU which requires use of 2014 CEHRT. However, on September 4, 2014 CMS issued The 2014 Edition EHR Certification Criteria Final Rule[82] (also known as the "Flexibility Rule"). This rule enabled hospitals and providers who had been unable to fully implement a 2014 CEHRT because of delays in the availability of 2014 CEHRT to attest for MU in 2014 using two alternative pathways--2013 Stage 1 objectives and measures or 2014 Stage 1 objectives and measures--depending on the MU stage for which they were scheduled to report. The Flexibility Rule was implemented into the SLR on April 1, 2015. Due to the late implementation, CMS approved the extension of the Program Year 2014 deadline to from March 31, 2015 to June 14, 2015 to allow providers ample time to apply using the Flexibility Rule. See Appendix 20 for the Flexibility Rule Addendum that was approved by CMS.

Hospitals and providers taking advantage of the Flexibility Rule were required to designate at least one of the following vendor-related reasons in the SLR to establish

[80] Medicare and Medicaid Programs; Electronic Health Record Incentive Program; Final Rule. Accessed May 21, 2018.

[81] Medicare and Medicaid Programs; Electronic Health Record Incentive Program—Stage 2; Health Information Technology: Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, 2014 Edition; Revisions to the Permanent Certification Program for Health Information Technology; Final Rules. Accessed May 21, 2018.

[82] Medicare and Medicaid Programs; Modifications to the Medicare and Medicaid Electronic Health Record (EHR) Incentive Program for 2014 and Other Changes to the EHR Incentive Program; and Health Information Technology: Revisions to the Certified EHR Technology Definition and EHR Certification Changes Related to Standards; Final Rule. Accessed May 21, 2018.

their eligibility to use the Flexibility Rule and were given the ability to upload documentation into the SLR supporting the reason(s) designated:

- Software development delays.
- Certification delays.
- Implementation delays by the vendor.
- Delays in release of the product or update by the vendor.
- Unable to train staff, test the updates system, or put new workflows in place due to delay with installation of 2014 CEHRT by the vendor.
- Other vendor related delays.
- Inability to meet Summary of Care objective due to inability of receiving hospital(s)/provider(s) to receive transmission (applies to using 2014 Stage 1 instead of 2014 Stage 2 only).
- MU 2015-2017 Modification/Stage 3 Final Rule.

In October 2015, CMS published a revised Final Rule[83] which updated MU requirements beginning in Program Year 2015. Under the modified rule, CQMs remained the same, but Stage 1 was eliminated and Stage 2 objectives were updated to include alternate exclusions for providers scheduled to be in Stage 1. In addition, Stage 3 requirements were defined. Due to SLR limitations in providing alternate exclusions separately for each measure, CMS approved a methodology for Program Year 2015 that presented providers who were scheduled to be in Stage 1 with two separate MU paths: in one path, all alternate exclusions were automatically accepted while in the second path providers were presented with Stage 2 objectives only. See Appendix 27 for the addendum submitted to CMS and approved on 3/10/2016. Beginning in 2017, Stage 2 is required for all EPs and EHs (note: in 2017, EPs and EHs also have the option to attest to Stage 3 per CMS FAQ 18257[84]). Beginning in 2018, Stage 2 will no longer be available and Stage 3 will be required for all EPs and EHs.

[83] Medicare and Medicaid Programs; Electronic Health Record Incentive Program—Stage 3 and Modifications to Meaningful Use in 2015 through 2017; Final Rule. Accessed May 21, 2018.

[84] CMS FAQ 18257

2017 IPPS FINAL RULE

The IPPS rule[85] (published 8/22/2016) reduced the number of hospital CQMs available from 29 to 16 beginning in Program Year 2017. Instead of reporting on 16 out of 29 CQMs from among at least three domains, EHs now are required to report on all 16.

MACRA/MIPS/QPP FINAL RULE

The MACRA/MIPS[86] rule (published 11/4/2016) changed the following program requirements effective on 1/1/2017:

- Updated the definition of a meaningful user to include supporting providers with the performance of CEHRT (SPPC).
- Required providers and hospitals to attest to supporting providers with the performance of CEHRT (SPPC).

OPPS FINAL RULE

The OPPS Rule[87] (published 11/14/2016) changed the following program requirements:

- Reduced the MU Reporting Period to 90-days for all applicants in 2016 and 2017.

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[85] Medicare Program; Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and the Long-Term Care Hospital Prospective Payment System and Policy Changes and Fiscal Year 2017 Rates; Quality Reporting Requirements for Specific Providers; Graduate Medical Education; Hospital Notification Procedures Applicable to Beneficiaries Receiving Observation Services; Technical Changes Relating to Costs to Organizations and Medicare Cost Reports; Finalization of Interim Final Rules With Comment Period on LTCH PPS Payments for Severe Wounds, Modifications of Limitations on Redesignation by the Medicare Geographic Classification Review Board, and Extensions of Payments to MDHs and Low-Volume Hospitals; Final Rule. Accessed May 21, 2018.

[86] Medicare Program; Merit-Based Incentive Payment System (MIPS) and Alternative Payment Model (APM) Incentive Under the Physician Fee Schedule, and Criteria for Physician- Focused Payment Models. Accessed May 21, 2018.

[87] Medicare Program: Hospital Outpatient Prospective Payment and Ambulatory Surgical Center Payment Systems and Quality Reporting Programs; Organ Procurement Organization Reporting and Communication; Transplant Outcome Measures and Documentation Requirements; Electronic Health Record (EHR) Incentive Programs; Payment to Non-excepted Off-Campus Provider- Based Department of a Hospital; Hospital Value-Based Purchasing (VBP) Program; Establishment of Payment Rates Under the Medicare Physician Fee Schedule for Non-excepted Items and Services Furnished by an Off-Campus Provider-Based Department of a Hospital. Accessed May 21, 2018.

- Allows all providers and hospitals to attest to Stage 3 in 2017 (further clarified in CMS FAQ 18257[88]).
- Modifies measure calculations to require that actions included in the numerator occur within the calendar year that the EHR reporting period occurred.

2018 IPPS FINAL RULE

The 2018 IPPS Rule[89] (published 8/14/2017) changed the following program requirements (effective in SLR 10/2/17):

- Reduced the CQM Reporting Period to 90-days in Program Year 2017.
- Removed 11 EP CQMs (from 64 to 53).
- Changed the EP CQM requirement from 9 CQMs among 3 domains to any 6 CQMs relevant to the provider's scope of practice.
- Stage 3 is now optional in 2017 and 2018, and required beginning in 2019.
- In 2018, those attesting to Stage 2 can use 2014, 2014/15 Combo, or 2015 CEHRT, those attesting to Stage 3 can use 2014/15 Combo, or 2015 CEHRT.

3.5 VERIFICATION AND VALIDATION

DHCS has developed an administrative review process designed for two explicit objectives:

- Address issues with providers and hospitals proactively to avoid appeals whenever possible.
- Work with providers and hospitals proactively in order to ensure that as many as possible meet the eligibility requirements within the constraints of the Final Rule.

[88] CMS FAQ 18257

[89] Medicare Program; Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and the Long- Term Care Hospital Prospective Payment System and Policy Changes and Fiscal Year 2018 Rates; Quality Reporting Requirements for Specific Providers; Medicare and Medicaid Electronic Health Record (EHR) Incentive Program Requirements for Eligible Hospitals, Critical Access Hospitals, and Eligible Professionals; Provider-Based Status of Indian Health Service and Tribal Facilities and Organizations; Costs Reporting and Provider Requirements; Agreement Termination Notices. Accessed May 21, 2018.

3.5.1 PREPAYMENT ELIGIBILITY VERIFICATION FOR ELIGIBLE PROVIDERS

Prepayment verification of eligibility is carried out on 100% of the EP applications. Providers who have not been prequalified are required to upload backup documentation to support their Medi-Cal encounters. The number of Medi-Cal encounters reported in the numerator of Formula 1 or Formula 2 is verified against the uploaded backup documentation and can be verified against claims and encounter data maintained in the DHCS MIS/DSS system. DHCS contracted with Optum to develop of a script that can be used by DHCS analysts in this verification process. The analysts can run the query against the MIS/DSS database for single or multiple NPIs in order to ascertain actual encounter volumes. After 2011, DHCS required all providers to upload supporting documentation because of the high percentage of providers who were unable to be verified using MIS/DSS data alone. Currently, the MIS/DSS data is only used in special cases to verify provider eligibility, such as encounter volumes at or very near the 30% threshold.

FQHC or RHC providers who are not prequalified have their verification conducted by DHCS staff using the uploaded backup documentation and OSHPD's Annual Utilization Report of Primary Care Clinics. This report documents clinic encounters categorized by payer source. Applications with reported numbers greater than a small percentage above documented numbers where the discrepancy would affect the attainment of the required eligibility threshold (30% or 20% patient volume) are referred to Audits & Investigations for further examination. As the Annual Utilization Report of Primary Care Clinics uses annual data, DHCS staff determines if the annual data is not representative of the reporting period (for example, the clinic was not operational during part of the year) before referral to Audits & Investigations staff. All providers claiming to practice predominantly, with 50% or more services in a FQHC or RHC have a clause stating such added to their attestation. The attestation must be signed and dated by the provider in order for the EP to be approved for payment. If there is a question about the signature, DHCS staff compares it to that on other documents signed by the EP that are held by the state, such as Medi-Cal fee-for-service applications submitted to the Provider Enrollment Division.

Group encounter volumes are required to include the encounters performed by non-EP providers. As non-EP encounters are not captured in DHCS's claims or encounter data, it is impossible for DHCS to carry out prepayment verification of most group volumes using MIS/DSS data. As such, group representatives are required to upload backup documentation that supports group volume data. Group eligibility will therefore be subject to aggressive post payment audit by Audits & Investigations.

As DHCS does not have access to an all-payer database, DHCS staff is unable to verify the numbers reported in the denominators of either Formula 1 or Formula 2, or to accurately determine whether or not a provider is hospital-based. Providers are required to attest to the validity of all information entered into the SLR. However, Audits & Investigations Division staff investigate this information by requiring further documentation or through onsite audit visits. DHCS also does not have data regarding most non-EP visits. When applications including non-EP encounters are selected for verification, the review may be passed by OHIT staff to Audits & Investigations, which can audit a variety of data sources, such as clinic visit calendars or encounter logs.

3.5.2 SLR VALIDATION STOPS

The SLR utilizes a number of "soft stops" which trigger reviews by state staff before an incentive payment is issued or denied. These prompt verifications by state staff and interactions with providers to clear up any issues. A few "hard stops" are used in the SLR, such as lack of a valid and current professional license, which prevent the provider from progressing with the application.

TABLE 13: STATE LEVEL REGISTRY VALIDATION ITEMS

VALIDATIONS	AUTOMATED (A), MANUAL (M)	EXCEPTION RESULT
PROVIDER CREATE ACCOUNT		
Validate that the provider's TIN and ID (NPI or CCN) matches PMF.	A	SOFT STOP
If not found on PMF then validate using the NLR record.	A	HARD STOP
Standard check to validate that a "group" status is noted on the PMF for users selecting Group Representative role.	A	N/A – State will be sent exception notice, but user can proceed.

VALIDATIONS	AUTOMATED (A), MANUAL (M)	EXCEPTION RESULT
Beginning in 2017, before allowing an EP/EH to proceed, validate that: • Hospitals have received a payment in the prior year • Providers have received a payment in a prior year	A	HARD STOP
STEP 1: ABOUT YOU		
Provider license number is on the PMF and is active.	A	SOFT STOP
PMF Provider Status 4 is noted as deceased.	A	HARD STOP
PMF Provider Status 6 is noted as permanently suspended.	A	HARD STOP
PMF Provider Status 3 is noted as pending a transition.	A	*HOLD
PMF Provider Status 2 is noted as inactive.	A	SOFT STOP
PMF Provider Status 5 is noted as rejected.	A	SOFT STOP
PMF Provider Status 9 is noted as temporarily suspended.	A	SOFT STOP
STEP 2: ELIGIBILITY		
For EP - Validate that the outcome of Formula 1 or Formula 2 meets eligibility when result is as follows: • **≥ 19.5% for pediatricians** **OR** • **≥ 29.5% for all other provider types**	A = Confirmation that data entered meets minimum eligibility requirements. M = OHIT staff to verify.	Required Field Validation – User forced to fix data entry before proceeding.
For EP – EP had at least one encounter with a Medicaid beneficiary in the 12 months prior to attestation or the previous calendar year.	M = OHIT staff to verify.	

VALIDATIONS	AUTOMATED (A), MANUAL (M)	EXCEPTION RESULT
For EH-Validate that the outcome of the eligibility entries meets eligibility when the result is as follows: • **The hospital is a children's hospital OR** • **If Medicaid volume > 9.5% AND LOS (Avg. Length of Stay) <=25 days AND the last 4 digits of CCN = 0001 – 0879 or 1300 – 1399**	A = Confirmation that data entered meets minimum eligibility requirements; M = Confirmation that data entered matches Hospital Cost Report.	Required Field Validation- User forced to fix data entry before proceeding.
STEP 3: ATTESTATION OF EHR AIU/MU		
Criteria Method (AIU or MU) - Check to validate that a document is attached. In the case of a modular approach, the provider will be able to attach up to 10 documents per page within the system. Since there is document management functionality in several places in the SLR, the provider could attach more documents in other locations in the application.	A = Confirmation that document is attached; M = Confirmation that document includes required information.	N/A- User cannot proceed without attaching document.
EHR Certified Technology – CMS EHR Certification ID is listed on ONC as a Certified EHR system. In the case in which a provider presents a modular solution DHCS staff will verify the CMS EHR Certification ID for the specific combination of modules on the ONC website.	A	HARD STOP
EHR Certified Technology – Validate that a document is attached.	A = Confirmation that document is attached; M = Confirmation that document includes required information.	N/A – User cannot proceed without attaching document.
STEP 4: REVIEW, SIGN AND ATTACH ATTESTATION		

VALIDATIONS	AUTOMATED (A), MANUAL (M)	EXCEPTION RESULT
Validate that there is a document attached.	A = Confirmation that document is attached; M = Confirmation that document includes required information.	HARD STOP
STEP 5: SEND (YEAR X) SUBMISSION		
Validate the NLR record is on file.	A	HARD STOP
Provider license number is on the PMF and is active.	A	SOFT STOP
PMF Provider Status 4 is noted as deceased.	A	HARD STOP
PMF Provider Status 6 is noted as permanently suspended.	A	HARD STOP
PMF Provider Status 3 is noted as pending a transition.	A	*HOLD
PMF Provider Status 2 is noted as inactive.	A	SOFT STOP
PMF Provider Status 5 is noted as rejected.	A	SOFT STOP
PMF Provider Status 9 is noted as temporarily suspended.	A	SOFT STOP
Validate that the outcome of the eligibility formulas meets eligibility criteria.	A	SOFT STOP
ADDITIONAL VALIDATIONS		
B-6 interface with other state exclusion. NOTE: From NLR to states; informs states of new, updated and cancelled Medicaid registrations. The NLR will send the states batch feeds of new EPs and Hospitals that signed up for HITECH and selected, or switched to, Medicaid.	A	SOFT STOP (in place until B-6 received from NLR)

VALIDATIONS	AUTOMATED (A), MANUAL (M)	EXCEPTION RESULT
D-16 response interface with other state exclusion. NOTE: From state to NLR, with NLR Response; to prevent duplicate EHR incentive payments, to notify NLR of state exclusions, to be notified of any Federal exclusions by NLR.	A	SOFT STOP (in place until D-16 received from NLR)
D-16 response interface with a Federal exclusion. NOTE: From state to NLR, with NLR Response; to prevent duplicate EHR incentive payments, to notify NLR of state exclusions, to be notified of any Federal exclusions by NLR.	A	HARD STOP
* HOLD – Will occur only if PMF Provider Status is noted as *3: Pending Transition*. HOLD will occur for 8 days, after which will change to SOFT STOP if *Pending Transition* status has not changed.		

DHCS monitors and reviews exceptions as needed to reduce the number of unnecessary appeals. Follow up discussions occur to ascertain whether the user is still working on the issue, requires additional assistance, has received information, or concluded the issue could not be corrected.

Generally, there are two global issues that could precipitate an appeal; eligibility and incentive payment calculation. Although eligibility is generally determined through the automated application verification and validation process, there are components of the eligibility process that can and are addressed by DHCS staff.

The most common eligibility issue is related to Medi-Cal patient volumes. Determination of patient volumes for both professionals and hospitals can be a complex task. DHCS staff are well versed in the requirements of the Final Rule and direction from CMS as it relates to patient volumes. DHCS staff work with providers to ensure that all avenues are addressed, ensuring that professionals and hospitals are provided every opportunity to attain eligibility to receive an incentive payment in accordance with the Final Rule and CMS regulations.

3.6 PAYMENTS

3.6.1 FOR ELIGIBLE PROFESSIONALS

The SLR designates the appropriate payment amount for the provider based upon the year for which they are receiving payment. Providers receive $21,250 in their first year, and $8,500 in years 2 through 6. The SLR is able to accommodate the two-thirds incentive payment for pediatricians meeting the 19.5-29.4% Medi-Cal eligibility threshold. The SLR also ensures that only one payment per provider is issued per year, and does not calculate a payment for a provider that is ineligible due to not meeting the Medicaid encounter volume requirements. The SLR functionality limits the number of payments to EPs to six.

3.6.2 FOR ELIGIBLE HOSPITALS

The system will calculate the hospital incentive payment amount using the formula provided by CMS. As part of the registration and eligibility processes for hospitals, the system gathers all of the information required to complete the calculation. The SLR displays the calculation on a screen so that hospitals will be able to determine exactly how incentive payments are calculated.

Calculation of the Overall EHR Amount is calculated based on the following steps:

- Calculate the average annual growth rate over three years using the most recent Medicare/Medicaid Cost Reports or other auditable data sources for a 12-month period prior to the payment year (base year) and the three years prior to that. If a hospital's average annual rate of growth is negative over the three-year period, it will be applied as such.
    - DHCS will allow hospitals with less than four years of data to apply, as long as a full year of data is available for the base year. When four years of data are available, the growth rate will be recalculated and payments adjusted accordingly.
    - In 2016, with approval from CMS, DHCS changed the timeframe for the base year to end before the end of the payment year rather than to end before the start of the payment year. This policy is not retroactive. See Appendix 20 for more details.
- Calculate the total Medicaid discharges using the Medicaid discharges in the Medicare/Medicaid Cost Reports plus the discharges where Medicaid is

the secondary payer. Only discharges between 1,149 and 23,000 per CCN will be allowable discharges.

    - After consultation with CMS, DHCS determined in 2017 that psychiatric and acute rehabilitation discharges are included if the care occurred in beds that would be reimbursed under IPPS for Medicare patients. This policy is retroactive.

- Calculate each of the next four-year's total discharges by multiplying the previous year's discharges times the average computed growth rate.
- Calculate the Aggregate EHR Amount for each year by multiplying (total discharges times $200) plus the $2,000,000 base.
- Apply the appropriate transition factor to each year's Aggregate EHR Amount. (Year One – 100%, Year Two – 75%, Year Three – 50%, Year Four – 25%).
- Calculate the total Overall EHR Amount by adding the total of each year with the transition factor applied.
- Apply the Medicaid Share percentage to the Overall EHR Amount. (See Medicaid Share calculation below). This is the hospital's Medicaid Aggregate EHR Incentive amount.

Calculation of the Medicaid Share percentage:

- Total Medicaid Bed Days includes both the total Medicaid Bed Days and total Medicaid HMO Bed Days from the Medicare/Medicaid Cost Report.
    - After consultation with CMS, DHCS determined in 2017 that psychiatric and acute rehabilitation bed days are included in the Medicaid and Medicaid HMO Bed Days if care occurs in beds that would be reimbursed under IPPS for Medicare patients. This policy is retroactive.
    - After consultation with CMS, DHCS determined in 2017 that "Administrative Bed Days" (which occur while waiting for a SNF bed) are included in the Medicaid and Medicaid HMO Bed Days since such bed days are considered acute inpatient care under IPPS for Medicare. This policy is retroactive.
- Calculate the non-charity percentage. Divide the total hospital charges less uncompensated care by the total hospital charges.

- Calculate the non-charity days by multiplying the non-charity percentage times the total hospital days.
- Calculate the Medicaid Share percentage by dividing the Total Medicaid Bed Days by the non-charity days.

DHCS created a Hospital Workbook for EHs that mirrors the calculation in the SLR application and instructs the EH how to gather their information using the Medicare/Medicaid cost report.

FIGURE 17: HOSPITAL WORKBOOK

Medi-Cal EHR Incentive Program
Hospital Workbook

Input the required data in the ORANGE BOXES below.

Hospital Name:	Hospital Location (City):	CCN:
		xx-xxxx

STEP 1: MEDICAID VOLUME (Medicaid Discharges/Total Discharges)

90-Day Representative Period:	START DATE: / END DATE:	Choose a representative 90-day period within the **prior federal fiscal year** (October 1st - September 30th) to determine your hospital's eligibility to participate in the program.
Hospital Discharges and ER Encounters: From the 90-Day Representative Period	TOTAL / MEDICAID	You may use any auditable data source. Include both fee-for-service and managed care inpatient discharges, and emergency room (ER) encounters. Indigent care may be included by some hospitals (see special instructions in Step 3). Nursery discharges should be included.
Does your hospital have Medicaid discharges or ER encounters from other states that you are including to establish eligibility and payments?		Enter Yes/No
Hospitals (except children's hospitals) must have a Medicaid volume ≥ 10% to be eligible.	**Medicaid Volume Percentage:**	

For STEP 2 and STEP 3 below:
- The CMS Annual Cost Reports (2552-96 or 2552-10) should be used. Other auditable data sources may be used if necessary.
- Non-acute beds should be excluded.
- Nursery and swing bed days should be excluded if the hospital is unable to distinguish between days used to deliver SNF-level care versus inpatient acute-level care.
- ER encounters should not be included in bed days or discharges.

STEP 2: AVERAGE LENGTH OF STAY (Total Inpatient Days/Total Discharges)

Enter the year of your most current cost report or other auditable data source:		This should be the most current 12-month period prior to the payment year (for which the hospital has a cost report or other auditable data).
Total Inpatient Bed Days:		CMS 2552-96: Worksheet S-3, part I, column 6, sum of lines 1,2, 6-10. CMS 2552-10: Worksheet S-3 part I, column 8, sum of lines 1, 2, 8-12.
Total Discharges:		CMS 2552-96: Worksheet S-3, part I, column 15, line 12. CMS 2552-10: Worksheet S-3 part I, column 15, line 14.
Hospitals (except children's hospitals) must have an Average Length of Stay ≤ 25 days to be eligible.	**Average Length of Stay**	**days**

STEP 3: ADDITIONAL INFORMATION NEEDED TO CALCULATE HOSPITAL PAYMENTS

Total Discharges for Last Four Years: This data is used to calculate your hospital's Average Growth Rate.					CMS 2552-96: Worksheet S-3, part I, column 15, line 12. CMS 2552-10: Worksheet S-3 part I, column 15, line 14.
				0	
Total Medicaid Inpatient Bed Days: Include bed days paid by Medicaid for individuals in fee for-service or managed care. Do not include bed days for individuals if payment may be made by Medicare or a Medicare Advantage organization.					CMS 2552-96: Worksheet S-3 part I, column 5, sum of lines 1, 2, 6-10. CMS 2552-10: Worksheet S-3 part I, column 7, sum of lines 1, 2, 8-12.
					Special Instructions: In calculating Total Medicaid Inpatient Bed Days, if managed care bed days have not been reported on the CMS 2552-96 form in Line 2, Column 5, the Medicaid managed care bed days reported on the OSHPD Annual Hospital Financial Report may be used instead. Specifically, the amount in Section 4.1, line 5, column 4, of the Patient Census Days table of the OSHPD report may be used. Please upload a copy of the appropriate OSHPD report page with your application if your hospital will be using this data source. If column 3 of the CMS 2552-96 form has been used to report contractual services, the amounts in this column may be added to the relevant column 5 (Title XIX) amounts to establish Total Medicaid Inpatient Bed Days. If Medicare Title V funding has been used for any bed days reported in column 3, these must be excluded before adding to column 5. **INDIGENT CARE:** Designated public hospitals and other hospitals in Alameda, Contra Costa, Kern, Los Angeles, Orange, San Diego, San Francisco, San Mateo, Santa Clara, and Ventura counties may include indigent care encounters if these are partially supported by Safety Net Care Pool funds under Medi-Cal's 1115 Waiver. Please attach an auditable data source documenting such indigent care, such as the OSHPD Annual Hospital Financial Report Section 4.1, line 5, sum of columns 5 and 6. Designated Public Hospitals use DPH Supplemental Workbook.
Total Hospital Charges:					CMS 2552-96: Worksheet C, part I, column 8, line 101. CMS 2552-10: Worksheet C part I, column 8, line 200. LA County-owned Designated Public Hospitals use DPH Supplemental Workbook.
Hospital Charity Care Charges:					CMS 2552-96: Worksheet S-10, line 30. CMS 2552-10: Worksheet S-10, column 3, line 20. Note: Uncompensated care cost data may be used only if "bad debt" is subtracted. When using CMS 2552-96, Worksheet S-10, line 30 ensure that bad debt has been subtracted from this total. Consider using the OSHPD annual financial statement to document bad debt (OSHPD Supplemental Patient Revenue Information, Line 420). If charity care data is not available, please enter "0." Designated Public Hospitals should use DPH Supplemental Workbook.

STEP 4: HOSPITAL PAYMENT CALCULATION

Go to the Payment Calculations tab to view the calculation of your hospital's incentive payments.

In early 2012, DHCS updated the hospital workbook in response to FAQs issued by CMS, adding explicit instructions to only include paid bed days as Medicaid bed days and to not include bed days that may be paid by Medicare.

For designated public hospitals (DPH), the DHCS P-14 Workbook is used in addition to the Medicare/Medicaid cost report to gather the information required to calculate the hospital payment amount. For this reason, DHCS created the DPH Supplemental Workbook for DPH use in tandem with the Hospital Workbook. Because of changes in the P-14 workbook, DHCS provided three versions of the DPH Supplemental Workbook for Fiscal Years 2009-2010, 2010-2011, and 2011-2012. All DPHs had applied to the program by 2012. The 2011-2012 DPH Supplemental Workbook is provided below.

FIGURE 18: DESIGNATED PUBLIC HOSPITAL SUPPLEMENTAL WORKBOOK

Medi-Cal EHR Incentive Program
Designated Public Hospitals Supplemental Workbook

This workbook serves as a supplement to the Medi-Cal EHR Incentive Program Hospital Eligibility Workbook for the purpose of determining total Medicaid inpatient bed days and hospital charity care charges. To access the Hospital Eligibility Workbook, click below:

Medi-Cal EHR Incentive Program Hospital Workbook

Input the required data in the ORANGE boxes below:

Hospital Name:	Hospital Location (City):	CCN:
		XX-XXXX

NOTE: This workbook is to be used with the P14 FY 11-12 Version. If your hospital is using a different version of the P14, please select the appropriate tab.
Data sources to attach:

1. Paragraph 14 Workbook (FY11-12 Version), Schedule 1 and 1.1. **The P14 workbook used should correspond to the same fiscal year as the CMS 2552 cost report used. To determine which cost report should be used, see the "Hospital Fiscal Year" tab in the Hospital Workbook (link above).**
2. OSHPD report, page 12 (Los Angeles County-owned public hospitals only; see below)
3. Paragraph 14 Workbook, Schedules 1B and 2.1 (LAC-owned public hospitals only; see below)
4. If necessary, schedule showing removal of subprovider days from Medicaid Inpatient Bed Days derived from P14 workbook

STEP 1: Total Medicaid Inpatient Bed Days

All designated public hospitals use this section to calculate Medicaid inpatient bed days

Include Medi-Cal fee-for-service, Medi-Cal managed care, Health Care Coverage Initiative, Low Income Health Program, and SNCP-covered uninsured days.		
Total Medicaid Inpatient Bed Days:		Paragraph 14 Workbook FY11-12 Version, Schedule 1, sum of columns 2a (Medi-Cal FFS days), 3a (Medi-Cal managed care days), 5a (out-of-state Medicaid days), 7a (uninsured days), 6a, 8a, 9a, 9g, 9k, 10a, 10c, and 10e (Low Income Health Program days), and sum of lines 3000-3400 as well as "Other Special Care" lines, which may be numbered 3500 up to 3502; any subprovider lines should not be included. **Subprovider days may not be included.** If subprovider days are included in any workbook line mentioned above, they should be broken out per a separate schedule. Uninsured days should be reduced by 13.95%. Finally, the total must be reduced by the number from "Schedule 1.1 Medi-Cal Data", column 1b, Medicare/Medi-Cal crossover days. ***Use as input for "Total Medicaid Inpatient Bed Days" on the Medi-Cal EHR Incentive Program Hospital Workbook (Step 3, cell G51)***

STEP 2a: Total Hospital Charity Care Charges

All designated public hospitals, except those owned by Los Angeles County, use this section to calculate Hospital Charity Care Charges

Total Uninsured Inpatient Day-Based Charges:		P14 workbook, Schedule 1, column 7a, section "Inpatient Unit Charges" (at bottom), lines 03000-04300.
Total Uninsured IP&OP Ancillary Charges		P14 workbook, Schedule 1, columns 7a and 7c, sum of lines 4400-11600 as well as "Other Special Purpose (Specify)."
Total Uninsured Charges:	0	**Sum of Uninsured Day-Based Charges and Ancillary Charges**
SNCP-Funding-Ineligible Percentage:	13.95%	
Hospital Charity Care Charges:	$0	**Total Uninsured Charges * SNCP-Ineligible Percentage** ***Use as input for "Hospital Charity Care Charges" on the Medi-Cal EHR Incentive Program Hospital Workbook (Step 3, cell G63)***

STEP 2b: Total Hospital Charity Care Charges (Los Angeles County Only)

Only designated public hospitals owned by Los Angeles County should use this section to calculate Hospital Charity Care Charges

Total Hospital and Professional Charges:		For Los Angeles County only: OSHPD report, page 12, line 415, column 23. Please include a copy of the relevant OSHPD report page.
Professional Services Costs:		Schedule 1B, Column 4, line A.
Total Hospital Costs:		CMS 2552-96, worksheet B, part I, column 25, line 95. CMS 2552-10, worksheet B, part I, column 24, line 118.
Professional Services Percentage:		**Prof. Svc. Costs / (Total Hosp. Costs + Prof. Svc. Costs)**
Total Hospital Charges:		**Total Hosp. and Prof. Charges * (1 - Prof. Svc. %)** ***Use as input for "Total Hospital Charges" (LA County-owned public hospitals only) on the Medi-Cal EHR Incentive Program Hospital Workbook (Step 3, cell G60)***

SNCP-Funding-Ineligible Percentage:	13.95%	
Total Uninsured IP&OP Costs:		P14 workbook, Schedule 2.1, step 3, column 8, "Adjusted Hospital Based Uncompensated Costs (DSH Eligible)"
Charity Care Costs as % of Total Costs:		**(SNCP-Ineligible % * Total Uninsured Costs) / Total Hosp. Costs**
Total Charity Care Charges:		***Total Hosp. Charges * Charity Care Cost %*** ***Use as input for "Hospital Charity Care Charges" (LA County-owned public hospitals only) on the Medi-Cal EHR Incentive Program Hospital Workbook (Step 3, cell G63)***

Data sources from the Medicare/Medicaid hospital cost report and/or the DHCS P-14 Workbook are designated on the worksheet for each required data element. If charity care charges are not available, DHCS will allow the use of data for uncompensated care where bad debt is removed from charity care charges. If neither charity care data nor uncompensated care cost data are available, DHCS will set the charity care ratio to one. Hospitals submitting cost reports after May 1, 2010 use cost report form CMS 2552-10. Any Medicare Cost Report prior to that date would have used form CMS 2552-96.

In accord with the Final Rule, DHCS allows hospitals to count discharges when Medicaid is the primary or secondary payer. Discharges for patients who are dually-eligible for Medicare and Medicaid cannot be counted as Medicaid in calculating the "Medicaid Share." The estimated amounts for total charges and charity care charges used in the payment formula must represent inpatient hospital services only and exclude any professional charges associated with the inpatient stay.

DHCS pays the aggregate hospital incentive payment amount in four annual payments, contingent on the hospital's annual attestations and demonstrations of MU. In the first year, if all conditions for payment are met, 50% of the aggregate amount will be paid to the EH. In the second year, if all conditions for payment are met, 30% of the aggregate amount will be paid to the EH. In the third year and fourth year, if all conditions for payment are met, 10% of the aggregate amount will be paid to the EH for each year. Payments

are extended over four years in order to increase the number of EHs incentivized to achieve stages 2-3 of MU. No Medi-Cal EHs may begin receiving payments after 2016, and payments will not be made after September 30, 2021. Prior to 2015, payments could be made to an EH on a non-consecutive annual basis, but beginning in 2017, in order for a hospital to receive payment it must have received an incentive payment in the prior fiscal year.

Due to Final Rule changes in 2013, DHCS allows hospitals to switch to California from another state where they have received EHR incentive payments. DHCS works with the other state to determine the remaining payments due to the hospital based on the aggregate incentive amount and incentive amounts already paid. The hospital then assumes California's payment cycle, less the money paid from the other state. Prior to addressing this scenario, DHCS consults with CMS. To date, DHCS has not received any such requests.

3.6.3 PAYMENT PROCESSING

DHCS has determined that the most efficient intervals for delivery of incentive payments to recipients is weekly. This utilizes the existing payment processes currently in place for the state and ensures that incentive payments are made within the timeframes required by CMS.

The payment processing begins in the State Level Registry (SLR). The system captures the state's approval of the EP/EH's attestation and flags the record for payment. The system includes sufficient storage capacity in preparation of capturing and tracking transactions between 2011 and 2022.

The current role of DHCS' Fiscal Intermediary (FI), Conduent, is to coordinate the transfer of payment information from the SLR to the state's payment system based upon the MMIS Interface Standards. The MMIS system is able to process provider payments via Electronic Funds Transfer (EFT), and provide the annual 1099 required by the IRS for reporting income.

The system functionality includes the following:

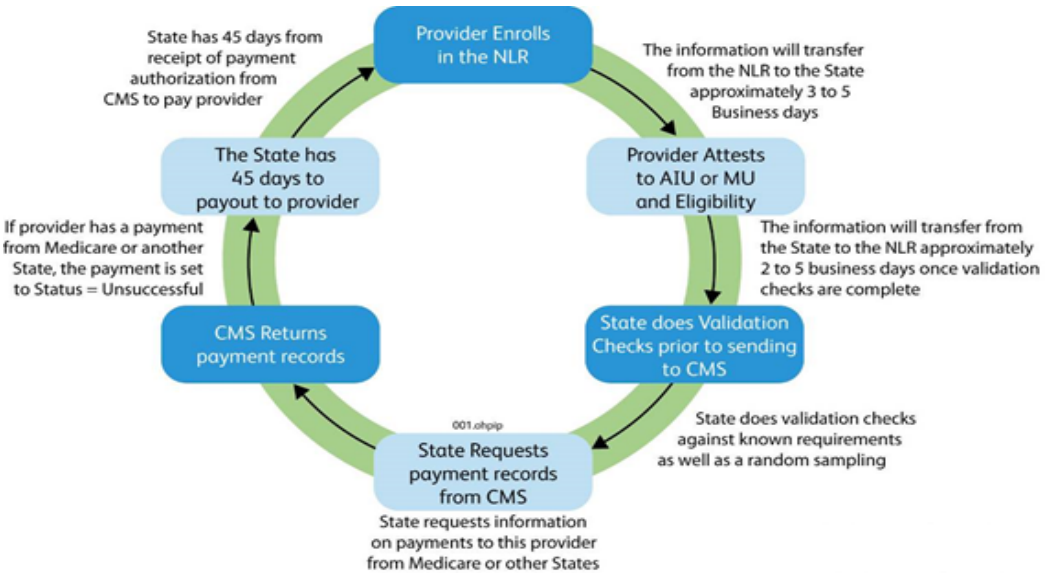
- Maintains a complete repository of incentive payment-related information.
- Follows correct payment methodology based on CMS payment rules.
- Accurately exchanges payment information with the MMIS payment system.

- Avoids inappropriate payments.
- Excludes payments to providers with state or federal exclusions, sanctions, and/or other state incentive payments pending or paid.
- Pays assigned payees designated by the provider in the NLR.

The SLR system calculates incentive payment amounts, and executes a payment validation process with the National Level Repository (NLR) via the D-16 interface. The FI uses data from the SLR to send a file to the MMIS for payment. Currently, the exchange between the SLR and the MMIS is a manual process. DHCS and Conduent are in the process of creating an automated payment process to increase payment efficiency and reduce errors. It is anticipated this process will be implemented in September 2018. Under the automated process, the SLR will send payment information to MMIS without the need for manual intervention. The MMIS will issue incentive payments and notifications to eligible professionals through normal payment channels and send a confirmation to the SLR system. As it does today, the SLR system will send a D-18 file with the payment details to the NLR to update the NLR records for those eligible parties receiving payments.

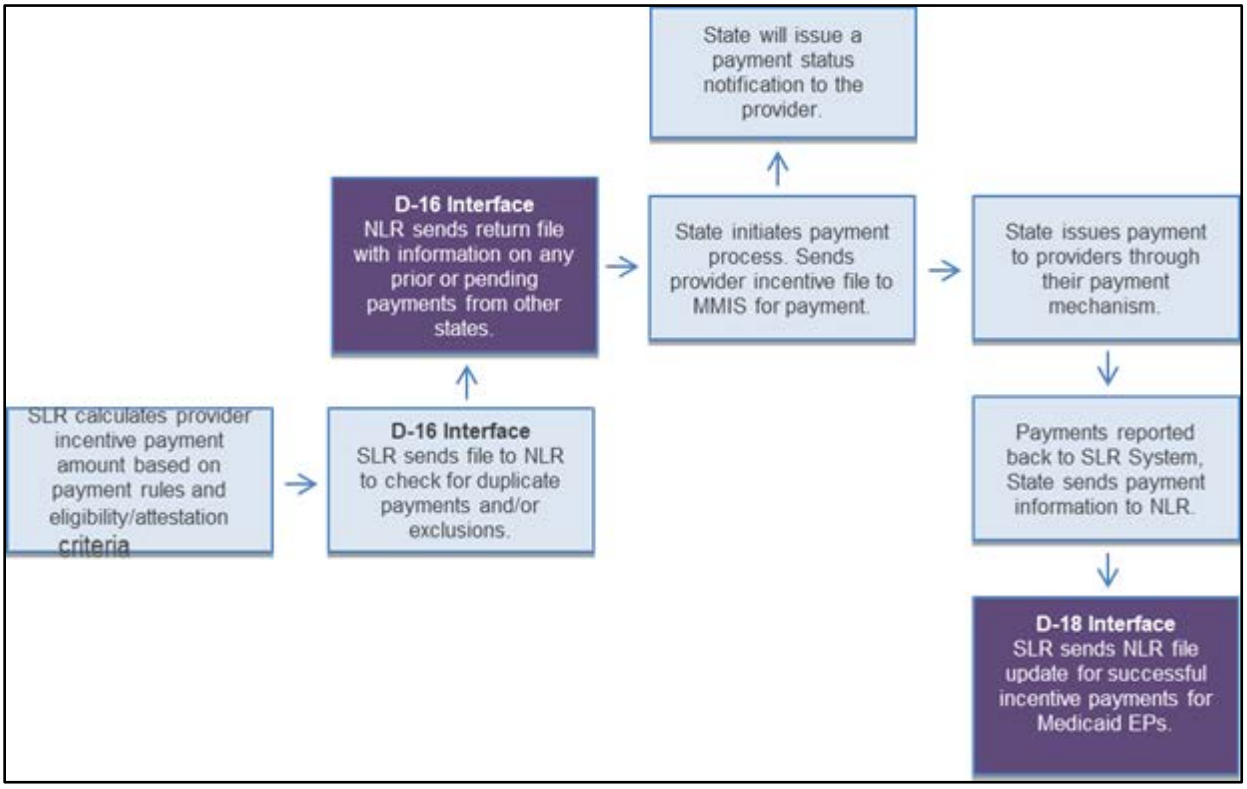
As required by CMS, incentive payments are issued without any deduction to pay for its own program administration or to fund other state priorities. However, when there are public debts owed by the provider, the state may recoup the debt from the provider by offsetting the debt with the incentive payment. Similar to the Medicare program, if the provider reassigns the payment, any debt owed by the re-assignee would not be recouped from the payments made on behalf of the provider.

FIGURE 19: PAYMENT CYCLE



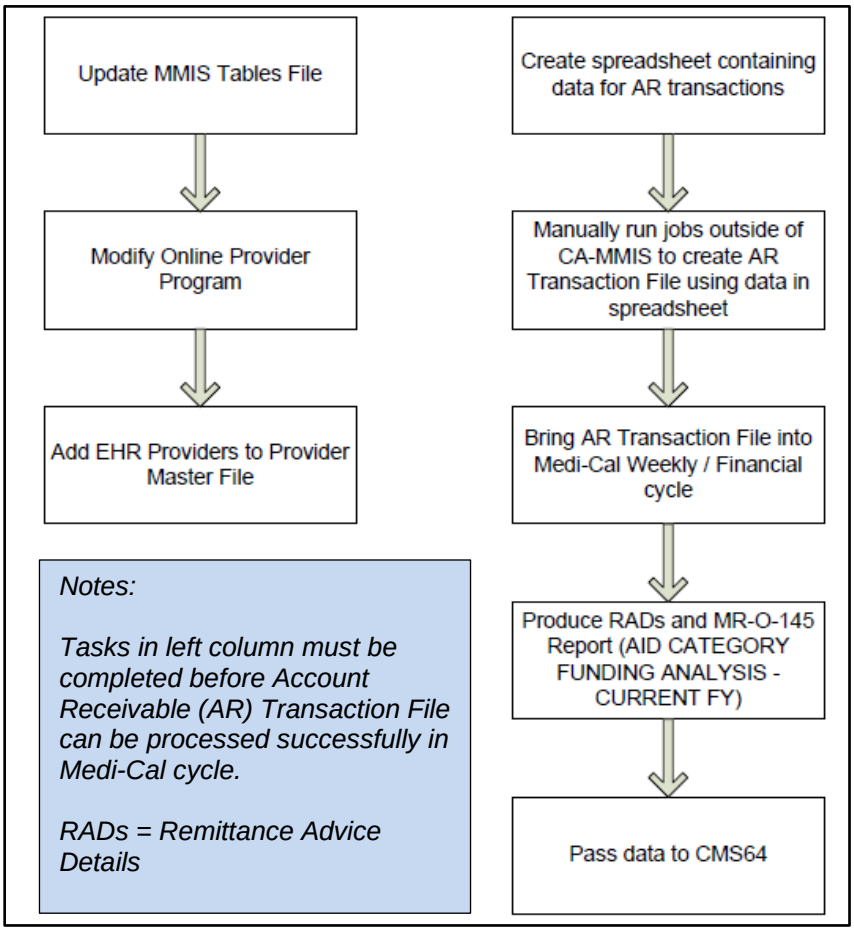
The SLR system uses the payment methodology in Figures 19 and 20 for incentive payments to all eligible entities, including EPs and EHs. Conduent has worked directly with CMS to define the details for correct computation of incentive payments under the EHR Incentive Program. The Medi-Cal payment methodologies are similar to those prescribed for Medicare incentive payments. Using validation checks with the NLR, the SLR prevents issuing payments when actual or pending Medicare EHR incentive program payments and Medicaid EHR incentive program payments from other states are identified. However, this does not apply to dually-eligible hospitals that are allowed to participate in both programs.

FIGURE 20: NLR PAYMENT APPROVAL PROCESS



When the payment is calculated, the SLR requests information via the D-16 Interface on duplicate or pending payments as well as any updated exclusions from the NLR. A payment from another state or from Medicare disqualifies the provider from receiving a Medi-Cal incentive payment for that year. The payment file is sent to the MMIS for payment. When the MMIS reports the payment back to the SLR, the payment record is forwarded to the NLR. The Payment Process Data Flow chart (Figure 21) illustrates the standard flow for the generation of provider incentive payments.

FIGURE 21: PAYMENT PROCESS DATA FLOW



CMS allows each state to determine methods for recovery of inappropriate payments. In the instance that an overpayment is self-identified by the provider or identified through an audit, the overpayment may be fully or partially satisfied through offset from future incentive payments. The state will utilize its existing Medi-Cal recovery methodologies to recover inappropriate incentive payments that cannot be offset against future incentive payments. If underpayments are identified, the provider will be appropriately reimbursed.

EPs receiving incentive payments under the incentive program may assign their incentive payments to certain other entities. For example, an EP is allowed to specify that his or her group practice received the incentive payments. The EP designates the TIN of the practice (payee) to which he or she wishes to assign his or her incentive payments at the NLR, and that information is received and stored in the SLR via the B-6 transaction. The state validates that the NPI/TIN reassignment combination is allowed by examination of

the Provider Master File. After validating the NPI/TIN for reassignment, payments for that EP are issued to the payee TIN.

The state's payment process requires that a warrant (check) number is included for tracking and audit purposes. As the source of the warrant information, the State Controller's Office (SCO) issues the final payments. The system uses the current Medi-Cal check write system.

Payment processing includes the following steps:

1) Upon acceptance of the verification and validation processes within the SLR, and notification from NLR that payment may be released, the FI will receive a release for payment notification from the SLR to pay the appropriate provider incentive payments.

    a) The payment is made with the warrant number from SCO and a uniquely identifiable transaction number.
    b) The transaction number will have an EHR Incentive Program descriptive message as defined in the Medi-Cal Provider Manual.

2) System reporting is updated to identify the payments separately within existing service categories based on the transaction number identified above.
3) The CMS64 database calculates FFP for EHR Incentive Payments and retains the information for reporting purposes.

3.7 APPEALS

Eligible professionals and hospitals have the right to appeal DHCS' decision on participation eligibility, attestations, and incentive payment amounts. The appeals for pre-payment denials follows the process described in W & I Code section 14043.65. This code designates a written appeal process to the director's designee. No formal administrative hearing is required. The provider has 60 days from the date of the department's action to file their written appeal with all of the supporting materials. The director/designee has 90 days from receipt of the appeal to issue a decision. The decision may uphold, continue or reverse the department's action in whole or in part. Any further appeal shall be via a writ to the Superior Court under §1085 of the Code of Civil Procedure.

For audit appeals, DHCS has an established administrative hearing process referenced in the WIC, Section 14171, and California Code of Regulations, Title 22, Section 51016. Audit appeals are referred to the Office of Administrative Hearings and Appeals (OAHA), an independent office within DHCS, which handles Medi-Cal provider appeals for the Department. The EH or EP has 45 days from the date the EHR audit report is issued to file for an appeal with OAHA. OAHA affords providers an administrative hearing. If the provider wishes to appeal further, the appeal must be filed through Superior Court.

3.8 RECOVERY/RECOUPMENT

EHs found upon audit to have received an incentive payment in error for a payment year, will have the overpayment recovered by offsets against future incentive payments or, in the case that the EH is not eligible for future payments or there are insufficient future payments to cover the overpayment, through recoupment. EP overpayments will be recovered by recoupment only.

In the case that an audit determines that the EP or EH had engaged in fraud through deliberately attesting to false information, the EP or EH will permanently lose the payment for that participation year. Examples would be as follows:

- EPs in their first year of the program will not be able to receive a first year payment of $21,250 in a subsequent program year.
- EHs in their first year of the program will not be able to receive their calculated first year payment in a subsequent program year.
- EPs or EHs in the second year of participation, will lose the ability to receive their second year payment during the subsequent year of participation.

Such EPs and EHs will have their eligibility for the program reduced by one program year (from 4 years to 3 years for EHs and from 6 years to 5 years for EPs).

In the case that an audit determines that the EP or EH had received a payment in error but had not engaged in fraud, the EP or EH will not permanently lose the ability to receive payment for the participation year and will not have the total years of eligibility reduced. Such EPs in the example above may receive a first year payment in a subsequent program year and such EHs will be able to receive their calculated first or second year payments in subsequent program years.

EPs or EHs receiving only one payment before 2017 that are found on audit to be ineligible for that year (whether due to fraud or not) will lose the ability to receive payments in 2017 and subsequent years. EHs found on audit to be ineligible for any program year

after 2015 will lose the ability to receive payments in any subsequent program year. If such payments have already been made, they will be recovered.

3.9 REPORTING

The SLR provides DHCS with an actionable reporting package to effectively manage the Medi-Cal EHR Incentive Program. Key SLR reporting features include:

- Active eligible professional attestation applications currently being completed.
- Active eligible professional attestation applications currently being adjudicated by CMS.
- Active eligible professional attestation applications currently awaiting payment, include the dollar value of the payments.
- Inactive eligible professional attestation applications currently pending.
- Completed eligible professional attestation applications.

Additional reporting functionality is scheduled to be deployed in June 2018 and includes:

- Ad hoc reporting functionality.
- Active audit functions currently being executed.

3.10 ASSUMPTIONS

In providing a strategic and tactical plan for successfully implementing the Medi-Cal EHR Incentive Program, DHCS identifies that the role of CMS is critical to the success of the state's plan and requires the ongoing and close interaction of CMS with ONC and the state. The state is relying on CMS to provide timely guidance to state issues and concerns.

- **SMHP and I-APD Approvals:** CMS continues to review and approve the SMHP and I-APD updates, in a timely manner.
- **Status/Availability of Certified EHR Technology:** Certified EHR applications continue to be approved and certified in a timely manner so that providers can meet the requirements for Stage 3.
- **HIE Funding:** CMS funding for HIE development will be available and sufficient when DHCS submits its SMD letter 16-003 requests.

- **State Level Registry**: DHCS will be required to secure a new SLR contractor and complete transition by September 2019. DHCS will need CMS' support and assistance in this effort.
- **Operational Funding**: Health care reform efforts in Congress will not adversely impact California's budget and continued ability to support the 10% state match.
- **Program Termination and Closeout**: DHCS understands that incentive payments must cease at the end of fiscal year 2021 per the Final Rule. Unless the Final Rule is changed to allow for a 90-day reporting period instead of full year reporting period, the last year for attestation will be Program Year 2020. Additionally, DHCS will need most of calendar year of 2021 to process Program Year 2020 attestations and payments. The pending IPPS NPRM may provide for additional funding beyond 2021 that may impact DHCS plans for program closeout.

4 CALIFORNIA'S AUDIT STRATEGIES

4.1 INTRODUCTION

For DHCS, audits are conducted by the Audits and Investigations Division (A&I). The overall goal of A&I is to improve the efficiency, economy, and the effectiveness of DHCS while ensuring the financial and programmatic integrity of its programs. As part of its mission, A&I promotes sound management of public funds, performs specific audits of DHCS operations, performs medical and financial audits of Medi-Cal and public health providers, conducts investigations of suspected violations of Medi-Cal laws and regulations, identifies public funds spent inefficiently or illegally for recovery, and has the lead responsibility for DHCS' Medi-Cal anti-fraud program.

The Deputy Director of A&I reports to the Chief Deputy Director and has direct access to the Director of DHCS. This enables A&I to operate independently with no organizational impairments in order to fulfill its oversight and fiduciary responsibilities with regard to DHCS programs and operations. A&I is comprised of four branches: the Medical Review Branch (MRB), Financial Audits Branch (FAB), Investigations Branch (IB), and the Internal Audits Office. The two branches with primary responsibilities for auditing the EHR incentive program are MRB and FAB. MRB audits the non-institutional providers (e.g. laboratories, pharmacists, durable medical equipment providers, and various individual providers and practitioners), while FAB audits institutional providers (e.g. acute care hospitals, nursing home facilities, FQHCs, and RHCs). A&I conducts its audit work in accordance with Generally Accepted Governmental Auditing Standards (GAGAS). In addition to full access and authority over DHCS program operational data, A&I also utilizes Medi-Cal claims data, the Provider Master File (PMF), and other relevant data and information needed to carry out its oversight activities of Medi-Cal providers. A&I oversight and audit activities provide assurance that payments made to Medi-Cal providers are valid, reasonable, and in accordance with federal and state laws, regulations, and program intent.

FAB audits EHs and EPs who work in FQHCs, herein referred to as EP/Clinics. MRB audits EPs who have individual practices and/or work in a group. A&I has assigned EHR audit activities to the same audit branches that normally audit the specific provider types, with an intent to integrate EHR audits with other existing audit workload. This arrangement also leverages the auditors' familiarity with the providers' operations and programs. The audit activities for MRB and FAB are further described in Section 4.2 and the following sections.

The IB is primarily involved in EP and EH oversight, monitors the Medi-Cal Fraud Hotline and facilitates referrals to the California State Department of Justice (DOJ), Bureau of Medi-Cal Fraud and Elder Abuse (BMFEA). IB is also involved with various federal and state Program Integrity and Fraud Task Force activities to coordinate A&I's investigative and oversight activities with the Office of Inspector General, U.S. Attorney's Office, and other law enforcement agencies.

MRB and FAB will refer EHR incentive program providers to IB, if they suspect there has been misuse, abuse, or fraudulent activity or a multi-disciplined effort is needed to conduct unannounced reviews of high risk providers.

In an effort to ensure there is appropriate administration and oversight of the state's EHR incentive program, A&I's Internal Audits Branch periodically conducts an internal audit of the incentive program. The internal auditors examine all aspects of the program in detail, including but not limited to: the SLR, attestation process, department pre-payment review of applications, eligibility support documentation, payment approvals, payment processing, payment reconciliation, payment adjustments and recoupments, and system security/integrity.

In 2014, DHCS submitted an audit strategy that detailed the AIU audit plan. The strategy included a description of the departments risk assessment methodology, risk criteria and risk scores for EHs, EPs in individual practice, groups, and FQHCs/RHCs. The strategy also included copies of the audit programs and audit correspondence templates. CMS approved this audit strategy on May 5, 2014.

DHCS received CMS approval of its MU audit strategy on January 16, 2018. In accordance with the updated audit strategy, DHCS will conduct MU audits of EPs as well as Medi-Cal only EHs. For dually eligible EHs, DHCS will rely on the results of the Medicare MU audits for Program Years 2011-2014. For Program Years 2015 and later, DHCS will conduct MU audits for a sub-sample of EHs. DHCS will continue to audit eligibility requirements for EPs and EHs.

4.2 A&I AUDIT LANDSCAPE AND PROCESS

A&I has numerous field offices located throughout the state which are responsible for conducting audits and reviews of institutional and non-institutional providers within a given region or territory. The MRB conducts provider audits out of six field office sections

located throughout the state. MRB is staffed by multi-disciplined auditors (e.g. health program auditors, research analysts and medical staff) who also focus on anti-fraud initiatives, research and data mining, which has become an important component of the antifraud strategies by the branch. FAB has thirteen audit sections located throughout the state. These sections perform desk or field audits of Medi-Cal institutional providers which include; acute inpatient hospitals, children's hospitals, critical access and rural hospitals, designated public hospitals), long-term care facilities, FQHCs, rural health clinics (RHCs), Drug Medi-Cal providers, mental health providers, ground emergency transportation providers, Local Educational Agencies (LEA), and Targeted Case Management providers. To minimize audit burdens on the providers and for purposes of efficiency, FAB has attempted to integrate EHR Incentive Program audits of EH's with other Medi-Cal hospital desk or field audits.

As DHCS has a large universe of eligible professionals participating in the Medi-Cal EHR Incentive Program, A&I has devised a two-tier audit approach to EHR Program audits, which include pre-payment audits and post-payment audits. In each of the tier levels, desk or field audits will be utilized depending on the assessed audit risk as described in Sections 4.2.1 Pre-Payment Audits and Section 4.2.2 Post-Payment Audits.

To supplement the historical profiles when developing risk profiles, A&I has access to the SLR, which contains relevant provider information submitted during the application process. The SLR also contains "hard stops" and "soft stops" which are used in risk evaluation. Comparing the severity of the registration stops with historical data allows A&I to develop a risk profile.

A&I audit procedures are designed to ensure that the provider has met the financial and programmatic requirements of the EHR Incentive Program. A&I has developed a risk assessment process that analyzed various risk factors and assigns risk ranking scores. The assigned risk ranking score determines the provider risk level and the number of discharges to test. The risk assessment process is detailed in A&I's Audit Strategy. Risk scores also take into consideration, information that may be provided in referrals from OHIT.

To ensure the consistency of audits, A&I conducts training for A&I staff in accordance with audit procedures approved in the Audit Strategy. A&I is committed to auditing 100% of year one EH applications, ensuring the accuracy of the calculated incentive payments.

4.2.1 PRE-PAYMENT AUDITS

Pre-payment audits are initiated through referrals from OHIT. The purpose of the referral is to address areas of concern identified by an analyst during prepayment review that warrants further examination by an auditor. Concerns may include, but are not limited to, the validity of information uploaded to the SLR by providers or their representatives, “soft or hard stops” generated by the SLR, known or suspected histories of fraud, waste or abuse by the provider.

Referrals contain a comprehensive description of OHITs concerns including supporting documentation or other relevant information. Once received by A&I, audit program administrators review the referral, research applicable databases, and further develop the audit case. If warranted, field or desk audits are conducted by audit staff. Once the review or audit is completed, results are shared with OHIT, whom reviews the findings and recommendations and takes appropriate action on the application. A&I and OHIT databases are also updated with audit findings.

4.2.2 POST-PAYMENT AUDITS

A&I is responsible for conducting AIU and MU post-payment audits of EPs and EHs consistent with the approved Audit Strategy. Post-payment audits are conducted through field audit reviews (FARs) and desk audit reviews (DARs) of Medi-Cal providers to verify compliance with program requirements and identify potential fraud, waste or abuse.

MRB has developed a risk assessment for all EPs (excluding those in FQHCs, RHCs, IHCs) who received payments for AIU and MU. The risk assessment determines audit selection by risk category. MRB conducts field or desk audits depending on the eligible professionals’ overall risk score.

MRB’s audit program includes the verification of ownership and controlling interest as a standard audit procedure. The intent of this procedure is to ensure that any individual receiving payment, or entity with an ownership or controlling interest in the provider, does not appear on state or federal exclusion lists.

MRB staff use the CMS approved calculation methods for EPs as stated in 42 CFR 495.306. Validation of EP SLR attestations will be conducted by audit staff to confirm the Medi-Cal percentage, utilizing claim data, provider data, and other applicable and reliable audit sources for patient encounters and panel patients. By using Medi-Cal claims and

Managed Care encounter data, audit staff are able to verify the EP's encounter and patient panel volumes.

MRB has audited a statistically relevant sample of EPs to ensure compliance with AIU and eligibility requirements. As of October 2017, of the 425 AIU audits completed, 13 audits resulted in negative findings. In many cases, it was determined that EPs met the 30% Medicaid patient volume requirement, although patient volumes differed from those that were reported at the time of attestation. Most EPs were still able to satisfy the volume requirements using a different 90-day reporting period, which fell within the acceptable timeframe based on the program year for which they had applied.

The approved Audit Strategy also addresses EPs who work in FQHCs and details the risk assessment process employed to identify the higher risk EP/Clinics that will be audited. Clinics are under the prospective payment system (PPS) and are not audited annually. FAB is refining its audit plans for EPs at FQHCs/RHCs and intends to conduct AIU/MU audits of EPs in a selected sample of clinics.

FAB's post payment audit scope for EHs in payment year one includes, but is not limited to:

- Review EH records to validate patient volumes, inpatient stays, and discharges and compare to EHR calculated payment for accuracy.

- Reviewing the attestation and supporting documentation (contracts, leases, invoices, receipts, hardware, and software certifications/serial numbers).

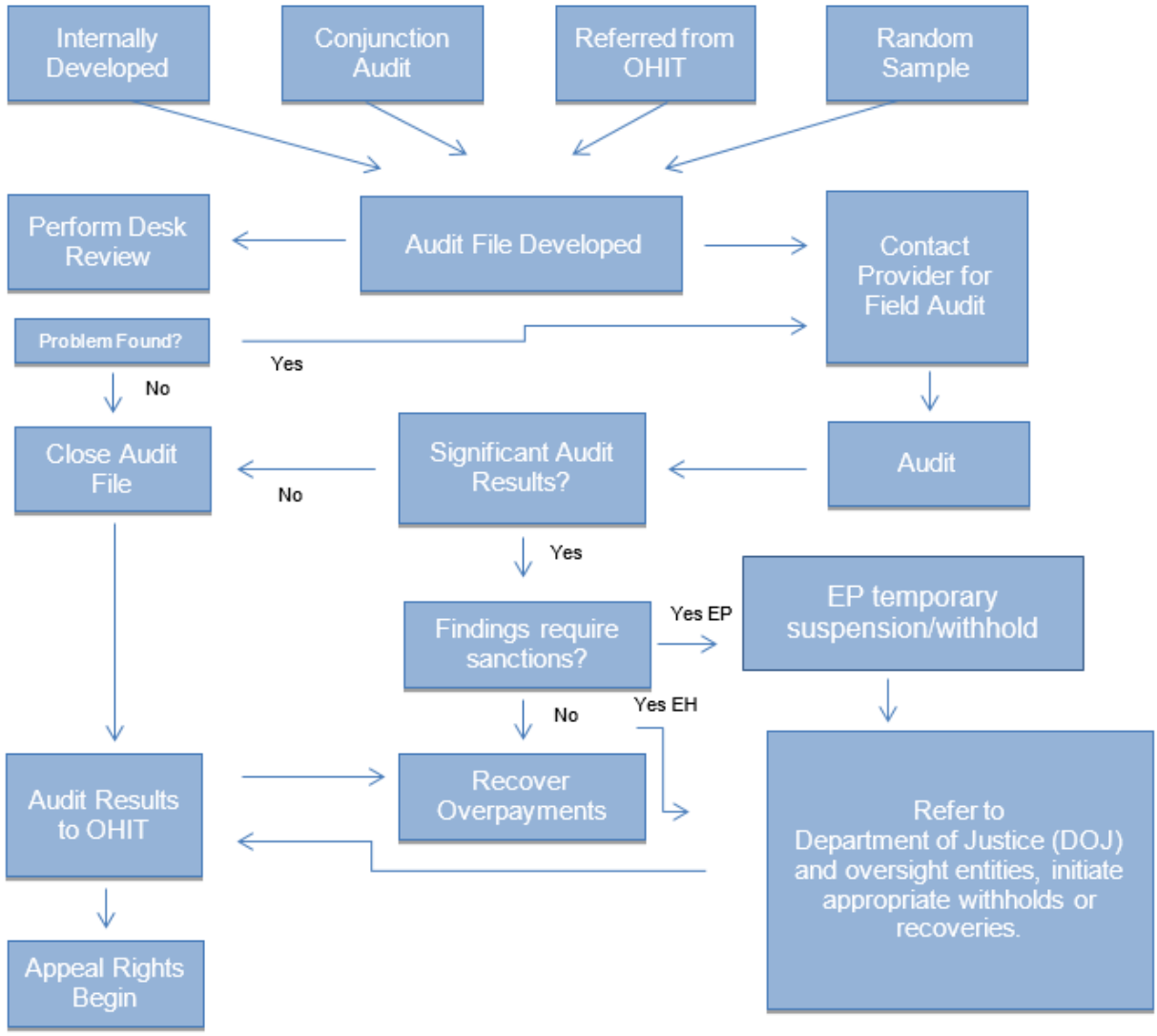
- Review the OHIT EH workbook[90] as well as verification that incentive fund calculations and payments are correct. This includes comparing disbursement ratios by fiscal year and actual disbursements through the SLR payment database.

Once the audit is completed, FAB notifies OHIT and the EH of the findings. The EH is given a two-week timeframe to provide additional information and documentation to resolve the findings. If the provider submits additional information or documentation, FAB reviews the additional information/documentation and determines whether the findings are adequately addressed. Where findings are insufficiently addressed, FAB issues an audit report to the provider, identifying any overpayments. OHIT also receives a copy

[90] Hospital Workbook (Updated 01/10/2017). Accessed May 21, 2018.

and determines whether overpayments will require immediate recoupment, or can be offset against future incentive payments. Recoupment may consist of off-setting against future fee-for-service payments or voluntary/involuntary collection action. In addition, FAB will enter the results in the CMS audit reporting tool and/or through the State Administrative Module (SAM).

FIGURE 22: AUDIT PROCESS



AUDIT DATA RESOURCES

A&I uses a number of data resources in its work auditing the Medi-Cal EHR Incentive Program and investigating providers for fraud, waste, and abuse. These are described in the table and narrative below.

TABLE 14: AUDIT DATA RESOURCES

Data Resource	Resource Function	Resource Benefit
State Level Registry (SLR)	Provider Registration	Review provider statements and submissions, and compare to other data sources and audit findings.
Surveillance and Utilization Review Subsystems (SURS)	Extensive report system of claim data for all Medi-Cal providers and beneficiaries.	Claim detail reports will be run on EHs and EPs to help verify Medi-Cal eligibility percentages and participation.
Provider Enrollment Tracking System (PETS)	Reviewing provider CA Medi-Cal enrollment applications.	Compare SLR registration information for EHs to their PETS file to verify accuracy of information provided on the SLR (cross-referenced with MRB for clinic ownership status).
Provider Master File (PMF)	Master file on all Medi-Cal providers from information submitted by the provider to the Provider Enrollment Division.	Will be used to compare locations, businesses, practices, owners, tax identification numbers, NPI numbers, provider names, payment and location addresses, review Medi-Cal status, Medi-Cal payment histories, etc.
CA Dept. of Consumer Affairs	Licensure of medical professionals.	Verify licensure status and professional licensure sanctions.

Data Resource	Resource Function	Resource Benefit
American Board of Medical Specialties website	Tracking of physician certification of 24 medical specialties.	To assist in the verification of an eligible professional's designation as a pediatrician.
Gatekeeper List	Data list of providers, businesses, locations, individuals, etc. in which previous significant adverse audit findings were found.	Compare SLR data to Gatekeeper list to verify providers, locations, assigned payees, etc. to see if provider may be listed on the Gatekeeper in which MRB will exercise increased audit awareness.
Case Tracking System	Tracks audit cases and their results, amounts, sanctions, findings, etc.	Review the Case Tracking System for previous audit findings on providers.
Financial Audits Tracking System (FATS)	Maintains the historical record of a provider's payment activity, Auditor assignments, and recoveries.	Review FATS for historical payment background.
A&I Documentum System	Maintains complete audit files for Hospital audits conducted for fiscal years ending 2008 years and filed cost reports.	History of previous audit findings for each EH.
TeamMate	Electronic audit work paper system implemented during fiscal year 2014-15. Replaces hard copy audit working papers, also compiles provider documentation obtained during the audit.	Full history of all previous audit findings for each EH.

Data Resource	Resource Function	Resource Benefit
Certified HIT Product List (CHPL)	Official database of certified EHR programs.	Database of the criteria measures of EHR programs selected for certification measure. MU module audit procedures to be developed in future years.
Office of Statewide Health Planning-- Annual Utilization Report	All licensed clinics in California submit an Annual Utilization Report.	Used to obtain encounters by payer source.
Management Information System/Decision Support System (MIS/DSS)	Database of eligibility, provider, and claims information for Medi-Cal.	Review provider statements and submissions, and compare to other data sources and audit findings.

STATE LEVEL REGISTRY (SLR)

A&I has access to the SLR, which is maintained by Conduent. The SLR is the primary access point for source data submitted by providers during the application process. EHR lead auditors and managers will utilize the SLR to access EH workbooks, applications, attestations, and supporting documentation uploaded by EHs and EPs. The SLR provides information needed for preliminary audit work scoping prior to starting the desk or field audit.

SURVEILLANCE AND UTILIZATION REVIEW SUBSYSTEMS (SURS)

The SURS system is a mainframe-based reporting system that captures all elements of submitted claims by Medi-Cal providers whether paid or not paid. The SURS system is used extensively by auditors when verifying EHR Medi-Cal requirements, such as the 30%-20% EP eligibility, 30% Needy Individuals patient volume when practicing more than 50% of encounters over six months in the prior calendar year at FQHC/RHC's, and the 90% hospital-based measures. MRB EHR Program Administrators run frequency distribution reports as well as claim detail reports during the case development scoping process.

PROVIDER ENROLLMENT TRACKING SYSTEM (PETS)

The PETS system is utilized frequently by MRB to compare data attested by the provider in the SLR and NLR systems to application data the provider attested to in order to participate in California's Medicaid/Medi-Cal program. The PETS system is used extensively for ownership and control disclosures, practice locations, provider's affiliations with sub-contractors, medical specialties, etc. Review of the PETS system is a standard audit case development tool used for both pre-payment audits and post-payment audits. When discrepancies are found between the provider's attestations in the SLR/NLR and their CA Medi-Cal enrollment data, the audit risk increases.

PROVIDER MASTER FILE (PMF)

Maintained by the Provider Enrollment Division (PED), the PMF stores all eligible provider information as well as the payments received by each provider for the Medi-Cal program. Address information, including pay-to address, tax identification numbers, social security numbers, active statuses, declared profession type, payment history, etc. is stored in the PMF. Data can be used by A&I auditors to identify address discrepancies, activity status, and for payment tracking.

GATEKEEPER LIST

The Gatekeeper list was developed by MRB to track individuals and sites (addresses, regional areas, etc.) where significant Medi-Cal fraud, waste, or abuse has occurred. The Gatekeeper list is checked to determine if any of the EPs, locations, entities, owners, affiliated individuals, etc. are listed.

CASE TRACKING SYSTEM (TEAMMATE)

During fiscal year 2014-15, A&I transitioned to an electronic work paper software known as TeamMate. TeamMate increases the level of security necessary to access audit working papers, which contain sensitive and personal information, and reduces paper and storage costs. The tracking system assigns a specific case number for each audit and records the entire history of the case from beginning to end. Once a case is closed, the tracking system will return all data. Each audit file in the tracking system contains many elements that include, but are not limited to, audit periods, monetary amount subject to review, monetary overpayments, and dates of all actions relating to the audit, case notes, and the auditors/staff and A&I office(s) assigned to the review/audit. A&I EHR Program Administrators and auditors have access to the tracking system and are able to search the system by provider number and retrieve any prior audit information and results available for a particular provider. Audit and overpayment information for each EP/EH is available in A&I's case tracking program.

FINANCIAL AUDITS TRACKING SYSTEM (FATS)

FATS is a database developed by FAB to track the history of all audit types and capture relevant financial data for extraction and evaluation. FAB field audit sections can access the FATS data base.

A&I DOCUMENTUM 2 SYSTEM (ELECTRONIC FILE ROOM)

During fiscal year 2012-13, A&I transitioned from hard copy file to an electronic file room. ARAS is the custodian of the audit records maintained by the Documentum 2 System (D2). D2 is an enhanced PDF system with an optical reader that is capable of searching and querying documents by fiscal year, name, or word search. D2 contains the audit working papers and audit reports and records going back to 2008. During the risk assessment process, EHR audit staff will refer to the files. EHR audit working papers and audit reports are scanned into the D2 system.

CERTIFIED HIT PRODUCT LIST (CHPL)

The ONC Certified Health IT Product List (CHPL) is the comprehensive listing of health IT products that have been tested and certified under the Health IT Certification Program administered by the Office of the National Coordinator for Health IT (ONC). The CHPL is a starting point in researching eligible EHR systems available, and may be used to develop MU attestation audit procedures in conjunction with CMS updates of Level 1-3 criteria.

OSHPD ANNUAL UTILIZATION REPORT

The OSHPD Annual Utilization Reports is used for reference in planning in EH and FQHC/RHC audits. The reports contain encounters by payer source and procedure. FQHCs/RHCs file an Annual Utilization Report and the reports will supplement the claims data from the SURS system for patient volume verification

MIS/DSS

The MIS/DSS is a subsystem of the California Medicaid Management Information System (CA-MMIS) and serves as the California Department of Health Care Services (DHCS) Medi-Cal Data Warehouse. As a current and comprehensive database of eligibility, provider, and claims information for the Medi-Cal Program, the MIS/DSS is the largest Medicaid data warehouse in the nation. It is Teradata-based, a leading-edge, hardware and software technology platform that enables the MIS/DSS to store great volumes of data and allow large numbers of users to simultaneously access the data without any deterioration in system performance. As an integrated repository of data that offers the capability for robust queries and analyses, MIS/DSS will be used in a fashion similar to SURS.

4.3 AUDIT APPEALS

EPs and EHs are allowed appeal rights through an administrative hearing process under W&I Code section 14171 (see Section 3.7). As of September 30, 2017, FAB issued audit reports for 60 EHs and DHCS received 30 requests for informal or formal appeal hearings. In these audits, the issues cited as contributing to most overpayments are the improper inclusion of unpaid Medi-Cal bed days, the improper inclusion of psychiatric bed days, and the improper inclusion of administrative bed days in the calculation of EH payments. DHCS has consulted with CMS and has determined that administrative bed days can be included in EH payment calculations, as well as psychiatric and rehabilitation bed days if the beds are paid under CMS's IPPS payment system. In response to this, DHCS is recalculating its auditing findings in these areas. In the case of the first appeal, the administrative law judge decided that it was proper for DHCS auditors to exclude unpaid Medicaid bed days. Two other hearings are pending a decision at this time.

In 2016, the Office of the Inspector General audited 64 eligible hospitals in California, finding approximately $24 million in overpayments. Based on OHITs response to the audit findings, FAB has audited these same hospitals utilizing adjudicated claims data vs. hospital generated schedules. Results have varied in most instances, with some EHs having greater overpayments and, in some instances, underpayments. Consistent with DHCS' response to the OIG audit recommendations and prior discussions with CMS, DHCS will use its own audit findings for the payment adjustments for these hospitals.

4.4 FRAUD AND ABUSE

A&I has lead responsibility for DHCS' Medi-Cal Anti-Fraud program. Various data sources, as previously referenced in Table 14, are utilized to develop risk assessments and profiles which help identify providers whom pose the greatest risk for committing fraud or abuse. Providers meeting these criteria are often prioritized for review and audit. Examples of criteria that would normally identify a provider as a risk for fraud or abuse include, but are not limited to:

- Unrelated investigations of a provider due to improper billing practices, data mining claims patterns irregularities, or whistleblower complaints.
- Manual reviews of uploaded AIU or MU documentation identify evidence of improper modification, alterations, or fabrication of submitted documents.

- Verification of self-certified patient utilization, encounters, charity care charges, or discharges has significant variances to reported numbers with no explanation.
- Review of Medi-Cal claims volume identifies a sudden drop in claim submissions after payments are remitted to the provider.

If, upon completion of a referral, pre-payment, or post payment review, A&I identifies that the providers submissions and representations exhibit misuse/abuse and/or fraudulent activities related to the EHR incentive program, it will make a referral to the IB. The IB will log the case into the Case Tracking System and assign for review by an investigator. The IB will determine whether there is potential misuse or reliable evidence that fraudulent activity has occurred, and refer the case to the State Department of Justice (DOJ) Bureau of Medi-Cal Fraud and Elder Abuse (BMFEA) where there is reliable evidence.

In addition to referrals to IB and the DOJ, when A&I identifies reliable evidence of fraud and/or abuse perpetrated by a provider participating in the Medi-Cal EHR Incentive Program, DHCS withholds or denies EHR incentive payments. Temporary suspensions of providers and payment withholds may also be instituted by A&I.

4.5 A&I CONTINUING DEVELOPMENT

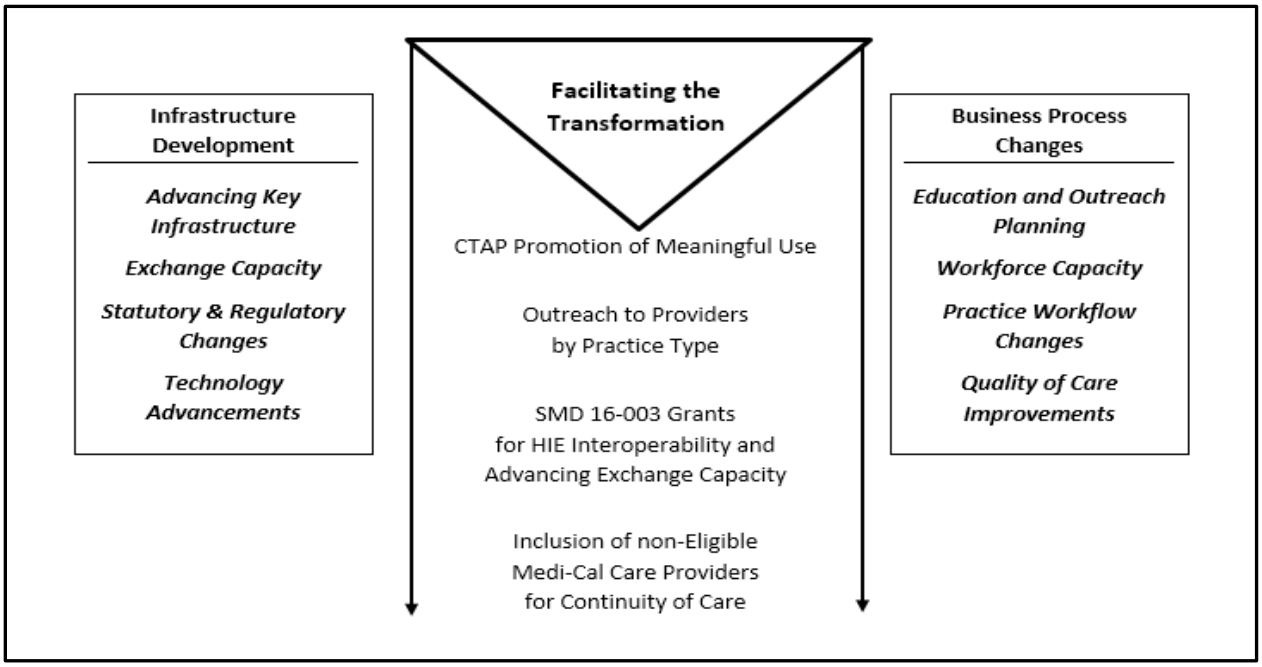
A&I conducts staff webinars and has developed PowerPoint presentations on audit procedures. In addition to TeamMate, working paper templates and audit report templates have been developed to enhance consistency in conducting audits.

A&I monitors the implementation of the EHR audit program along with both the new and previously established audit processes and tools to measure their effectiveness and make modifications and refinements as needed. Audit programs and processes are expanded and modified when requirements are added or revised.

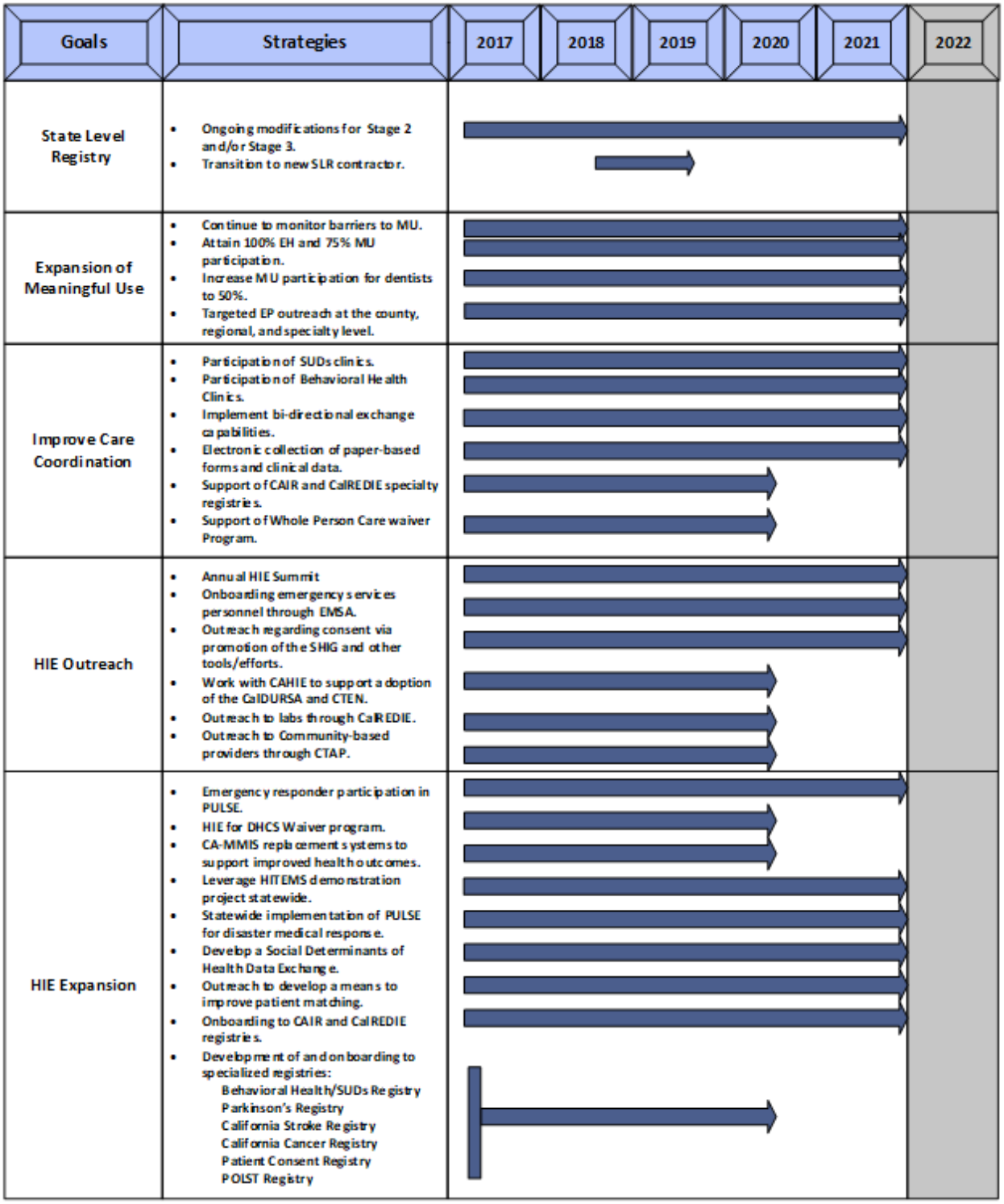
5 CALIFORNIA'S HIT ROADMAP

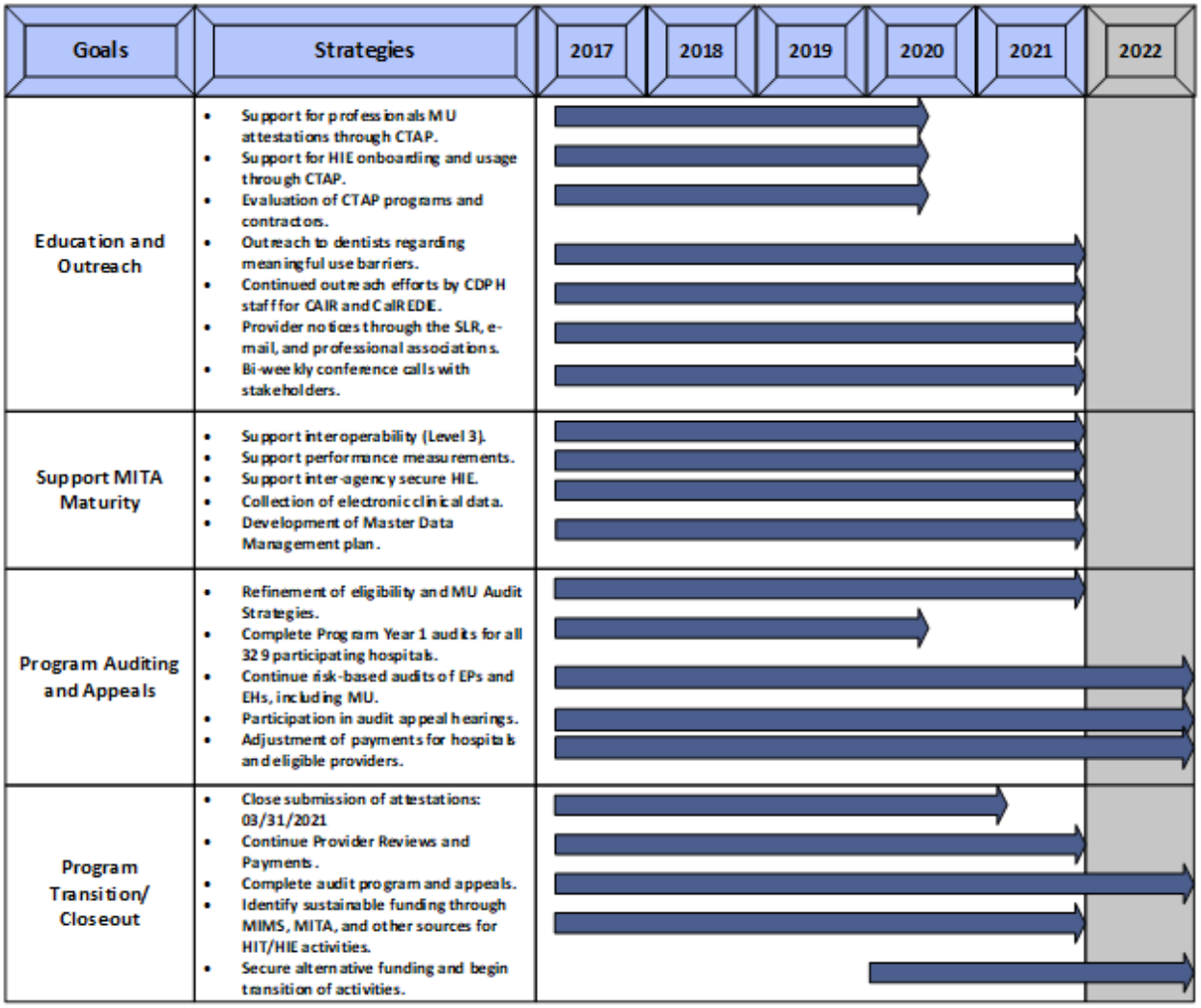
The long-term goals of the Medi-Cal EHR Incentive Program are to improve the quality and efficiency of health care for all Californians. In this section of the SMHP, information about the "as-is" and "to-be" environments are presented in graphical and tabular formats. More detailed information has been presented in prior sections of this document. Table 15 below provides a basic outline for progress in the future.

TABLE 15: TRANSFORMING HIT IN CALIFORNIA



5.1 2017-2022 TIMELINE





5.2 CURRENT AND FUTURE INITIATIVES

The following table presents a synopsis of the state's current and future initiatives. These initiatives encompass a range of efforts, including those related to provider outreach as well as further development of the systems needed to enhance interoperability.

TABLE 16: CURRENT AND FUTURE INITIATIVES

Initiative	Current Status	Future Activity
EHR Incentive Program	The state has closed out the final year for beginning participation in Program Year	The state will continue targeted outreach efforts at the county, regional and specialty level in order to

Initiative	Current Status	Future Activity
	2016 and has now deployed Stage 3 for 2017.	significantly increase the percentage of EPs meeting the various stages of MU. The state will continue to expand the incentive program through statewide HIE and HIO efforts in order to improve interoperability and onboard those Medi-Cal providers that were not eligible to participate in the incentive program, such as substance abuse counselors, behavioral health providers, and other non-hospital care settings. This will enable data sharing across all providers involved in patient care, thus improving overall health.
State Level Registry (SLR) Modifications	The SLR has been operational since the beginning of the program and has been continuously modified to reflect changes to the Final Rule. The SLR is operated by Conduent, the successor to Xerox, whose contract will expire September 2019.	Modifications for Stage 2 and Stage 3 in Program Year 2018 will be implemented as soon as the new regulations have been approved and are effective. The state will continue to use the current vendor through September of 2019 and will transition to other support thereafter for the remainder of the program.
Education and Outreach	The state employs direct emailing, website updates and social media on a regular basis	Due to a number of unavoidable delays in implementing the CTAP program fully after contract

Initiative	Current Status	Future Activity
	to provide incentive program updates. The CTAP program was initiated in 2015 to provide technical support to EPs similar to the previous ONC Regional Extension Program. CTAP contractors support EPs with EHR and HIE milestones, and have assisted more than 3,000 EPs to AIU and 4,000 EPs to MU to date. In 2017, DHCS carried out a survey of dentists who had not returned for MU and distributed MU information specifically for dentists.	award, the state has requested and received a two-year no-cost extension to the program in order to allow the contractors to achieve the milestone goals for most or all of the targeted EPs. The state is employing data analytics to develop targeted lists of EPs with similar attributes that have suspended progression in meeting MU stages in order to design specific information to address their barriers. DHCS will continue to reach out to providers, particularly dentists, to increase their participation in MU. DHCS will conduct a survey of providers participating in the CTAP program to evaluate that program as to how it can become more efficient and effective. CDPH staff will continue outreach efforts to encourage and enroll providers and practices in CAIR and CalREDIE.
California Medicaid Management Information System (CA-MMIS)	CA-MMIS is the legacy system for management of Medi-Cal claims payments and through	CA-MMIS replacement systems will support DHCS' move towards HIE/HIT by improving health outcomes

Initiative	Current Status	Future Activity
	which EHR Incentive Program payments are made. Its replacement, a modular enterprise solution, is currently being procured.	and quality services for Medi-Cal beneficiaries. Bridging the traditional split between the clinical and financial content of health care data requires an integrated, person-centered view of information. The enterprise system will provide a solution that supports unification of the financial and clinical data.
Medicaid Information Technology Architecture (MITA)	DHCS has completed its initial Medicaid Information Technology Architecture (MITA) State Self-Assessment (SS-A) to assess the MITA maturity levels of our Business, Information and Technical Architectures. The Technical Assessment and HIT Roadmap are currently drafted and evolving with progress over time.	The state will continue to update and maintain MITA business processes as the state's HIE/HIT landscape evolves. The DHCS goal is attain MITA Maturity Level 3 across the Business, Information and Technical Architectures by 2020. All new initiatives and projects must be reviewed and approved by the executive level MITA Governance Organization.
Electronic Clinical Data	The state is currently employing a CAASD TAR-free business process based on the receipt of information electronically, including clinical document templates using national standards. Providers participating in the EHR Incentive Program are required to report CQMs and have the capability to do so	DHCS will implement bi-directional exchange capabilities using trust networks for trading partners: HIEs, groups, hospitals, providers, and Medi-Cal beneficiaries to electronically exchange clinical data, including receipt of CQMs for MU. DHCS is advising a community HIE (Redwood

Initiative	Current Status	Future Activity
	electronically from their EHR. California currently only requires CQMs to be reported by attestation. Certain paper-based forms are required from EPs by the state, which could feasibly be incorporated into EHRs for submission.	MedNet) which is developing software that will enable the electronic collection of printed form data into EHR vendor-agnostic format. The first such form is the Staying Healthy Assessment (SHA), a behavioral risk questionnaire required to be administered periodically to all Medi-Cal beneficiaries and stored for clinical use in the medical record.
Health Information Exchange (HIE) and Health Information Organizations (HIO)	The state's HIE landscape is large and complex, consisting of an array of two types of entities. These are either community-based HIO initiatives supported by a number of unaffiliated health care organizations within a geographic service area and connected electronically to public health resources; or, enterprise-based HIOs supported by a single hospital, health system, or integrated delivery network. The HIE landscape in the state is large, complex and continues to evolve. The state's annual HIE Stakeholder Summit was held in November 2017 to provide a venue for discussion of HIE advancement.	The state is investigating the use of enhanced funding as described in SMD #16-003 for onboarding of emergency services personnel, public health providers, pharmacies, laboratories, hospitals, and professionals. In addition to the statewide and regional proposals for HIE interoperability currently before the department, DHCS is also examining its 2017 Strategy for Quality Improvement in Health Care and the department's 1115 Waiver (Medi-Cal 2020 Waiver) for opportunities to further enhance their strategies with the available HIE infrastructure and onboarding funding. The state will continue with annual HIE Stakeholder Summits in the future.

Initiative	Current Status	Future Activity
Emergency Medical Services (EMS) Data Exchange	EMS provides entry into the emergency medical care system with response to medical and trauma emergencies. ONC provided grant funding for a demonstration project to develop Health Information Technology for Emergency Medical Services (HITEMS).	Leveraging the HITEMS demonstration project, the state is seeking funding for statewide implementation of HITEMS, developing interoperability among diverse HIE platforms. The system will support patient identification and bi-directional transmission of health information between emergency services personnel and hospital emergency medical personnel.
Patient Matching: Associating patients with their health records	The size and complexity of health care delivery in California is not conducive to a Master Patient Index and the issue of matching patients with their health records, and only their health records, persists.	DHCS will be working with stakeholders to identify a means to improve patient matching and the appropriate association of health information with patients that can be used by community HIOs, health systems, and state agencies. Given the success of a previously ONC-funded pilot project by EMSA, DHCS has requested funding via IAPD-U for implementation of a statewide Patient Unified Lookup System for Emergencies (PULSE) for disaster medical response.
Public Health Initiatives	California's Department of Public Health (CDPH) has implemented the California Immunization Registry (CAIR)	With the most recent 90/10 funding approved by CMS, CDPH will now engage in onboarding of

Initiative	Current Status	Future Activity
	and California's Reportable Disease Information Exchange (CalREDIE) which support MU within the EHR incentive program. Implementation was supported in part by 90/10 funding through the incentive program.	providers to the CAIR system to expand it usage; and a CalREDIE Electronic Case Reporting (eCR) project will allow health care providers and organizations to comply with California's public health disease reporting requirements through an automated, secure process.
Parkinson's Disease (PD) Registry	California currently has Regional Caregiver Resource Centers (CRCs) to provide services to those families with caregivers providing support to family members with Parkinson's Disease.	The state intends to seek funding for the development of a Parkinson's Disease (PD) Specialized Registry that will provide a confidential database containing information about the extent and characteristics of PD in California. The PD Registry will facilitate MU Stage 2 and 3 requirements.
California Stroke Registry (CSR)	California currently has Regional Caregiver Resource Centers (CRCs) to provide services to those families with caregivers providing support to family members with cognitive issues associated with stroke.	The state intends to seek funding for the development of a Stroke Specialized Registry to monitor the quality of acute stroke care across clinical settings, including pre-hospital care provided through exchange of real-time information between emergency medical services (EMS) and in-hospital care personnel. The Stroke Registry will facilitate

Initiative	Current Status	Future Activity
		MU Stage 2 and 3 regulations.
California Cancer Registry (CCR)	The CCR collects information about most types of cancers diagnosed in California. The CCR has expanded their technical capacity to receive physician reports to meet MU Stage 2 requirements.	The CCR plans to coordinate with the San Diego Beacon Community to expand electronic health information exchange through the San Diego Health Connect HIE. Areas of focus within the San Diego Beacon Community include coordination with the Beacon, Education, Analytic and Collaboration Hub (BEACH) to integrate and exchange diagnostic and clinical data relative to the hospital cancer case abstract for legislative mandated reporting.
Patient Consent Registry	While patient consent must be obtained for health information exchange, there is currently no statewide registry for managing the varying levels of consent for medical, behavioral and substance use disorder information.	DHCS plans to seek funding for the development of a specialized registry in which consent information can be stored and easily accessed by HIEs and other entities that may require sharing of health information to better inform treatment plans.
Physician Orders for Life-Sustaining Treatment (POLST) Registry	POLST is a voluntary record of a patient's treatment wishes to inform actionable medical orders, especially in end-of-life situations. Currently, the California POLST eRegistry pilot is underway in Contra Costa County and San Diego.	DHCS will seek funding for the development of a statewide bi-directional POLST registry that would be accessible not only to acute care but long-term care facilities, including skilled nursing facilities and hospice. DHCS is interested in supporting the

Initiative	Current Status	Future Activity
		development of a unified approach to accessing POLST information.
Social Determinants of Health	While there is a growing body of research indicating that the social determinants of health (income, education, food, employment, transportation, personal safety, housing, etc.) are the primary drivers of long-term health improvement, there is no current method of exchanging these data elements in the state.	The state intends to seek funding to establish a Social-Health Information Exchange (S-HIE), introducing social determinants of health into HIE and EHRs to augment whole person care. Supplementary data sources would include data from social services agencies, housing authorities, mental and behavioral health facilities, correctional facilities, schools, census data, and public health data. These data, available to the EP, will inform targeted referral entities, such as pharmacies, physical therapy, legal, financial, patient navigation, etc. This enhanced view of the totality of the patient's needs will better inform the EP in meeting transitions of care and continuity of care core measures.
Behavioral Health Data Exchange	Privacy and security rules for consent, use, disclosure and reporting are more stringent for behavioral health care treatment. The data is generally retained separately from general health care data, which	In order to facilitate improvement in the quality of care, the state intends to develop a behavioral health information exchange (BHIE) which will address this unique situation by utilizing a hybrid federated/repository

Initiative	Current Status	Future Activity
	can result in disjointed care for patients.	model of data sharing to ensure the consumer record is complete and confidential.
Substance Use Disorder Data Exchange	Privacy and security rules for consent, use, disclosure and reporting are more stringent for substance use disorder treatment. The data is generally retained separately from general health care data, which can result in disjointed care for patients.	In order to facilitate improvement in the quality of care, the state intends to develop a substance use disorder information exchange which will address this unique situation by utilizing a hybrid federated/repository model of data sharing to ensure the consumer record is complete and confidential.

5.3 BEYOND 2021

Like most states, California understands the challenges in continued funding and is considering ways to expand health information technology after the Medi-Cal EHR Incentive Program sunsets in 2021. Given the complexity of both health care delivery and the HIE landscape in California, the state is investigating several methods for statewide expansion of interoperability as well as enhancements to the current HIE infrastructure to facilitate healthcare delivery.

DHCS intends to examine sustainability models capable of leveraging the progress made by the Medi-Cal EHR Incentive Program. These models will include identification of specific areas of health needing quality improvement, such as programs within the state's Quality Strategic Plan and the 1115 Waiver, Medicaid 2020 Waiver. This could be accomplished through more efficient use of CQM data gathered electronically.

Future activities will include continued support of MMIS and MITA, the collection of CQMs electronically, and efforts related to interoperability. As the state identifies various systems which require further development or replacement, our intention is to engage with these efforts in support of HIE/HIT and further improve health outcomes and quality services for Medi-Cal beneficiaries. It is through efforts such as these that the state will seek to further the benefits and progress made to date in California.