California Health Benefits Review Program

Analysis of California Assembly Bill (AB) 2507 Telehealth: Access

A Report to the 2015–2016 California State Legislature

April 11, 2016

CALIFORNIA
HEALTH BENEFITS REVIEW PROGRAM

Key Findings:

Analysis of California Assembly Bill (AB) 2507 Telehealth Access

Summary to the 2015–2016 California State Legislature, April 2016

CALIFORNIA HEALTH BENEFITS REVIEW PROGRAM

AT A GLANCE

Telehealth is broadly defined by the Health Resources and Services Administration as "the use of telecommunications and information technologies to share information, and provide clinical care, education, public health, and administrative services at a distance." State law currently recognizes two forms of telehealth: live video and store-and-forward (capture of medical information and transfer to providers for later review).

Assembly Bill (AB) 2507 (introduced February 2016) would formally recognize telephone, e-mail, and synchronous text and chat conferencing as telehealth modalities. AB 2507 also requires reimbursement parity to equivalent in-person visits and allows for cost-sharing at least as favorable to the enrollee as equivalent in-person visits.

- **Enrollees covered.** CHBRP estimates that in 2017, all 25.2 million Californians with state-regulated coverage would be subject to AB 2507.
- **Impact on expenditures.** CHBRP estimates that in the first year postmandate, AB 2507 would increase overall health expenditures (premiums and out-of-pocket expenses) by between $96.8 million (0.07% change) and $402.6 million (0.28% change), depending on the rate of adoption of covered telehealth services.
  - CHBRP estimates premium increases may range from $0.24 to $1.33 PMPM for DMHC-regulated plans, depending on the rate of adoption. Or, from $0.25 to $1.09 for CDI-regulated policies, depending on the rate of adoption.
  - CHBRP assumes that out-of-pocket expenses would increase by between $15.5 million (0.10%) and $64.8 million (0.40%), depending on the adoption of telehealth services.
- **Essential health benefits.** AB 2507 would not appear to exceed EHBs. Services would be delivered in a different way (via telehealth), rather than be considered a new benefit.
- **Medical effectiveness.** Advances in technology are outpacing the publication of studies on these technologies, limiting the research literature on telehealth modalities. On the basis of the existing literature, CHBRP concludes:
  - **Live video:** There is a preponderance of evidence that care provided by live video is at least as effective as care provided in person for both physical and mental health conditions. In particular, there is clear and convincing evidence that live video is equivalent to in person care for both mental health services and dermatology.
  - **Store-and-forward:** There is a low preponderance of evidence that medical care provided by store-and-forward is at least as effective as medical care provided in person for both physical and mental health conditions.
  - **Telephone:** The studies of the effect of telephone consultations on subsequent utilization are inconsistent; therefore, the evidence that medical care provided by telephone compared to medical care provided in person is ambiguous.
  - **E-mail, and text or chat:** There is insufficient evidence to determine whether services provided by synchronous text and chat are as effective as medical care provided in person.
- **Benefit coverage.** Currently, CHBRP estimates that 78% of enrollees in state-regulated health insurance have telehealth coverage for phone, 76% have coverage for e-mail, and text or chat, whereas 91% have coverage for live video and store-and-forward.
- **Utilization.** Postmandate, CHBRP estimates that between 3.75% and 15% of all visits would be delivered via telehealth using a low adoption and high adoption scenario.

BILL SUMMARY

AB 2507 would further refine the state's definition of telehealth to include live video, store-and-forward transfers, telephone, e-mail, and synchronous text or chat conferencing. The current definition includes synchronous interactions and store-and-forward interactions. Unlike previous telehealth bills, AB 2507 is not limited to a certain type of visit (e.g., evaluation and management). The bill would require reimbursement parity for telehealth visits as compared to equivalent visits in-person and allow for cost sharing at least as favorable to the enrollee as equivalent in-person visits. AB 2507 is not limited in scope to established patients, and may apply to any health care provider licensed by the Business and Professions Code. Patients must consent to receiving telehealth services via verbal, written, or digital consent. The proposed bill also adds new language indicating that the delivery of telehealth services should be "physician- or practitioner-guided and patient-preferred." The bill indicates that a provider cannot require the use of telehealth if a patient prefers to receive treatment in person.

CONTEXT FOR BILL CONSIDERATION

Technology: According to a 2013 survey from the California Public Policy Institute, most Californians (86%) use the Internet at least occasionally, an increase of 21 percentage points since 2000. Sixty-nine percent of Californians have high-speed broadband access at home, but differences in access are apparent by income, education, race, ethnicity, and geographic location. Nearly 92% of Californians report having a cell phone, and 58% have a smart phone, with younger age groups (i.e., 18–34 years) more likely to use a smart phone. Smart phone usage also increases with higher education and income levels. Thirty-two percent of Californians use the Internet to contact a health insurance provider or medical professional (32%), whereas over half (55%) seek out medical information online.

Telehealth: As stated, in addition to the telehealth modalities currently recognized by state law (live video and store-and-forward), AB 2507 would also formally recognize telephone, e-mail, and synchronous text and chat conferencing as billable telehealth modalities. CHBRP analyzed the potential impact of AB 2507 related to these telehealth modalities:

- Live video (real-time interaction via video communications);
- Store-and-forward (capture and secure transmission of medical information, such as photo or x-rays, for review by a health care provider at a later time);
- Telephone; and
- E-mail, and synchronous text and chat

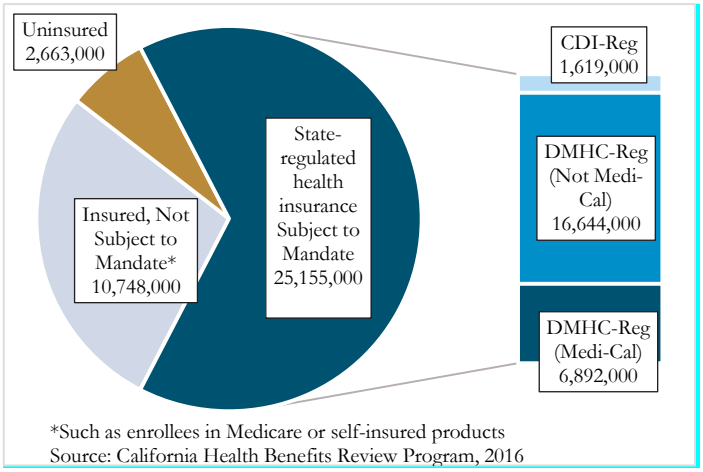
Medical Effectiveness

The evidence related to medical effectiveness of telehealth varies by modality. The scope of AB 2507 applies to virtually all diseases and conditions. The telehealth literature generally focuses on a limited number of conditions (e.g., dermatology, neurology, psychiatry/psychology) and may not be generalizable to other conditions. Furthermore, a major challenge in assessing medical effectiveness of telehealth is the speed of technological advancements in the field, which often outpaces the research literature about these technologies.

- **Live video:** There is clear and convincing evidence that these modalities are at least as effective as in-person care for both mental health services and dermatology. However, this evidence may not be generalizable to live video usage in other specialty areas.
- **Store-and-forward:** For the areas studied (e.g., in dermatology), there is a low preponderance of evidence that medical care provided by store-and-forward is at least as effective as medical care provided in person. The evidence suggests that store-and-forward technology reduces wait times for specialty outpatient care.
- **Telephone:** For the areas studied (e.g., mental health), the studies of the effect of telephone consultations on subsequent utilization are inconsistent. Therefore, the evidence that medical care provided by telephone compared to medical care provided in person is ambiguous. Furthermore, it is unknown whether diagnoses made using these technologies are as accurate as diagnoses made during in-person visits.
- **E-mail, text and chat:** There is insufficient evidence to determine whether services provided by synchronous text and chat are as effective as medical care provided in person. CHBRP notes that the absence of evidence does not mean there is no effect; it means the effect is unknown.

Benefit Coverage, Utilization, and Cost

Figure 1. Health Insurance in CA and AB 2507



AB 2507 would apply to all state-regulated insurance (as shown in Figure 1), including DMHC–Medi-Cal managed care.

CHBRP estimates postmandate usage of telehealth services with a low and high adoption scenario, ranging from 3.75% of total visits delivered via telehealth postmandate to 15% of total visits delivered via telehealth postmandate.

CHBRP estimates that in the first year postmandate, AB 2507 would increase overall health expenditures (premiums and out-of-pocket expenses) by between $96.8 million (0.07% change) and $402.6 million (0.28% change).

CHBRP estimates premium increases to range from $0.24 to $1.33 per member per month (PMPM) for DMHC-regulated plans, depending on the rate of adoption. Increases range from $0.25 to $1.09 PMPM for CDI-regulated policies, depending on the rate of adoption.

CHBRP assumes that out-of-pocket expenses would increase by between $15.5 million (0.10%) and $64.8 million (0.40%), depending on the adoption of telehealth services.

Public Health

CHBRP estimates that, postmandate, patient experience would improve as providers increase their e-mail and telephone responses to patient-initiated inquiries. The improvement is partly attributable to increased access to (specialty or primary) care, as well as improved convenience for patients, such as reduced wait times for some visits.

For mental health and dermatology, evidence indicates that outcomes for live videoconferencing and store-and-forward were equivalent to in-person care; however these results may not be generalizable to other conditions. CHBRP estimates that utilization would increase between 86,000 to 364,000 live videoconferencing encounters and between 1 million to 4.4 million store-and-forward encounters. For those newly covered enrollees seeking mental health and dermatologic care via telehealth, CHBRP estimates that positive outcomes could occur for some with these conditions; however, the public health impact for other conditions is unknown.

In the case of AB 2507, key social determinants of health that may be affected by the mandate include transportation, rural living, and socioeconomic characteristics (age, race/ethnicity, income, language).

CHBRP estimates that, postmandate, travel costs and travel time would likely decrease for some urban and rural enrollees using newly-covered, patient-initiated telehealth services. As a result, some enrollees with transportation challenges may have better outcomes because they would no longer delay or avoid in-person visits by favoring telephonic or electronic communications with physicians; however, CHBRP is unable to quantify the exact impact due to a lack of data.

It is unknown whether AB 2507 would reduce disparities in access to care by ameliorating the effects of certain social determinants of health (transportation and geography). As noted, barriers to care could be reduced for some; however, AB 2507 also could exacerbate disparities in access to care for some enrollees with certain socioeconomic characteristics (e.g., age, language, income, etc.) that impede the use of telehealth modalities.

Likewise, it is unknown whether patient-initiated telehealth services would result in harms to patients. Note that an unknown finding could result in a positive, negative, or no impact.

Long-Term Impacts

CHBRP assumes that technology will continue to drive changes in telehealth. This includes increased penetration of electronic health records (EHR), associated patient portals and office management systems; increased use of mobile and remote communication devices (such as cellular telephones and or medical devices) and their applications; increased broadband coverage, which not only allows better Internet coverage, but also easier and more rapid transfer of large data files; and increased demand for these types of services from consumers, insurers, and providers. CHBRP projects that this trend, along with changes in reimbursement, would likely increase use of telephone, e-mail, and other telehealth services between patients and providers; however, the impact of telehealth on health outcomes requires further study.

The additional costs of reimbursing live video, store-and-forward transfers, telephone, e-mail, and synchronous text or chat conferencing are likely to increase with health care inflation and increased use of services. Although preliminary studies on telehealth show promise in specific populations, such as senior patients in assisted living centers, to date there are no widespread, peer-reviewed studies that indicate telehealth will reduce emergency department visits or inpatient stays directly. Given that certain telehealth visits may result in follow-up care or repeat visits for someone with acute health needs, it is also unclear whether or not telehealth might increase certain types of in-person visits at the same time.

A Report to the California State Legislature

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Telehealth: Access

April 11, 2016

California Health Benefits Review Program
1111 Broadway, Suite 1400
Oakland, CA 94607
Tel: 510.287.3876
Fax: 510.763.4253
www.chbrp.org

ABOUT CHBRP

The California Health Benefits Review Program (CHBRP) was established in 2002 to provide the California Legislature with independent analysis of the medical, financial, and public health impacts of proposed health insurance benefit mandates and repeals, per its authorizing statute. The state funds CHBRP through an annual assessment on health plans and insurers in California.

An analytic staff in the University of California's Office of the President supports a task force of faculty and research staff from several campuses of the University of California to complete each CHBRP analysis. A strict conflict-of-interest policy ensures that the analyses are undertaken without bias. A certified, independent actuary helps to estimate the financial impact, and content experts with comprehensive subject-matter expertise are consulted to provide essential background and input on the analytic approach for each report.

More detailed information on CHBRP's analysis methodology, as well as all CHBRP reports and publications are available at www.chbrp.org.

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Table 1. AB 2507 Impacts on Benefit Coverage, Utilization, and Cost in 2017

	Premandate	Postmandate	Increase/ Decrease	Change Postmandate
Benefit Coverage				
Total enrollees with health insurance subject to state-level benefit mandates (a)	25,155,000	25,155,000	0	0%
Total enrollees with health insurance subject to AB 2507	25,155,000	25,155,000	0	0%
Number of enrollees with coverage for phone telehealth services	19,524,587	25,155,000	5,630,413	29%
Number of enrollees with coverage for email, synchronous text and chat conferencing telehealth services	19,198,940	25,155,000	5,956,060	31%
Number of enrollees with coverage for live videoconferencing telehealth services	23,013,187	25,155,000	2,141,813	9%
Number of enrollees with coverage for store-and-forward telehealth services	23,013,187	25,155,000	2,141,813	9%
Percentage of enrollees with coverage for phone telehealth services	78%	100%	22%	29%
Percentage of enrollees with coverage for email, synchronous text and chat conferencing telehealth services	76%	100%	24%	31%
Percentage of enrollees with coverage for live videoconferencing telehealth services	91%	100%	9%	9%
Percentage of enrollees with coverage for store-and-forward telehealth services	91%	100%	9%	9%
Utilization and Cost (Low Adoption Scenario)				
Phone telehealth services utilization (Units Per 1,000 Covered Enrollees)	0.59	43.03	42.44	> 1000%
Email, synchronous text and chat conferencing telehealth services utilization (Units Per 1,000 Covered Enrollees)	0.22	16.19	15.97	> 1000%
Live videoconferencing telehealth services utilization (Units Per 1,000 Covered Enrollees)	0.06	3.47	3.41	> 1000%
Store-and-Forward telehealth services utilization (Units Per 1,000 Covered Enrollees)	0.68	42.06	41.38	> 1000%
In-person visits utilization (Units Per 1,000 Covered Enrollees)	2,749.41	2,687.68	-61.73	-2%
Average per-unit cost of phone telehealth services	$38.83	$93.16	$54.34	140%
Average per-unit cost of email, synchronous text and chat conferencing telehealth services	$51.73	$93.16	$41.44	80%
Average per-unit cost of live videoconferencing telehealth services	$145.43	$125.80	-$19.63	-13%
Average per-unit cost of store-and-forward telehealth services	$108.34	$135.20	$26.86	25%
Average per-unit cost of in-person visits	$132.05	$132.05	$0.00	0%
Utilization and Cost (High Adoption Scenario)				
Phone telehealth services utilization (Units Per 1,000 Covered Enrollees)	0.59	180.36	179.77	> 1000%
Email, synchronous text and chat conferencing telehealth services utilization (Units Per 1,000 Covered Enrollees)	0.22	67.84	67.62	> 1000%
Live videoconferencing telehealth services utilization (Units Per 1,000 Covered Enrollees)	0.06	14.53	14.47	> 1000%
Store-and-Forward telehealth services utilization (Units Per 1,000 Covered Enrollees)	0.68	176.30	175.62	> 1000%
In-person visits utilization (Units Per 1,000 Covered Enrollees)	2,749.41	2,487.11	-262.31	-10%

Average per-unit cost of phone telehealth services	$38.83	$93.16	$54.34	140%
Average per-unit cost of email, synchronous text and chat conferencing telehealth services	$51.73	$93.16	$41.44	80%
Average per-unit cost of live videoconferencing telehealth services	$145.43	$125.80	-$19.63	-13%
Average per-unit cost of store-and-forward telehealth services	$108.34	$135.20	$26.86	25%
Average per-unit cost of in-person visits	$132.05	$132.05	$0.00	0%
Expenditures (Low Adoption Scenario)				
Private Employers for group insurance	$64,837,024,000	$64,866,263,000	$29,239,000	0.045%
CalPERS HMO employer expenditures (c)	$4,756,143,000	$4,758,181,000	$2,038,000	0.043%
Medi-Cal Managed Care Plan expenditures (d)	$16,670,700,000	$16,697,262,000	$26,562,000	0.159%
Enrollees for individually purchased insurance	$22,073,116,000	$22,087,047,000	$13,931,000	0.063%
Individually Purchased – Outside Exchange	$10,875,864,000	$10,882,959,000	$7,095,000	0.065%
Individually Purchased – Covered California	$11,197,252,000	$11,204,088,000	$6,836,000	0.061%
Enrollees with group insurance, CalPERS HMOs, Covered California, and Medi-Cal Managed Care (a) (b)	$20,496,488,000	$20,505,992,000	$9,504,000	0.046%
Enrollee out-of-pocket expences for covered benefits (deductibles, copayments, etc.)	$16,248,327,000	$16,263,870,000	$15,543,000	0.096%
Enrollee expenses for noncovered benefits (e)	*Unknown (f)*	$0	$0	*Unknown*
	$145,081,798,000	$145,178,615,000	$96,817,000	0.067%
Expenditures (High Adoption Scenario)				
Private Employers for group insurance	$64,837,024,000	$64,958,777,000	$121,753,000	0.188%
CalPERS HMO employer expenditures (c)	$4,756,143,000	$4,764,637,000	$8,494,000	0.179%
Medi-Cal Managed Care Plan expenditures (d)	$16,670,700,000	$16,780,765,000	$110,065,000	0.660%
Enrollees for individually purchased insurance	$22,073,116,000	$22,131,054,000	$57,938,000	0.262%
Individually Purchased – Outside Exchange	$10,875,864,000	$10,905,436,000	$29,572,000	0.272%
Individually Purchased – Covered California	$11,197,252,000	$11,225,618,000	$28,366,000	0.253%
Enrollees with group insurance, CalPERS HMOs, Covered California, and Medi-Cal Managed Care (a) (b)	$20,496,488,000	$20,536,049,000	$39,561,000	0.193%
Enrollee out-of-pocket expences for covered benefits (deductibles, copayments, etc.)	$16,248,327,000	$16,313,089,000	$64,762,000	0.399%
Enrollee expenses for noncovered benefits (e)	*Unknown (f)*	$0	$0	*Unknown*
	$145,081,798,000	$145,484,371,000	$402,573,000	0.277%

Source: California Health Benefits Review Program, 2016.

Notes: (a) This population includes persons with privately funded and publicly funded (e.g., CalPERS HMOs, Medi-Cal Managed care Plans) health insurance products regulated by DMHC or CDI. Population includes enrollees aged 0 to 64 years and enrollees 65 years or older covered by employment sponsored insurance.

(b) Premium expenditures by enrollees include employee contributions to employer-sponsored health insurance and enrollee contributions for publicly purchased insurance.

(c) Of the increase in CalPERS employer expenditures, about 56.7%, would be state expenditures for CalPERS members who are state employees or their dependents.

(d) Does not include enrollees in COHS.

(e) Includes only those expenses that are paid directly by enrollees to providers for services related to the mandated benefit that are not currently covered by insurance. In addition this only includes those expenses that will be newly covered, post-mandate. Other components of expenditures in this table include all health care services covered by insurance.

(f)The amount of enrollee expenses for noncovered telehealth benefits premandate is unknown.

Key: CalPERS HMOs = California Public Employees' Retirement System Health Maintenance Organizations; CDI = California Department of Insurance; DMHC = Department of Managed Health; COHS = County Operated Health Systems.

POLICY CONTEXT

The California Assembly Committee on Health has requested that the California Health Benefits Review Program (CHBRP)[1] conduct an evidence-based assessment of the medical, financial, and public health impacts of AB 2507 Telehealth Access.

If enacted, AB 2507 would affect the health insurance of approximately 25.2 million enrollees (65.2% of all Californians). This represents 100% of the 25.2 million Californians who will have health insurance regulated by the state that may be subject to any state health benefit mandate law — health insurance regulated by the California Department of Managed Health Care (DMHC) or the California Department of Insurance (CDI). If enacted, the law would affect the health insurance of enrollees in DMHC-regulated plans and/or CDI-regulated policies, with no known exemptions.

Bill-Specific Analysis of AB 2507, Telehealth Access

Bill Language

AB 2507 would further refine the state's definition of telehealth from "synchronous interactions and asynchronous store-and-forward transfers" to "synchronous interactions and asynchronous store-and forward-transfers, including, but not limited to, video communications, telephone communications, e-mail communications, and synchronous text or chat conferencing." The bill would require reimbursement parity for telehealth visits as compared to equivalent visits in-person or "by some other means," and allow for cost-sharing at least as favorable to the enrollee as equivalent visits in-person or "by some other means." Unlike previous telehealth bills CHBRP has analyzed (AB 1771[2] and SB 289[3]), this bill is not limited in scope to established patients. AB 2507 may apply to any billable health care provider licensed by the Business and Professions Code. Patients must consent to receiving telehealth services via verbal, written or digital consent. The proposed bill also adds new language indicating that a provider cannot require the use of telehealth if a patient prefers to receive treatment in person. The new language indicates that the delivery of telehealth services should be "physician- or practitioner-guided and patient-preferred." The proposed bill does not require any providers to offer telehealth modalities to their patient, but codifies that if a provider does offer the service in one of the five modalities, it will be reimbursed and covered by insurers. Requiring that carriers pay for telehealth services is not specifically a change in benefits, but rather a change in the settings where benefits can be delivered.

AB 2507 would amend: Section 2290.5 of the Business and Professions Code, Section 1374.13 of the Health and Safety Code, and Section 10123.85 of the Insurance Code. The full text of AB 2507 can be found in Appendix A.

Analytic Approach and Key Assumptions

Based on the bill language, this report focuses on four groups of telehealth modalities:

- Video communications (live video, synchronous "real time"): uses two-way, interactive video to connect users;

[1] CHBRP's authorizing statute is available at www.chbrp.org/docs/authorizing_statute.pdf.
[2] Available at: http://chbrp.ucop.edu/index.php?action=read&bill_id=157&doc_type=3.
[3] Available at: http://chbrp.ucop.edu/index.php?action=read&bill_id=173&doc_type=3.

- Asynchronous store-and-forward (store and forward): captures medical information (e.g. photo, recording) and transmits information to a health care provider for later review;
- E-mail communication and synchronous text or chat conferencing;
- Telephone communication.

For the purpose of this analysis, CHBRP groups e-mail and synchronous text and chat together due to current standards of coding and billing for electronic communication. Although the bill mentions 5 modalities, for the purposes of this analysis CHBRP groups them into 4 modality categories as described above. These modalities are further described in the *Background on Telehealth* section.

Types of visits

Unlike in previous telehealth bills introduced in California, AB 2507 does not limit to a certain type of visit (e.g., evaluation and management) and is not limited to established patients.

For the purposes of this analysis, CHBRP focused on patient-initiated telehealth visits based on the bill language. CHBRP assumes that telehealth is used primarily for acute needs (including acute needs associated with chronic conditions) that require the patient to seek care rather than a provider contacting a patient for evaluation, diagnosis, treatment, or management. This report excludes remote patient monitoring and telephonic disease management from consideration, because these services would likely be provided by a third party disease management vendor or because the services typically do not rise to the level of a billable office visit.[4] These protocol-based disease management products are typically offered by nurses and are paid for by health plans, insurance carriers, or other payers on a per call or per member per month basis. However, CHBRP anticipates that any services focused on managing chronic disease being delivered by billable providers in-person or via telephone are subject to AB 2507 and are at least partially captured in claims data.

CHBRP assumes that postmandate telehealth visits include visits that replace existing in-person visits (substitute) and new (supplemental) visits that would not have taken place in-person or would not have been billed as a telehealth visit.

- Substitute visits replace current in-person visits with a telehealth visit.
- Supplemental visits would occur in addition to current in-person visits. Supplemental visits would not have been provided if not for the use of telehealth and includes both services that: (1) would previously not have been delivered in person due to distance, inconvenience, and time; and (2) services that physicians are already providing via telehealth modalities, but were previously not billed or reimbursed because they were not covered, there were barriers to reimbursement, lack of knowledge about reimbursement, or not reimbursed at all (e.g. denied).

Types of providers

Although the bill language indicates that the bill applies to any licensed health care professional in the state, this analysis focuses on physicians and billable non-physician providers (nurse practitioner, physician assistant under physician supervision, mental health professional), or other providers that are

[4] For additional information about the types of CPT codes included in CHBRP's analysis, please see information provided in Appendix C.

delivering a service, with a supervising physician or non-physician provider billing for the service to indicate the cost impact of the bill.

Interaction With Existing Requirements

AB 2507 would amend: Section 2290.5 of the Business and Professions Code, Section 1374.13 of the Health and Safety Code, and Section 10123.85 of the Insurance Code. AB 2507 may interact and align with the following state and federal provisions.

State Requirements

California law and regulations

"Telehealth has been broadly defined as “the use of telecommunications and information technologies to share information, and provide clinical care, education, public health, and administrative services at a distance” (HRSA, 2015).

Currently, California law defines telehealth in Section 2290.5 of the Business and Professions Code as “the mode of delivering health care services and public health via information and communication technologies to facilitate the diagnosis, consultation, treatment, education, care management, and self-management of a patient's health care while the patient is at the originating site and the health care provider is at a distant site. The originating site is defined in the Business and Professions Code as “a site where a patient is located at the time health care services are provided via a telecommunications system or where the asynchronous store and forward service originates.”[5] California law does not specifically preclude the originating site from being a patient’s home or other establishment. Telehealth facilitates patient self-management and caregiver support for patients and includes synchronous interactions and asynchronous store-and-forward transfers.”[6] State regulations define telehealth as “the ability of physicians and patients to connect via technology other than through virtual interactive physician/patient capabilities, especially enabling rural and out-of-area patients to be seen by specialists remotely.”[7]

As mentioned, existing law defines two modalities of telehealth: synchronous interactions and asynchronous store-and-forward transfers. Although the definition of telehealth under current law (“information communication technologies”) does not exclude telephone, e-mail, or text and chat, these modalities are also not explicitly included. Similarly, California’s existing definition of telehealth does not exclude evolving methods of telehealth, such as remote patient monitoring or mobile health, nor does it explicitly include those methods. Remote patient monitoring utilizes devices to store or transmit physiological data for provider review to enhance chronic disease management (e.g., blood pressure and blood glucose readings for patients with diabetes) (NIH, 2016). Mobile health (or “mHealth”) “is the use of mobile and wireless devices to improve health outcomes, healthcare services and health research” (NIH, 2016).

California’s Telehealth Advancement Act of 2011 (AB 415) became law January 1, 2012. Among several changes, the law updated legal definitions of telehealth, removed restrictions limiting where telehealth services could take place, expanded relevant providers to include all state-licensed health care providers, and allowed for patient verbal consent in addition to written for use of telehealth services (CCHP, 2015).

[5] BPC 2290.5(a)(4).
[6] BPC 2290.5.
[7] CA Code of Reg. Title 10 Sec. 6410.

See Table 2 for a description of California's telehealth policy and proposed policies across telehealth modalities.

There are state laws in place related to reimbursement for certain telehealth modalities (store-and-forward[8] and live video[9]) for Medi-Cal and private payers. Medi-Cal reimburses for telehealth under specific circumstances. Medi-Cal reimburses for live video and does not limit to certain specialties. For store-and-forward, Medi-Cal reimburses in teledermatology, teledentistry, and teleophthalmology. The program does not reimburse for phone, e-mail, or fax.[10] Subject to contract terms and conditions, private payers in California cannot require in-person contact before payment for covered telehealth (CCHP, 2016).[11] To date, no law in the state requires reimbursement parity with equivalent in-person services.

Table 2. Evolution of California's Telehealth Policy for Specific Modalities

	Live Videoconferencing	Asynchronous Store-and-Forward	Telephone/E-mail	Text and Chat
SB 1665 (1996)	Included in telehealth definition, but does not require coverage	Not explicitly included in telehealth definition	Excluded from definition of telehealth (a)	Not explicitly included in telehealth definition
AB 415 (2011)	Included in telehealth definition, but does not require coverage	Included in telehealth definition, but does not require coverage	Not explicitly included in or excluded from definition of telehealth	Not explicitly included in telehealth definition
AB 1771, proposed, not enacted (2014)	Requires coverage/payment, and reimbursement parity with in-person visits for patient-initiated visits among established patients only	Requires coverage/payment, and reimbursement parity with in-person visits for patient-initiated visits among established patients only	Requires coverage/payment, and reimbursement parity with in-person visits for patient-initiated visits among established patients only	Not explicitly included in telehealth definition
SB 289, proposed, not enacted (2015)	Requires coverage/payment	Requires coverage/payment	Requires coverage/payment	Not explicitly included in telehealth definition
AB 2507, proposed (2016)	Requires coverage and reimbursement parity with equivalent in-person visits	Requires coverage and reimbursement parity with equivalent in-person visits	Requires coverage and reimbursement parity with equivalent in-person visits	Requires coverage and reimbursement parity with equivalent in-person visits

Source: CHBRP, Review of California's existing laws.
Notes: (a) SB 922 (bill author Thompson, 1997) clarified exclusion of telephone and fax from telehealth.
AB 1771 (bill author Perez, 2014), as introduced, would have required reimbursement for live videoconference, store-and-forward, and telephone/e-mail visits with physicians.

[8] CA Business & Professions Code Sec. 2290.5, CA Welfare & Institutions Code Sec. 14132.725.
[9] CA Health & Safety Code Sec. 1374.13. CA Welfare & Institutions Code Sec. 14132.72.
[10] CA Department of Health Care Services. Medi-Cal Part 2 General Medicine Manual. Telehealth. Pg. 5. (Dec. 2013).
[11] CA Health & Safety Code Sec. 1374.13.

Similar requirements in other states

In 2015, state legislatures in 42 states introduced over 200 telehealth-related bills (CCHP, 2015). States vary greatly in the definition and regulation of telehealth.

Forty-eight states and the District of Columbia have a codified definition of telehealth (or telemedicine) in law, regulations or in their Medicaid programs while Rhode Island and New Jersey do not have an established legal definition for telehealth (CCHP, 2015).

The vast majority of states (47) and the District of Columbia reimburse for some type of telehealth service in their Medicaid programs (CCHP, 2015). This is an increase from 44 state Medicaid programs in 2014. Among these states, live video is the most commonly reimbursed form of telehealth, with all 47 states reimbursing for live video. However, the terms and conditions related to live video reimbursement vary widely across states. As of July 2015, California is one of nine states that reimburses for store-and-forward in its Medicaid program; the other states are Alaska, Arizona, Illinois, Minnesota, Mississippi, New Mexico, Oklahoma, and Virginia (CCHP, 2015). Sixteen states' Medicaid programs reimburse for remote patient monitoring; California does not. Four states' Medicaid programs (Alaska, Illinois, Minnesota, and Mississippi reimburse for live video, store-and-forward, and remote patient monitoring (CCHP, 2015).

Thirty-one states and the District of Columbia have laws in place which regulate telehealth reimbursement among private payers (CCHP, 2015). Washington State has passed such legislation scheduled to go into effect January 1, 2017. There is much variation among these laws; some do not require reimbursement while some require reimbursement parity between telehealth services and the same service delivered in-person (CCHP, 2015). At least 23 states have "full parity" in place wherein both coverage and reimbursement for telehealth services are comparable to in-person services (NCSL, 2016).

Federal Requirements

The following federal requirements provide context for the state of telehealth nationally, but some do not interact directly with AB 2507 (e.g., Medicare, Veterans Affairs).

Affordable Care Act

The Affordable Care Act (ACA) has impacted health insurance in California, expanding the Medi-Cal program (Medicaid in California)[12] and making subsidized and nonsubsidized health insurance available through Covered California, the state's health insurance marketplace.[13]

A number of ACA provisions have the potential to or do interact with state benefit mandates. Below is an analysis of how AB 2507 may interact with requirements of the ACA, including the requirement for certain health insurance to cover essential health benefits (EHBs).[14]

[12] The Medi-Cal expansion is to 133% of the federal poverty level (FPL) — 138% with a 5% income disregard.
[13] The ACA requires the establishment of health insurance exchanges in every state, now referred to as health insurance marketplaces.
[14] The ACA requires nongrandfathered small-group and individual market health insurance — including, but not limited to, QHPs sold in Covered California — to cover 10 specified categories of EHBs. Resources on EHBs and other ACA impacts are available on the CHBRP website: www.chbrp.org/other_publications/index.php.

Provider payment reforms and Affordable Care Act

The ACA pioneers a number of payment methods and demonstration projects aimed at replacing fee-for-service under Medicare and encouraging more "value-based" and "patient-centered" care. Through this framework, policymakers seek to create incentives for teams of providers to better coordinate the care of a patient, thereby increasing patient engagement, improving quality, and reducing overall health costs. These programs, including the formation of accountable-care organizations (ACOs), specifically encourage the use of "telehealth, remote patient monitoring, and other such enabling technologies" to achieve cost savings while maintaining or improving quality. Efforts to integrate care through ACOs, bundled payments, or alternative payment models may result in a move away from fee-for-service and incentives to invest in lower cost patient management services that can be paid for via shared savings payments in the Medicare ACO model, or proceeds from capitation payments. Insofar as an integrated system, like Kaiser Permanente, is able to take advantage of telehealth to improve efficiencies and provide patients with virtual access to care to alleviate the burden on their providers in specific settings, other integrated systems could follow suit.

Essential health benefits

State health insurance marketplaces, such as Covered California, are responsible for certifying and selling qualified health plans (QHPs) in the small-group and individual markets. Health insurance offered in Covered California is required to at least meet the minimum standard of benefits as defined by the ACA as essential health benefits (EHBs), and available in the Kaiser Foundation Health Plan Small Group Health Maintenance Organization (HMO) 30 plan, the state's benchmark plan for federal EHBs.[15,16]

States may require such QHPs to offer benefits that exceed EHBs.[17] However, a state that chooses to do so must make payments to defray the cost of those additionally mandated benefits, either by paying the purchaser directly or by paying the QHP.[18,19] On the other hand, "state rules related to provider types, cost-sharing, or reimbursement methods" would *not meet* the definition of state benefit mandates that could exceed EHBs.[20]

AB 2507 and EHBs

AB 2507 would require reimbursement for services already included in the current required EHB benchmark, but provided in a different setting. Therefore, AB 2507 does not appear to exceed EHBs, and

[15] The U.S. Department of Health and Human Services (HHS) has allowed each state to define its own EHBs for 2014 and 2015 by selecting one of a set of specified benchmark plan options. CCIIO, Essential Health Benefits Bulletin. Available at: http://cciio.cms.gov/resources/files/Files2/12162011/essential_health_benefits_bulletin.pdf.
[16] H&SC Section 1367.005; IC Section 10112.27.
[17] ACA Section 1311(d)(3).
[18] State benefit mandates enacted on or before December 31, 2011 may be included in a state's EHBs, according to the U.S. Department of Health and Human Services (HHS). Patient Protection and Affordable Care Act: Standards Related to Essential Health Benefits, Actuarial Value, and Accreditation. Final Rule. Federal Register, Vol. 78, No. 37. February 25, 2013. Available at: www.gpo.gov\fdsys\pkg\FR-2013-02-25\pdf\2013-04084.pdf.
[19] However, as laid out in the Final Rule on EHBs HHS released in February 2013, state benefit mandates enacted on or before December 31, 2011, would be included in the a state's EHBs and there would be no requirement that the state defray the costs of those state mandated benefits. For state benefit mandates enacted after December 31, 2011, that are identified as exceeding EHBs, the state would be required to defray the cost.
[20] Essential Health Benefits. Final Rule. A state's health insurance marketplace would be responsible for determining when a state benefit mandate exceeds EHBs, and QHP issuers would be responsible for calculating the cost that must be defrayed.

therefore would not trigger the ACA requirement that the state defray the cost of additional benefit coverage for enrollees in qualified health plans (QHPs)[21] in Covered California.

Medicare

Medicare is often used as the benchmark for reimbursement trends among private insurers. Medicare restricts the use of telehealth by both geographic region and "originating site" (the patient's location when they receive telehealth services). Medicare reimburses for certain telehealth services when the originating site is either:

- A Health Professional Shortage Area (HPSA); or
- A county outside of a Metropolitan Statistical Area (MSA).

The patient cannot receive reimbursable telehealth services from their home; the originating site must be a medical facility such as a hospital, rural health clinic, or provider's office (CMS, 2016; HRSA, 2016).

If a patient's originating site meets the above qualifications, Medicare will reimburse for synchronous live video. Medicare only reimburses for asynchronous store-and-forward in telehealth demonstration programs in Alaska or Hawaii (CMS, 2016).

Medicare reimburses the following providers for telehealth services that meet the above requirements (subject to state law):

- Physicians;
- Nurse practitioners (NPs);
- Physician assistants (PAs);
- Nurse-midwives;
- Clinical nurse specialists (CNSs);
- Certified registered nurse anesthetists;
- Clinical psychologists (CPs) and clinical social workers (CSWs); and
- Registered dietitians or nutrition professionals (CMS, 2016).

Medicare does not pay for telephone or e-mail encounters.

Department of Veterans Affairs

The federal Department of Veterans Affairs (VA) has an Office of Telehealth Services, which has experimented with telehealth over the past two decades and is widely considered a leader in the integration and use of the technologies. In fiscal year 2013, the latest year for which data are available, about 11% of veterans — 600,000 patients — in the VA health care system received a service delivered through telehealth, and delivery of such services is growing at a pace of about 22% annually. The VA has

[21] In California, QHPs are nongrandfathered small-group and individual market DMHC-regulated plans and CDI-regulated policies sold in Covered California, the state's health insurance marketplace.

invested heavily in telehealth to address the needs of its patients, nearly half of whom live in remote rural areas with limited access to a VA facility.[22]

The VA defines telehealth[23] as:

- Clinical video telehealth: Live video requires communication between both parties in real-time. Types of services typically provided via live video include mental health services, rehabilitation (such as for post-stroke patients), and surgical specialist consultations. The VA is also developing competencies in other areas of live videoconferencing, such as cardiology, genomics, neurology, nutrition, intensive care unit, and primary care.
- Store-and-forward: This modality involves the acquisition and storing of clinical information (e.g., data, image, video) that is then forwarded to (or retrieved by) another site for evaluation. At the VA, store-and-forward is used for teleretinal imaging and teledermatology services.
- Home telehealth: The VA defines this as chronic disease management through remote patient monitoring for conditions such as diabetes, chronic heart failure, chronic obstructive pulmonary disease, depression, or post-traumatic stress disorder.

The VA also has secure messaging features that allow patients to communicate via a web portal or their mobile devices; and mobile health, defined as smart phone applications for self-management of health conditions.

The VA supports three National Telehealth Training Centers to continue to develop telehealth capabilities, including 44 clinical specialties as previously noted. The training centers also serve to standardize training for health care professionals.

[22] Veterans Health Administration, "Connecting Veterans with Telehealth" www.va.gov, accessed March 8, 2015.
[23] www.telehealth.va.gov.

BACKGROUND ON TELEHEALTH

This section provides context for consideration of AB 2507 and includes descriptions of telehealth modalities and telehealth use by patients and providers, with a specific focus on certain subpopulations including rural populations.

Telehealth Modalities

AB 2507 specifies four types of telehealth modalities, which are classified somewhat differently than that of the telehealth industry. This section provides a crosswalk of terms that links the bill-specified modalities **(bold text)** to the terminology and definitions used by the telehealth industry[24] (*italic text*) and medical literature.

- **Video communications** (*live video*, *synchronous "real time*") uses two-way, interactive audiovisual technologies to connect users face-to-face (patients, caregivers, providers) as a substitute for an in-person encounter (CCHP, 2016). Live video has been used to care for conditions such as acute stroke, organ transplants, obesity, mental health problems, and diabetes-related complications. It can be used for multiple purposes, such as connecting emergency room physicians with outside specialists, facilitating consults between physicians as well as between physicians and patients with limited mobility (such as the homebound) and allowing patients at multiple locations to participate in health education/disease management courses (CCHP, 2016).
- **Asynchronous store-and-forward** (*store and forward*) involves the acquisition and secure transmission of recorded clinical information (such as x-rays, photos, or videos) to another provider for evaluation. Similar to live video, store-and-forward can connect physicians with specialists who may otherwise be unavailable. This modality has been used extensively in dermatology and radiology, as well as pathology and ophthalmology (CCHP, 2016). Under AB 2507, store-and-forward could also include patient–provider communication.
- **E-mail communication and synchronous text or chat conferencing** are not specifically identified as telehealth modalities in the telehealth industry's definitions. Although, the adoption of e-mail is nearly ubiquitous, it is less commonly used by patients to facilitate provider encounters than the telephone. Some health care systems have well-established, secure patient–provider e-mail systems that are HIPAA[25] compliant (see Kaiser below), whereas other clinicians have not yet developed secure systems and do not rely on e-mail for clinical communication with patients. Texting allows two or more people to communicate via smart phones or other devices over the phone network using typed messages, images, sound, or video. Chat is defined as a real-time conversation between two or more people, through the Internet, typically as a series of short text exchanges via instant messaging, or through images, voice, video, or some combination thereof. These live communication methods are generally performed using a limited number of alphanumeric characters.

[24] *Patient remote monitoring* (e.g., taking blood pressure or glucose readings remotely) and *mobile health* (mHealth-e.g., reminders to patients and population/public health advice) are common categories recognized by the telehealth industry. However, AB 2507 does not specifically reference either modality as defined by the industry; therefore, it is excluded from discussion in this CHBRP analysis (CCHP, 2016).
[25] HIPAA is the Health Insurance Portability and Accountability Act.

- **Telephone communication** is not specifically recognized as a telehealth modality in the telehealth industry's definitions. Telephone technology is more than a century old and its use has been and continues to be ubiquitous in patient-initiated clinical encounters.

Telehealth Utilization

Access to Technology

Consumer access to the Internet, telephone, and other electronic communication devices is necessary in communicating with physicians for health care treatment and advice. Nationally, cellphone use among adults reached 92% in 2015 with 68% of adults reporting smartphone use (Anderson, 2015). In 2014, 87% of adults reported using the Internet; use was similar by gender, race, and community type (see Table 3). In 2015, home broadband use plateaued at 67% with 55% of rural residents reporting broadband use (a 5% decrease from 2013 as smartphone use increased) (Pew Research Center, 2015).

Table 3. Internet Users in 2014 (U.S.)

	Use Internet (%)
Sex	
Men	87
Women	86
Race/ethnicity	
White	85
African American	81
Hispanic	83
Age group	
18–29	97
30–49	93
50–64	88
65+	57
Education level	
High school grad or less	76
Some college	91
College+	97
Household income	
Less than $30,000	77
$30,000–$49,999	85
$50,000–$74,999	93
$75,000+	99
Community type	
Urban	88

	Use Internet (%)
Suburban	87
Rural	83

Source: Pew Research Center, 2014.

Based on repeated statewide surveys by the Public Policy Institute of California, almost 92% of Californians report having a cell phone and 58% have a smartphone (up from 39% from 2011). A majority of Californians (56%) reported using their cell phones to access the Internet or e-mail — up from 37% since 2008 and 16% from 2011 (Public Policy Institute of California, 2014).

Use of Telehealth by Providers and Patients

Currently, at least 23 states require coverage and reimbursement parity between in-person and telehealth encounters, and more states are considering similar legislation (NCSL, 2016). As these legislative and regulatory changes remove barriers to the development and integration of telehealth technologies, the use of telehealth in the United States is projected by some to grow from 250,000 patients in 2013 to 3.2 million patients in 2018 (NCSL, 2016).

According to a telehealth company's survey of patients in the United States, 64% were interested in using live video to communicate with their physician. Interest in this technology peaked among younger adults (74% of respondents ages 18 to 34) and declined to 64% among respondents ages 55 and further declined to 41% among adults aged 65 years and older. The survey found that 60% of respondents would rather use live video to obtain a refill for their prescription drug instead of a visit to their doctor's office (American Well, 2015).

California

Since March 2014, the California Telehealth Network, a nonprofit focused on increasing access to telehealth in California, has been collecting monthly telehealth utilization reports from about 140 partner sites (generally multispecialty medical groups) for "Project U." Between January 2015 to November 2015, the number of telehealth consultations occurring per month ranged from 763 to 2,243, with an average of 1,340 consultations per month (about a 17% increase over the same time period in 2014). The majority of these telehealth consultations were for psychology/behavioral health (78%), followed by retinopathy (7%), endocrinology (4%), and pain management (3%). The remaining 8% of the telehealth consultations were for a variety of specialties, such as cardiology, oncology, pediatrics, dermatology, or nephrology (CTN, 2015).

Kaiser Permanente

Kaiser Permanente Northern California (KPNC) is a unique example of an integrated health care delivery system using all four telehealth modalities. KPNC serves approximately 3.4 million enrollees through 8,000 physicians and 21 hospitals. In 2008, KPNC implemented an inpatient and ambulatory care electronic health record (EHR) system that includes more than 100 patient-centered Internet, mobile, and live videoconferencing applications enabling members to review disease-specific information; access personal health information; make appointments, order refills, exchange secure e-mail messages with providers; and participate in virtual care in lieu of an office visit. KPNC's number of virtual visits grew from 4.1 million in 2008 to 10.5 million in 2013, and telephone visits increased from about 640,000 in 2008 to more than 2.3 million in 2013. KPNC estimates that by 2016, virtual visits (e-mail, telephone, video) would outnumber in-person office visits, which have remained constant since 2008 (Pearl, 2014).

Social Determinants of Health[26] and Disparities[27]

Per statute, CHBRP now includes discussion of disparities under the broader umbrella of social determinants of health (SDoH). SDoH include factors outside of the traditional medical care system that influence health status and health outcomes. CHBRP will consider the full range of SDoH and related disparities (e.g., income, education, and social construct around age, race/ethnicity, gender, and gender identity/sexual orientation) that are relevant to this bill and where evidence is available. In the case of AB 2507, evidence shows that disparities in certain determinants including geographic location, (accessible) transportation and access to and use of technology.

Rural Health Disparities and Travel Barriers in California

Residents of rural communities in California experience poorer health status compared to residents of urban communities, such as higher self-reported poor health status (6.1% in rural vs. 4.4% in urban), recent mental health issues (37.8% rural vs. 34.1% urban), physical health issues (52.8% rural vs. 40.3% urban) and recent inability to engage in work, recreation, or self-care (27.0% rural vs. 21.4% urban) (CalSORH, 2013). Travel barriers and inadequate provider–patient ratios are telehealth-relevant factors that contribute to rural health disparities (Iezzoni et al., 2006; Weinhold and Gurtner, 2014). About 14% (5.2 million) of California's 37.7 million residents live in rural areas (CalSORH, 2013) and in about two-thirds of counties, the number of physicians per capita is less than what is considered adequate to meet demand (CHCF, 2012).

Telehealth may help to overcome some of the disparities in health care by redistributing knowledge and expertise when and where it is needed, including rural areas of California (Nesbitt, 2012). However, telehealth has yet to meet rural demand according to one study. Of 60 California rural health clinics surveyed in 2012, less than half (47%) used telehealth; 47% used live videoconferencing, 5% used store-and-forward, and 3% used home monitoring. Cost of equipment and lack of arrangements with specialists were the primary obstacles to clinic participation (52% and 48%, respectively) (CHCF, 2012). About half of the clinics used the Internet to contact other providers, but just 12% did so to contact patients (CHCF, 2012). In recognition of the ongoing challenge to provide accessible clinical services to rural residents, the federal Office of Rural Health Policy established an Office for the Advancement of Telehealth to promote telehealth grants and programming for clinical care, education, and public health in rural areas (HSRA, 2015).

California Telehealth Systems

Business models and strategies to maximize new reimbursement models and rules are expected to occur. As noted earlier, CHBRP found no studies of patient-initiated live videoconferencing, but the number of online, virtual doctor companies is proliferating. In the last five years, the number of virtual care

[26] CHBRP defines social determinants of health as conditions in which people are born, grow, live, work, learn, and age. These social determinants of health (economic factors, social factors, education, physical environment) are shaped by the distribution of money, power, and resources and impacted by policy (adapted from Healthy People 2020, 2015; CDC, 2014). See SDoH white paper for further information. Available at: www.chbrp.org/analysis_methodology/docs/Incorporating%20Relevant%20Social%20%20Determinants%20of%20Health%20in%20CHBRP%20Analyses%20Final%2003252016.pdf.

[27] Several competing definitions of "health disparities" exist. CHBRP relies on the following definition: "Health disparities are potentially avoidable differences in health (or health risks that policy can influence) between groups of people who are more or less advantaged socially; these differences systematically place socially disadvantaged groups" at risk for worse health outcomes (Braveman, 2006).

companies has increased; through a basic online search, CHBRP counted more than 25 companies. These companies generally provide e-mail or live phone, video, or chat sessions with physicians 24/7. Some companies specialize in providing only second opinions or specialists, such as radiologists. Companies either contract exclusively with employers or provide services to patients for a flat fee by consult or time increment. (See prior CHBRP telehealth reports for examples of company processes.)

Telehealth technology continues to evolve and diffuse across the state, the expansion of covered services may change dramatically in unforeseen ways. Issues concerning breeches in data security, privacy, patient continuity of care, as well as billing fraud and abuse will need to be monitored continually.

The following sections will review whether telehealth affects access, outcomes, and costs. The medical effectiveness review summarizes findings from the literature from 2015 to the present on the effectiveness of telephone, live videoconferencing, store-and-forward, e-mail, and synchronous text and chat. The subsequent section on costs reviews the financial impacts of AB 2507. Finally, the Public Health section will explore the population impact as well as issues related to societal determinants of health.

MEDICAL EFFECTIVENESS

As discussed previously, AB 2507 would require state-regulated health insurance to cover telehealth services, principally telephone and electronic diagnosis, consultation, treatment, education, care management and self-management encounters delivered by physicians or billable non-physician providers beginning in January 2017. The medical effectiveness review summarizes findings from the literature from 2015 to the present on the effectiveness of telephone, live videoconferencing, store-and-forward, e-mail, and synchronous text or chat conferencing. This review encompasses studies of patients with a wide range of diseases and conditions because AB 2507 would require coverage and reimbursement for these telephonic and electronic modalities for all enrollees. The specific services assessed vary depending on patients' conditions.

Research Approach and Methods

Studies of telephone, live videoconferencing, store-and-forward, e-mail, and synchronous text or chat conferencing were identified through searches of multiple bibliographic databases of medical, scientific, and economic literature, as well as websites maintained by organizations that produce and/or index meta-analyses and systematic reviews (see Appendix B for full list of databases and websites). The current search was limited to abstracts of peer-reviewed research studies that were published in English in 2015 and 2016. For studies published prior to 2015, CHBRP relied on a literature search conducted in 2014 and 2015 for its analysis of proposed SB 289 and AB 1771, which also addressed telephonic and electronic communications.

The medical effectiveness review included studies of the use of telephone, live videoconferencing, e-mail, and synchronous text or chat conferencing by physicians or non-physicians. Although the bill language does not specifically exclude services that are not "patient-initiated," studies of telephonic and electronic communication between physicians, such as in an emergency room or an intensive care unit, were excluded from this review, as were interventions involving telephone follow-up to patients post-hospitalization.

Of the 615 articles found in the current literature review, 93 were reviewed for potential inclusion in this report. Studies were eliminated because they did not report findings from clinical research studies, did not focus on the telehealth modalities, or were of poor quality. The 36 studies previously included in the medical effectiveness review for AB 1771 (2014) and the 32 studies included in the medical effectiveness review for SB 289 (2015) were also reconsidered. In total, 41 studies were included in the medical effectiveness review for AB 2507, based on the quality of the studies and their relevance to the specific bill language. When systematic reviews had inclusion criteria broader than the mandate of this bill, CHBRP summarized findings only from the relevant studies.

Methodological Considerations

Most studies pertinent to the telehealth bill examine the use of telephone, e-mail, live videoconferencing, store-and-forward, and synchronous text or chat conferencing as a substitute for in-person care, in which case the relevant studies evaluated whether care provided via these technologies is at least as effective as in-person care and whether use of these technologies improves access to care and outcomes. Some studies, especially studies of e-mail and synchronous text or chat conferencing, assess the effect of the technology to supplement in-person care; these studies evaluate whether adding these technologies improves processes of care and health outcomes relative to receiving in-person care alone.

A major methodological limitation of the literature is the pace of technological change. By the time a research study is published, the technology under study is sometimes outdated, making it difficult to draw conclusions about the medical effectiveness of current technologies. Another important limitation of the studies is the inability to disaggregate the mandated services from other interventions, such as an integrated web portal that includes e-mails as well as information about self-care, access to test results, and ability to refill prescriptions.

Study Findings

The findings are summarized by the following groupings of telehealth modalities: (1) live videoconferencing (2) asynchronous store-and-forward (3) e-mail, and synchronous text or chat; and (4) telephone. Because this bill would apply to many different situations, the medical effectiveness of the mandated telehealth services are considered separately in three sets of outcomes: (1) access to care and utilization, such as wait time to specialty care, or number of outpatient, emergency department visits and hospitalizations; (2) process of care outcomes, including treatment adherence and accuracy of diagnoses and treatment plans; and (3) health outcomes, including both physiological measures and patient-reported outcomes.

Taken together, the preponderance of the evidence from moderate-to-strong studies across multiple diseases indicates that both live videoconference and store-and-forward are at least as effective in terms of health outcomes and diagnostic accuracy as in-person care for studied conditions. The evidence is ambiguous that medical care provided by telephone is equivalent to or as effective as medical care provided in person. The evidence for the medical effectiveness of e-mail, and synchronous text or chat communication is either ambiguous or insufficient to make a determination. The exception to that is in health outcomes in diabetes, in which a preponderance of the evidence from studies with strong-to-moderate designs shows that use of secure e-mail as part of a multifaceted web portal is associated with better glycemic control. These findings are discussed in further detail in the sections that follow.

Patient Experience

CHBRP addresses issues pertaining to the patient experience and satisfaction related to telephone, e-mail, and other types of telehealth.

Patient interest and use

Authors of a systematic review of 168 included articles, representing a wide variety of clinical settings, reported high and uniform patient satisfaction with telemedicine regardless of the clinical setting (Heinzelmann et al., 2005). The studies measuring patient satisfaction with telehealth, generally, reported that 20% to 73% of subjects stated they preferred in-person visits to telehealth. A 2004 Cochrane review also looked at patient satisfaction with telephone consultations. The review included five studies that were based in the United Kingdom, three in the United States, and one in Denmark. Of these, four studies examined satisfaction. Three studies (two of which were RCTs conducted in the United States) found that patients were satisfied with their care, and in one U.K.-based study, 84% of patients said they would be happy to use telehealth consultation again. However, the authors of the review note that patient satisfaction results must be interpreted with caution, due to low response rates and selection bias (Bunn et al., 2004).

In a systematic review limited to teledermatology, Warshaw et al. reported that in three of five studies (all of which were randomized controlled trials) that addressed patient satisfaction, patients expressed comparable levels of satisfaction between store-and-forward and in-person care (Warshaw et al., 2011).

One nonrandomized study reported greater satisfaction with teledermatology. In the remaining study, patients who had already been seen via store-and-forward, reported greater satisfaction with clinic dermatology (Warshaw et al., 2011). Overall, preference for teledermatology ranged from 38% to 86%. One study reported slightly higher satisfaction with clinic dermatology, but 76% of the patients preferred teledermatology over waiting to see a dermatologist (Warshaw et al., 2011).

In a study of adult caregivers of children cared for in an urban pediatric primary care clinic, 86.3% reported that they would like to communicate with their provider by e-mail, but only 10.7% reported doing so (Dudas and Crocetti, 2013). In a 2013 internal survey of Kaiser Permanente members who used the secure patient portal, 87% percent of respondents reported that their physicians did a very good or excellent job of meeting their needs (Pearl, 2014).

In a study of telehealth visits conducted as part of the Health e-Access Telemedicine Program (which provides telehealth visits in schools and neighborhood locations in low-income, inner-city neighborhoods), 84% of parents were highly satisfied with the care they or their children received and 79% to 83% would be interested in using telehealth for their or their child's routine health care. Additionally, over 95% of parents felt that the telehealth visit was more or much more convenient (McIntosh et al., 2014).

Findings for Live Videoconferencing

Access to care and utilization

Previous studies of live videoconferencing used in place of in-person care showed improvements in timely treatment compared to outpatient specialty care (Ferrer-Roca et al., 2010) and that live videoconferencing had no impact on hospitalization, emergency department visits, visits to specialists for outpatient care, or primary care visits (Leimig et al., 2008; Modai et al., 2006; O'Reilly et al., 2007; Wallace et al., 2004). CHBRP found no recent studies examining the effect of live videoconferencing on access to care and utilization of health services.

Process of care

A previously identified systematic review of 78 studies of repeated measures design found that diagnoses via patient-physician live videoconferencing are highly accurate in dermatology (Warshaw et al., 2011). Also, a systematic review of 23 studies of psychotherapy via live videoconferencing found strong support for the development of therapeutic alliance at least as strong as with in-person therapy (Simpson and Reid, 2014).

More recently, one multisite randomized controlled trial (RCT) comparing the effectiveness of in-person psychological care to psychological care delivered via videoconferencing and telephone-based monitoring for veterans diagnosed with post-traumatic stress disorder (PTSD) found that there were no statistically significant differences among intervention and control groups in medication adherence or number of prescribed medications (Fortney, 2015). One small cohort study comparing face to face visit with a physician to store-and-forward videoconferencing methods of diagnosing dermatological conditions; findings indicated a 100% rate of agreement between the consultation types, and 96% rate of agreement for history-taking and physical examination, and 96% for the investigations, diagnosis, management plan, and the treatment prescribed (Seghers et al., 2015).

Health outcomes

In 2015, CHBRP found a large body of evidence on the effects of live videoconferencing on health outcomes, including numerous RCTs and a systematic review comparing live videoconferencing to in-

person care (Ferrer-Roca et al., 2010; Garcia-Lizana and Munoz-Mayorga, 2010; Harrison et al., 1999; Kairy et al., 2009; Morland et al., 2010, 2014; Wallace et al., 2004).

More recently, CHBRP found three studies on the effects of live videoconferencing on health outcomes. One multisite RCT trial comparing videoconferencing and usual care for veterans receiving psychological care found significantly larger decreases in scores measuring severity PTSD compared to those receiving usual care at both 6 months and 12 months (Fortney, 2015). Another RCT for children with attention deficit/hyperactivity disorder (ADHD) and their caregivers found that the telehealth service model performed better than the usual care (Myers et al., 2015) and demonstrated the effectiveness of a telehealth service model to treat ADHD in underserved, non-metropolitan communities with limited access to specialty mental health services. Another small cohort study comparing store-and-forward to in-person dermatological diagnosis reported no adverse or harmful events for patients using store-and-forward modality for dermatological diagnoses (Seghers et al., 2015).

There is clear and convincing evidence that both mental health services and dermatology care delivered by live video conferencing are at least as effective as in-person care.

Figure 2. Live Videoconferencing Summary

Treatment	Conclusion
Evidence about live videoconferencing	Clear and convincing evidence that these modalities are at least as effective as in-person care for both mental health services and dermatology

Source: California Health Benefits Review Program, 2016.

CHBRP concludes that, for the diseases and conditions studied, there is a preponderance of evidence that medical care provided by live videoconferencing is at least as effective as medical care provided in person for both physical and mental health conditions. In particular, there is *clear and convincing* evidence that live videoconferencing is equivalent to in person care in psychiatric and dermatologic health outcomes.

Findings for Store-and-Forward

Access to care and utilization

The 2015 report for SB 289 found a systematic review of access to care related to store-and-forward dermatology care; the studies consistently found that teledermatology was associated with shorter time to treatment as measured by time until appointment, biopsy, surgery, or other intervention (Warshaw et al., 2011).

CHBRP found one recent study examining the effect of store-and-forward on access to care and utilization of health services. One large RCT found very high reliability between store-and-forward and in-person dermatology for both diagnosis and treatment plans (Nami et al., 2015).

Process of care

In studies of store-and-forward technology, findings are inconsistent for diagnostic accuracy. A systematic review in dermatology found poorer accuracy compared to in-person diagnosis, especially for malignant and premalignant lesions (Warshaw et al., 2011).

Store-and-forward diagnosing in diabetic retinopathy and pediatric heart murmurs has been shown to be highly accurate (Dahl et al., 2002; Saari et al., 2004).

Health outcomes

The evidence for the effect of store-and-forward technology on health outcomes is limited to dermatology. A systematic review in 2011 found that there was insufficient evidence to evaluate clinical outcomes of store-and-forward teledermatology (Warshaw et al. 2011). Since then, one RCT found that teledermatology was equivalent to in-person care in both disease-specific and general health outcomes (Whited et al., 2013a,b).

One prospective cohort study at a primary care geriatrics practice providing acute illness care by high-intensity telemedicine to older adults residing in senior living communities showed significant decreases in the rate of emergency department use for ambulatory care sensitive conditions (ACSCs) over 1 year, compared with no change in the rate of emergency department use for ACSCs among the control group. It is important to note that this study is with a specific senior population and provided patient-to-provider, real-time, or store-and-forward telemedicine services. The extensive services available included video and audio communication, images (e.g., skin), video clips (e.g., movement), sound (e.g., lung sounds), and 12-lead electrocardiograms. Given the richness of clinical information available to the providers, this is considered a “high-intensity” model (Shah et al., 2015). Given the high intensity nature of the model and the population (senior population living in senior living center setting), generalizability to CHBRP’s population of interest is limited. Most enrollees in DMHC- and CDI-regulated plans and policies in California are age 64 years or below.

There is a *low preponderance* of evidence that health services delivered by store-and-forward are at least as effective as in-person care.

Figure 3. Store-and-Forward Summary

Treatment	Conclusion
Evidence about store-and-forward	Low preponderance of evidence that these modalities are at least as effective as in-person care

Source: California Health Benefits Review Program, 2016.

CHBRP concludes that, for the diseases and conditions studied, there is a low preponderance of evidence that medical care provided by store-and-forward is at least as effective as medical care provided in person for both physical and mental health conditions. The evidence suggests that store-and-forward technology reduces wait times for specialty outpatient care.

Findings for E-Mail, Synchronous Text and Chat Conferencing

Access to care and utilization

In 2015, CHBRP identified several studies of e-mail access to physicians in the United States and conducted within an integrated health system (such as Kaiser) that also included a multifaceted web portal, making these studies less generalizable. The findings from these large and well-designed studies were also ambiguous, with one showing a decrease in primary care visits, one showing no difference, and two showing an increase in visits associated with patients' use of e-mail to access primary care providers (Liss et al., 2014; North et al., 2014; Palen et al. 2012; Zhou et al., 2007). Many of these studies were summarized in a systematic review (Goldzweig et al., 2012).

CHBRP found no recent studies examining of the effect of e-mail, and synchronous text or chat conferencing on access to care and utilization of health services.

Process of care

Previous studies of patients with diabetes with e-mail access to physicians via a multifaceted web portal found evidence for improved screening adherence relative to those without such access, but these studies could not distinguish e-mail use from other features of the web portal, such as reminder notices or electronic appointment scheduling (Bredfeldt et al., 2011; Harris et al., 2013; Zhou et al., 2010). Moreover, two of these studies had poorly controlled comparison groups, which limit the reliability of the findings. It is also difficult to generalize from this condition to the entire population of insured individuals. CHBRP found no studies that related e-mail use to accuracy of diagnosis.

CHBRP found no recent studies examining of the effect of e-mail, and synchronous text or chat on process of care.

Health outcomes

CHBRP found no recent studies of the effect of e-mail, and synchronous text or chat communication on health outcomes for the general population.

However, health outcomes associated with e-mail access has been well studied in diabetes. Five studies of e-mail communication as part of a multifaceted web portal consistently found that use of secure e-mail was associated with better glycemic control as measured by HbA1c (Harris et al., 2009, 2013; Lau et al., 2014; Ralston et al., 2009; Zhou et al., 2010). There was less consistency in the findings regarding other outcomes, such as hypertension or hyperlipidemia.

There is a *low preponderance* of evidence that health services delivered by e-mail, and synchronous text and chat conferencing are at least as effective as in-person care.

Figure 4. E-mail, Synchronous Text and Chat Conferencing Summary

Treatment	Conclusion
Evidence about synchronous text and chat conferencing	Insufficient evidence to make a determination
Evidence about e-mail (**diabetes only**)	Preponderance of evidence from moderately strong studies that e-mail communication within a multifaceted web portal is associated with better glycemic control

Source: California Health Benefits Review Program, 2016.

CHBRP concludes that there is insufficient evidence to determine whether services provided by synchronous text and chat are as effective as medical care provided in person. CHBRP notes that the absence of evidence does not mean there is no effect; it means the effect is unknown. However, for diabetes, there is a preponderance of evidence that medical care provided by e-mail is at least as effective as medical care provided in person for glycemic control.

Findings for Telephone

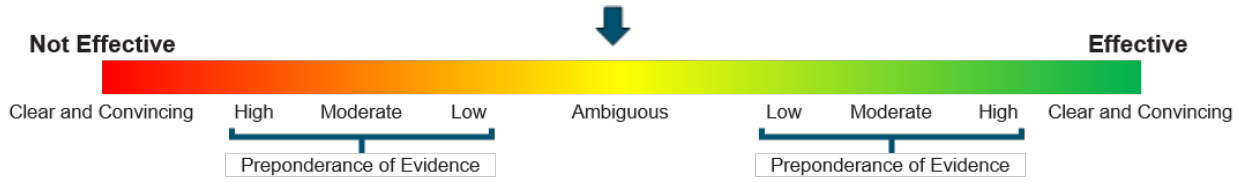
Access to care and utilization

Telephone consultation and triage systems, staffed by physicians or nurses, have been in existence for several decades. These systems were designed to reduce the demand for outpatient and emergency department visits, but can also have a supplemental effect, adding to the total quantity of services a patient receives. There is ambiguous evidence from RCT and time-series studies of the effect of telephone consultation services on access to care and utilization, with studies showing different effects for the same type of service utilization (e.g., emergency department, hospitalization, or primary care) (Bunn et al., 2004; Flores-Mateo et al., 2012).

CHBRP found no recent studies examining of the effect of telephone-based telehealth on access to care and utilization of health services.

Figure 5. Telephone Impact on Access to Care and Utilization

Treatment	Conclusion
Evidence about telephone on access to care and utilization	Ambiguous evidence that medical care provided by telephone is at least as effective as medical care provided in person.



Source: California Health Benefits Review Program, 2016.

Processes of care

CHBRP found no recent studies that examined the impact of patient-initiated telephone based telehealth on processes of care, including treatment adherence and accuracy of diagnoses and treatment plans.

Figure 6. Telephone Impact on Processes of Care

Treatment	Conclusion
Evidence about telephone on processes of care	Insufficient evidence that medical care provided by telephone is at least as effective as medical care provided in person.

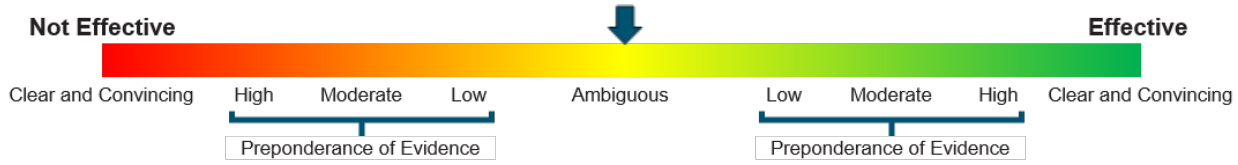
Source: California Health Benefits Review Program, 2016.

Health outcomes

CHBRP found three recent studies examining of the effect of telephone-based telehealth on health outcomes. An RCT in the United Kingdom found telephone consultations were as effective as in-person consultations for children and adolescents with inflammatory bowel disease in regards to improvements in quality of life (Akobeng et al., 2015). Another RCT assessed the differences in mental health outcomes among patients with traumatic brain injury and major depressive disorder diagnoses who were randomized to receiving telephonic cognitive behavioral therapy (CBT), in-person CBT, or usual care (consisting of phone notifications regarding depression status, and encouragement to continue using rehab/primary care resources plus mental health/traumatic brain injury referrals). The study found that participants who received telephonic CBT reported significantly more symptom improvement and greater satisfaction with depression care (Fann et al., 2015). Similarly, a meta-analysis of 30 RCTs comparing the effectiveness of forms of telemedicine for patients with heart failure found that structured telephone support significantly reduced the odds of death and hospitalizations due to heart failure compared to usual care (Kotb et al., 2015).

Figure 7. Telephone Summary on Health Outcomes

Treatment	Conclusion
Evidence about telephone on health outcomes	The evidence that medical care provided by telephone compared to medical care provided in person is ambiguous



Source: California Health Benefits Review Program, 2016.

CHBRP concludes that, for the diseases and conditions studied, the studies of the effect of telephone consultations on subsequent utilization are inconsistent; therefore, the evidence that medical care provided by telephone compared to medical care provided in person is ambiguous. Furthermore, it is unknown whether diagnoses made using these technologies are as accurate as diagnoses made during in-person visits. However, there is a low preponderance of evidence that telephone-based telehealth is as effective as medical care provided in person on health outcomes.

BENEFIT COVERAGE, UTILIZATION, AND COST IMPACTS

CHBRP examined the cost impact of Assembly Bill (AB) 2507, which would require state-regulated health insurance to cover telephonic and electronically-delivered health care services. AB 2507 would affect the health insurance of approximately 25.2 million enrollees (65.2% of all Californians). If enacted, AB 2507 would require state-regulated plans and policies to reimburse physician and billable non-physician providers for *non*–in-person services — principally telephone and electronic diagnosis, consultation, treatment, education, care management and self-management encounters delivered by physicians or billable non-physician providers. AB 2507 would also have the effect of requiring coverage — and reimbursement at the same level as comparable to in-person visits — for any electronic communication technologies used to assist physicians *in treating* patients electronically.

This section will first present the premandate (baseline) benefit coverage, utilization, and costs and then provide estimates of the impacts on coverage, utilization, and cost if AB 2507 is enacted. For further details on the underlying data sources and methods, please see Appendix C.

Analytic Approach

CHBRP limits analysis of AB 2507 to only services provided *by a physician or billable non-physician provider* to patients who consent to receiving and being billed for telehealth services. CPT coding standards further establish that for telephone, e-mail, synchronous text and chat, and other electronic visits to be billable, patients must initiate with contact the physician. AB 2507 specifically targets use of telephonic and electronic communication tools to "recognize the practice of telehealth as a legitimate means by which an individual may receive health care services from a health care provider without in-person contact with the health care provider." Based on that language, CHBRP analyzed CPT billing claims associated with services traditionally delivered to new and established patients in-person that could potentially be delivered electronically, via telephone, e-mail or other electronic messaging (synchronous text and chat), live videoconference, or store-and-forward technologies.

In this section, CHBRP uses "telehealth" to collectively represent all five modalities: live videoconferencing, store-and-forward, telephone, e-mail communication, and synchronous text or chat conferencing.

CHBRP examined the literature to obtain estimates for:

- Adopting, or initiating use of telehealth by providers and patients when it is made available;
- Use of these technologies impact on in-person visits (i.e., how much does telehealth serve as a substitute for in-person care);
- Impact on supplementary visits (i.e., how much does telehealth generate additional visits or other contacts that provided "added value" to patients' care that would not have occurred or been billed because telehealth was not covered or reimbursed); and,
- Impact on cost sharing, and impact on long-term use and health (beyond the 1-year horizon in the cost analysis).

As depicted in the *Medical Effectiveness* section, the literature on the medical effectiveness impacts of telehealth indicates that most services have ambiguous, insufficient or a low preponderance of evidence showing that they are equivalent to in-person visits, and while some groups (rural populations, patients with dermatologic problems, victims of stroke) may benefit from specific interventions (such as

videoconferencing or store-and-forward) related to telehealth, the telehealth findings in the literature are not generalizable to the whole population. It is also important to note that although physician or billable non-physician-provided remote monitoring and self-management services are covered by AB 2507, there are remote monitoring and self-management programs that are not physician-provided and therefore are unlikely to be reimbursed under AB 2507 because the proposed legislation does not "alter the scope of practice of any health care provider or authorize the delivery of health care services in a setting, or in a manner, not otherwise authorized by law." For that reason, those remote monitoring and self-management programs are excluded from the analysis. There is insufficient evidence from the literature to suggest that additional outpatient services offered via telehealth reduce use of emergency room visits, inpatient hospital stays, or have significant impacts on health outcomes. Instead, telehealth is considered a component of broader health care utilization that can be helpful in managing disease and health.

Assumptions on Utilization and Cost

CHBRP assumes insurance carriers would not realize cost savings resulting from either new telehealth services, or telehealth services that *substitute* for in-person visits because:

- Providers would receive reimbursement for telehealth visits equal to reimbursement for comparable in-person visits (according to AB 2507 bill language); and
- Providers' capacity and resources are able to handle some new use of telehealth due to time or resource efficiencies despite requirements that telehealth visits have to be equivalent to in-person visits (per bill language and CPT code definitions).

Rather, CHBRP anticipates a shift in the service delivery settings from in-person to telehealth visits. The core assumptions that CHBRP made in understanding the impact on utilization and costs are:

- If AB 2507 is enacted, CHBRP assumes physicians and billable non-physician providers would be more likely to bill for services delivered via telehealth modalities that:
    - **Substitute** (or replace) current in-person visits with live videoconference, store-and-forward, telephone, e-mail and synchronous text or chat for patient-initiated encounters; and
    - **Supplement** current in-person visits with added services via telehealth, and include both services that: (1) would previously not have been delivered in person due to distance, inconvenience, and time; and (2) services that physicians have already been providing via telephone, e-mail, and other electronic methods but were previously not billed or reimbursed because they were not covered or there were barriers to reimbursement.[28] CHBRP's analysis constrains coverage of services to those that are physician or billable non-physician-provided only; CHBRP assumes that the capacity to add supplemental services is limited based on each billable provider's capacity (including their staff's ability to deliver and bill for services ordered by the physician).
- CHBRP assumes that substitute services constitute 60% of all new telehealth services (i.e., replacing in-person services of comparable severity and time), while supplementary telehealth services would constitute 40% (i.e., additional services that were previously provided but not

[28] Some telehealth services will still not be reimbursed due to CPT coding standards related to follow-up visits within 7 days for the same issue, regardless of setting. However, the supplementary services are assumed to occur within coding rules and be billable.

reimbursed, or not previously provided).[29] This assumption is partially based upon the fact that reimbursement parity between telehealth and in-person services would provide incentives for providers to deliver care via telehealth as the reimbursement is equivalent and the administrative or time burden may be the same or better under telehealth.

- CHBRP uses analysis by PricewaterhouseCoopers of Thomson Reuters' MarketScan data on claims to estimate current utilization of phone, e-mail or synchronous text and chat, live videoconferencing, and store-and-forward.
- CHBRP assumes that current billing for live video, store-and-forward, telephone, e-mail, and synchronous text or chat modalities underestimates true utilization of these services because the vast majority of enrollees subject to AB 2507 already have coverage for these settings or services, and there are existing barriers to utilization, billing limits, and other factors that result in a lack of information showing up in claims data. In addition, the definition of covered telehealth services differ by insurance carrier, and it is likely that no carrier reimbursed a telehealth service at the level of an in-person visit, as is required by AB 2507. Further, once AB 2507 officially codifies and standardizes telehealth billing standards and price equivalence to in-person visits, CHBRP anticipates that claims will begin appearing for telehealth reflecting newly paid claims (both supplemental and replacement).
- CHBRP assumes that certain telehealth services provided through insurance carriers for their enrollees (e.g., Teladoc, etc.) where the enrollee *pays a fee* for a virtual visit are not considered billable under current state law, despite AB 2507 covering telehealth services. CHBRP assumes that postmandate, this type of encounter is unlikely to be eligible for reimbursement because the encounter may be with a non-billable provider (e.g., because non-billable providers tend to deliver these types of services or billable providers of a national vendor may not be licensed by California's Business and Professions code). For this reason, some of the supplementary services will offset these provided services that have not resulted in claims to insurers themselves.
- In some cases, insurers will contract with a telehealth service (i.e. HealthNet's MD Live) to provide nurse triage, virtual visits, and other services *without* a copayment or cost to the enrollee. These services do not appear to be directly billing insurance carriers through claims, and they may have another per call or subscription-based model with the insurer.
- CHBRP assumes that additional increases in telehealth services with the introduction of AB 2507 would not occur for Kaiser Permanente because of their existing telehealth infrastructure and coverage policies. For plans that contract with external physician groups, CHBRP assumed utilization of telehealth services would increase. The incentives for use of telehealth will differ among plans because of the contracting mechanisms used by each plan with their network providers. In the case of Kaiser, where providers are salaried and the system determines what, if any, telehealth services to offer, they can continue paying salaries. CHBRP recognizes that capitation rates for specific physician groups might not increase immediately to reflect any anticipated increase in the total cost to provide physician services. However, to the extent CHBRP assumed an increase in the utilization of the five modalities of telehealth services, and, in

[29] No data were available, but content experts and claims data suggest this is a reasonable estimate. This estimate was also used in previous CHBRP analysis of AB 1771 (2014) which also required reimbursement for telehealth at comparable levels to in-person visits. Kaiser Permanente Northern California's telehealth implementation did not charge cost sharing to patients, so the actual use by enrollees of insurance carriers who did decide to use cost sharing would be reduced in comparison to the Kaiser model because cost sharing would deflate demand for supplementary telehealth services. Please see Appendix C for more details.

particular, supplemental telehealth services, the 2017 cost and premium estimates in this report assume the impact is reflected completely in all physician capitation rates for commercial HMOs. CHBRP used data from Kaiser Permanente Northern California (KPNC) to estimate postmandate changes in utilization as the KPNC experience is one of the only well-documented examination of utilization of telephone and e-mail visits between physicians and patients. The evaluation occurred over the period of time between 2008 (at the introduction of a telehealth strategy that included phone, secure e-mail, and live videoconference visits went into effect) and 2013. CHBRP uses the "rate of use" of telephone and e-mail in 2008 to calculate an estimated level of utilization (15%) for those modalities in the first year after enactment, assuming providers quickly adapt and begin billing for telephone, e-mail, and other electronic messaging services. [30,31] This level of utilization (15%) represents the overall use of telehealth among all visits.

Limited Evidence on Telehealth Use and Adoption

Kaiser Permanente's experience in Northern California could overestimate or underestimate the use of a fully implemented system for telephone and e-mail. However, KPNC's evidence on use of telephone and e-mail is the best estimate available for the initial and future adoption of the modalities by providers and patients, once a carrier develops the capacity and pays for telephone and e-mail services.

- First, at Kaiser Permanente, telephone, e-mail, and live videoconference services are already delivered as part of an integrated system where fee-for-service reimbursement does not occur. Enrollees do not pay any cost sharing for telephone or e-mail visits. Although the Kaiser Permanente rate of telephone and e-mail use serves as a good benchmark, the first year (2017) impact of AB 2507 would be influenced by cost-sharing decisions by carriers and adoption of the technology by physicians outside of an integrated, salary-based system.
- In the Kaiser Permanente model, again which does not operate in a fee-for-service environment, the system may realize savings and efficiencies from the creation and widespread use of telehealth to reduce in-person patient visits and to deliver care to enrollees in outlying areas who face access barriers due to transportation, disability, or work hours. Because of those incentives to deliver more efficient care, even though they are not currently reimbursed by a typical health insurer, Kaiser Permanente physicians may encourage telephone and e-mail use at a higher rate than other health insurance carriers, which are paying physicians monthly capitation for certain types of visits or fee-for-service based on the number of visits delivered to enrollees. Conversely, health insurance carriers may decide that coverage of all five telehealth modalities would allow them to expand the network of physicians available, deliver more timely care, and meet patient needs in a more efficient way to attract enrollees and cover a wider area. For this reason, Kaiser Permanente's experience in Northern California may underestimate the use of a fully implemented telehealth system.

Based on these limitations, CHBRP made adjustments to apply Kaiser's experience to the remainder of the commercial insurance market, which is made up of capitated and fee-for-service reimbursement, which would include patient cost sharing unlike the Kaiser model for telehealth. Although Kaiser's experience in Northern California indicated that 26% of office visits were via telehealth after one year of

[30] This represents the percentage of telehealth visits of Kaiser's patients. This value was calculated using Pearl's (2014) estimate of the level of utilization (26%) at Kaiser Permanente Northern California (KPNC) of virtual visits (alternatives to in-person visits conducted via secure e-mail, telephone, or live videoconference) in 2008.
[31] The 2008 estimate was used because this was the year in which KPNC introduced an inpatient and ambulatory care electronic health record system that includes a suite of patient-friendly internet, mobile, and video tools. Pearl (2014) shows that by 2013, utilization increased to 58.3% among all visits.

implementation, to come up with a more reasonable estimate for non-Kaiser commercial providers CHBRP applied cost sharing requirements to understand likely actual use of telehealth if barriers were removed and coverage was mandated. The adjusted number is 15% of all patient visits delivered via telehealth. [32]

Instead of assuming even implementation across all plans and providers, CHBRP modeled two separate estimates to provide a range of the variety of reactions anticipated from health plans and providers in terms of telehealth technology adoption. The models are based on different rates of adoption of telehealth by insurers and/or providers during 2017 (Table 4).

CHBRP estimates that up to 15% of total visits may be provided via telehealth postmandate. CHBRP estimates in Scenario A there is a dampened/modest 25% adoption of telehealth postmandate (the low-end estimate). In Scenario A, CHBRP assumes that ultimately, 3.75% of total visits (which expresses 25% of the expected 15% telehealth visits out of all visits) will be delivered via telehealth postmandate. In Scenario B, there is full 100% adoption by both providers and patients of the five telehealth modalities postmandate, which results in 15% of all services being delivered by telehealth in Year 1. The high scenario provides an upper bound for telehealth adoption and utilization postmandate. Both of these scenarios assume enrollees would pay a $26.70 copay on average for telehealth services (based on estimated 20% coinsurance) — equivalent to an in-person visit. CHBRP believes cost sharing scenarios are more likely than no cost sharing once telehealth becomes reimbursable, and AB 2507 explicitly allows cost sharing equivalent or less than cost-sharing for in-person visits.

[32] As previously noted, CHBRP assumes that increases in utilization of telehealth services with the introduction of AB 2507 would not occur for salary-based systems (such as Kaiser). For plans that contract with external medical groups, CHBRP assumed utilization of telehealth services would increase. CHBRP recognizes that capitation rates for specific medical groups might not increase immediately to reflect any anticipated increase in the total cost to provide professional services. However, to the extent CHBRP assumed an increase in the utilization of the five modalities of telehealth services, and, in particular, supplemental telehealth services, the 2017 cost and premium estimates in this report assume the predicted impact is reflected completely in all provider capitation rates for commercial HMOs.

Table 4. Low and High Adoption of Telehealth Services Scenarios

	Scenario A (25% ADOPTION) Where 3.75% of All Visits Are Now Telehealth		Scenario B (100% ADOPTION) Where 15% of All Visits Are Now Telehealth	
Type of new telehealth visits billed	Substitute	Supplementary	Substitute	Supplementary
Percentage of increase explained	60%	40%	60%	40%
Share of telehealth visits by substitute and supplementary	2.25%	1.5%	9%	6%
Percent of Total Visits Delivered via Telehealth	3.75%		15%	

Source: California Health Benefits Review Program, 2016.

Premandate (Baseline) Benefit Coverage, Utilization, and Cost

Premandate (Baseline) Benefit Coverage

Current coverage of telehealth was determined by a survey of the seven largest providers of health insurance in California representing:

- 76% of enrollees in the privately funded, DMHC-regulated market;
- 28% of enrollees in the CDI-regulated market; and
- 70% of enrollees in the privately funded market subject to state mandates.

DMHC-regulated health plans and CDI-regulated policies report that currently:

- 78% of enrollees have benefit coverage[33] for telephone and e-mail; and
- 91% of enrollees have benefit coverage for live videoconferencing and store-and-forward.

[33] As previously mentioned, the definition of covered telehealth services differs by insurance carrier, and it is likely that no carrier is currently reimbursing telehealth services at the level of an in-person visit, as is required by AB 2507.

Employees covered by the California Public Employees' Retirement System (CalPERS) HMOs generally cover live videoconference and store-and-forward, although coverage for telephone, e-mail and other electronic messaging based services varies.

Beneficiaries with Medi-Cal Managed Care plans have benefit coverage for live videoconferencing and store-and-forward. Medi-Cal Managed Care does not cover or reimburse for telephone and e-mail. AB 2507 would require coverage for telehealth offered via all five modalities. However, because Medi-Cal managed care capitation rates are typically set based on budget constraints and at the lower bound of actuarially sound rates by their contractor, CHBRP does not anticipate any increase in capitated premiums due explicitly to telehealth.

Premandate (Baseline) Utilization and Per-Unit Cost

Premandate utilization assumptions

CHBRP approaches utilization by examining both Kaiser and non-Kaiser utilization rates. For this a set of assumptions were made:

- Kaiser members are assumed to be unaffected by the AB 2507 under all scenarios and thus are not included in the analysis;
- Non-Kaiser members who had coverage premandate are still assumed to have additional utilization postmandate. Although a carrier may have technically covered telehealth, the level of reimbursement and coverage may vary by carrier and does not appear to be reimbursed and defined as described in AB 2507.
- Postmandate, all non-Kaiser members are assumed to use office visits and telehealth services under the provisions of the two scenarios (in Scenario A, CHBRP assumes that barriers to entry, slower adoption of technology, updates to billing systems, and other factors will result in only 25% of the possible telehealth impact (i.e. 3.75% of all office visits being telehealth) occurring. In Scenario B, CHBRP assumes that providers and patients will be able to take full advantage of telehealth modalities within the first year and achieves similar growth after adjusting for cost sharing as the Kaiser Permanente implementation of telehealth, resulting in 15% of all visits being via telehealth modalities in Year 1);
- As stated, among CalPERS plans, coverage for telehealth varies. Generally, CalPERS HMOs cover live video and store-and-forward, although coverage for telephone, e-mail and other electronic messaging based services varies by plan. As with other non-Kaiser members with premandate telehealth coverage, we assume these CalPERS members have no premandate utilization that is currently reimbursed. Postmandate, they gain coverage for e-mail and electronic messaging, and are assumed to use office visits and telehealth services under the provisions of the two scenarios.

Estimating current utilization

CHBRP examines billing codes specific to telephone, e-mail, and electronic messaging. CHBRP also examined CPT billing codes associated with diagnosis, treatment, and management delivered traditionally in-person or “modified” to denote that the service was delivered via live videoconference or store-and-forward. CHBRP also included Healthcare Common Procedure Coding System (HCPCS) temporary telehealth codes that have not yet been added to the AMA’s official CPT code manual. (For a full list of CPT codes included, please see Table C-2 in Appendix C).

CHBRP also uses CPT code to define:

- "Time" and "complexity" of a condition. CPT codes are descriptive of the amount of time an encounter should require, and the severity of the patient's illness.

Table 5 shows premandate utilization and unit cost for telephone, e-mail, electronic messaging, live videoconference, and store-and-forward. CHBRP estimates premandate (baseline) utilization based on PricewaterhouseCoopers' analysis of 2014 California claims data.[34] CHBRP assumes these utilization estimates underreport the extent to which physicians and billable non-physician providers are currently using telephone, e-mail, and other electronic messaging to communicate with patients, because they are not billing for the service due to a lack of standardization for reimbursement or limitations in coverage. For this reason, the premandate noncovered benefits is unknown as stated in Table 1.

Premandate (Baseline) Premiums and Expenditures

Table 7 at the end of this section presents per member per month (PMPM) premandate estimates for premiums and expenditures by market segment for DMHC-regulated plans and CDI-regulated policies. Total current annual expenditure for all DMHC-regulated plans and CDI-regulated policies is $145.1 billion.

Public Demand for Benefit Coverage

Considering the criteria specified by CHBRP's authorizing statute, CHBRP reviews public demand for benefits relevant to a proposed mandate in two ways. CHBRP:

- Considers the bargaining history of organized labor; and
- Compares the benefits provided by self-insured health plans or policies (which are not regulated by the DMHC or CDI and therefore not subject to state-level mandates) with the benefits that are provided by plans or policies that would be subject to the mandate.

On the basis of conversations with the largest collective bargaining agents in California, CHBRP concluded that unions *currently do not* include coverage arrangements for telehealth, by its existing definition, or phone and e-mail. In general, unions negotiate for broader contract provisions such as coverage for dependents, premiums, deductibles, and broad coinsurance levels.

Among publicly funded self-insured health insurance policies, the preferred provider organization (PPO) plans offered by CalPERS currently have the largest number of enrollees. The CalPERS PPOs *currently* provide benefit coverage similar to what is available through group health insurance plans and policies that would be subject to the mandate.

To further investigate public demand, CHBRP used the bill-specific coverage survey to ask carriers who act as third-party administrators for (non-CalPERS) self-insured group health insurance programs whether the relevant benefit coverage differed from what is offered in group market plans or policies that would be subject to the mandate. The majority of plan respondents did not act as third-party

[34] PricewaterhouseCoopers uses MarketScan databases reflecting the health care claims experience of employees and dependents covered by the health benefit programs of large employers, as detailed in Appendix C and the literature. It should be noted that the MarketScan databases contain claims data collected from insurance companies, Blue Cross Blue Shield plans, and third party administrators, but not from Medi-Cal or Workers Compensation.

administrators for self-insured group health insurance programs; it is unclear whether benefit coverage differs in this segment.

How Lack of Coverage Results in Cost Shifts to Other Payers

It appears unlikely that the current benefit coverage prompts enrollees to seek care from public programs or other payers, including charities, and other state departments. However, insofar as county health departments, clinics, nonprofit organizations, or foundations currently fund telehealth activities to provide unreimbursed care to their patients to overcome access barriers, there may be a shift from those external funding sources providing telehealth due to the availability of reimbursement for telehealth services covered by AB 2507. That would mean the postmandate premium increases could result in savings to other organizations that have been providing telehealth already, without insurance reimbursement.

Postmandate Impacts of AB 2507

Postmandate Benefit Coverage

CHBRP projects AB 2507 would affect the health insurance of the approximately 25.2 million enrollees with state-regulated health plans and policies (65.2% of all Californians). For AB 2507-specific telehealth modalities:

- Telephone/e-mail/electronic messaging: Premandate, 78% of enrollees (19.5 million) had benefit coverage for telephone while 76% (19.2 million) had coverage for e-mail and text or chat; postmandate, all 25.2 million enrollees with state-regulated health insurance would have coverage for telephone and e-mail, and text or chat telehealth services.
- Live videoconference and store-and-forward: Premandate, 91% of enrollees (23.0 million) had benefit coverage for live videoconference and store-and-forward. Postmandate, all 25.2 million enrollees with state-regulated health insurance would have coverage for the modalities.

Postmandate Utilization

Assumptions for postmandate utilization

- Postmandate, all non-Kaiser members, regardless of their premandate coverage for telehealth services, are assumed to use office visits and telephone, e-mail, live videoconference, and store-and-forward services under the provisions of the two scenarios.
- Based on a PricewaterhouseCoopers' analysis of MarketScan data, an estimated distribution of telehealth utilization by service type was assumed as follows: telephone-based evaluation and management 60%, e-mail–based evaluation and management 20%, videoconferencing 5%, and store-and-forward 15%.

AB 2507 impact on volume of telehealth

In the absence of cost sharing, utilization of use of telehealth services would increase to approximately 15%[35] in the first year after enactment, assuming providers quickly adapt to the bill for telephone and e-

[35] This represents the percentage of telehealth visits of Kaiser's new and existing patients. This value was calculated using Pearl's (2014) estimate of the level of utilization (22.8%) at Kaiser Permanente Northern California (KPNC) of

mail services. The adjusted 2008 estimate was used because this was just before the introduction of KPNC's inpatient and ambulatory care electronic health record system, which includes a suite of patient-friendly Internet, mobile, and video tools had opportunity to take effect. (Please see Appendix C for the impact of this scenario.)

However, as previously discussed, Kaiser's integrated and closed system, and which already uses telephone and e-mail without cost sharing to deliver evaluation and management services, may not generalize to other types of health insurance contracts. CHBRP made adjustments to apply Kaiser's experience to a capitated and fee-for-service network HMO and PPO commercial market, and includes a $26.70 average copay for a typical telehealth visit.[36] Copay by modality is summarized in Table 5. As seen in both scenarios, CHBRP believes cost sharing for telehealth that is equivalent to in-person cost sharing would be likely.

Table 5. Summary of Cost Share by Telehealth Modality

	Premandate Telehealth Cost Share	Postmandate Telehealth Cost Share
Phone	$7.99	$23.08
E-mail, synchronous text and chat conferencing	$20.67	$23.08
Live videoconference	$32.76	$32.29
Store-and-forward	$23.91	$31.34
Average telehealth copayment	$17.16	$26.70

Source: California Health Benefits Review Program, 2016.

Note: Cost share for Medi-Cal HMO plans not included.

CHBRP used a framework (Figure 8) to define increased utilization by distinguishing whether the additional telehealth visits resulting from AB 2507 are "substitute visits" — replacing existing in-person visits with telephonic or electronic visits, or "supplementary visits," which are telehealth visits that are in addition to current in-person visits, and that would not have been delivered (or if delivered, not counted) premandate because they were not billable.

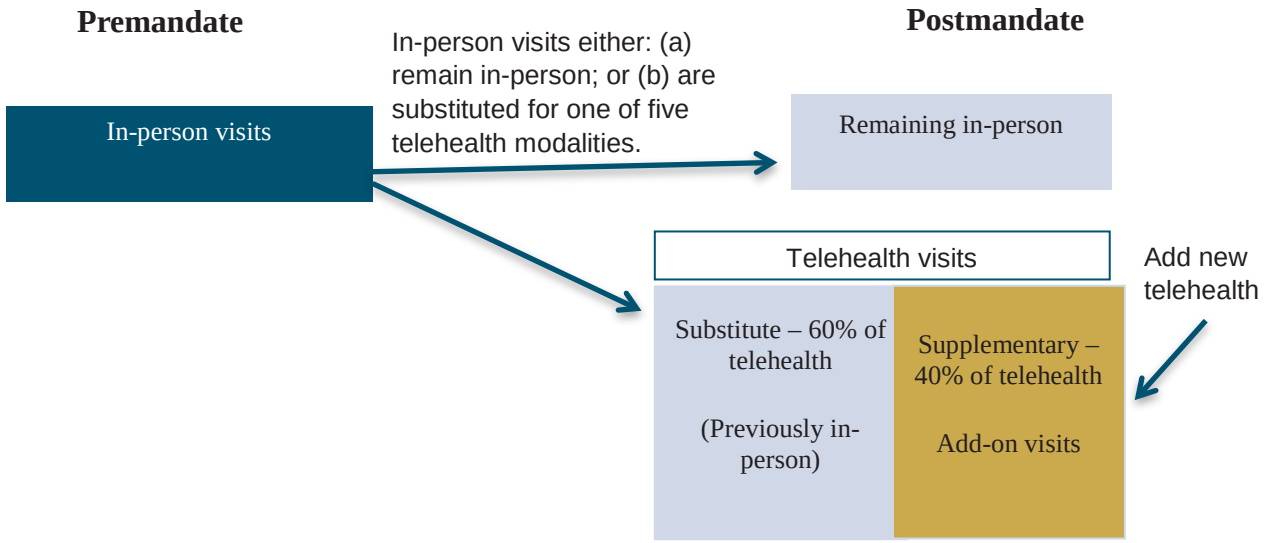
Supplemental visits: Supplemental visits are "new" visits that would increase health care costs overall. CHBRP assumes 40% of new telehealth visits would be supplemental, defined as visits:

virtual visits (alternatives to in-person visits conducted via secure e-mail, telephone, or live videoconference) in 2008 (Pearl, 2014). The adjusted 2008 estimate was used because this was just before the introduction of KPNC's inpatient and ambulatory care electronic health record system that includes a suite of patient-friendly Internet, mobile, and video tools had opportunity to take effect. Pearl (2014) shows that by 2013, utilization of those modalities — as a share of total visits, including in-person — increased to 58.3% among established patients.

[36] As previously mentioned, the definition of covered telehealth services differs by insurance carrier, and it is likely that no carrier is currently reimbursing telehealth services at the level of an in-person visit, as is required by AB 2507.

- That were previously not being billed because telephone and e-mail were not reimbursed. These could include follow-up visits more than 7 days after the original visit.
- That otherwise would not have occurred because of other barriers, including distance, urgency, etc., that could have (or should have) been done in-person.

Figure 8. Change in Patient Utilization Once Telehealth Modalities Are Reimbursed



Source: California Health Benefits Review Program, 2016.

Note: Services described in the figure above are either in-person services or telehealth services delivered by a physician or other billable non-physician provider.

Substitute visits: CHBRP assumes that with the introduction of AB 2507, 60% of evaluation and management visits would be substitute visits replacing in-person, and commensurately split between e-mail, phone, videoconferencing, and store-and-forward modalities. Because these telehealth visits are replacing in-person visits, health spending for insurance carriers, plans, and patients would stay the same, or potentially decrease because of increased efficiency in accessing needed services, or reduced travel time (please see the *Public Health* section). CHBRP estimates the net increase in telephonic and electronic visits in Table 6 below.

Table 6. Net New Encounters by All Five Telehealth Modalities Postmandate, Low and High Scenarios

	Increase in Telehealth (Low Adoption Scenario A) Visits due to Mandate	Increase in Telehealth (High Adoption Scenario B) Visits due to Mandate
Share of visits via telehealth modalities	3.75%	15%
% Substitute visits	60%	60%
% Supplemental visits	40%	40%
Phone	1,068,000	4,522,000
Substitute	641,000	2,713,000
Supplemental	427,000	1,809,000
E-mail, synchronous text and chat conferencing	402,000	1,701,000
Substitute	241,000	1,021,000
Supplemental	161,000	680,000
Live videoconference	86,000	364,000
Substitute	52,000	218,000
Supplemental	34,000	146,000
Store-and-forward	1,041,000	4,418,000
Substitute	625,000	2,651,000
Supplemental	416,000	1,767,000
Enrollee out-of-pocket costs	$15,542,000	$64,762,000

Source: California Health Benefits Review Program, 2016.

Note: Numbers may not sum due to rounding.

In cases where enrollees would supplement in-person visits with telehealth services, costs would increase as a result of more spending by health insurers and patients in the form of additional provider reimbursement and patient cost sharing for those additional telehealth services used. In cases where enrollees are substituting a telehealth visit for an in-person visit, resulting in more efficient use of resources, CHBRP assumes enrollees would see no change in cost sharing due to equivalent cost-sharing requirements for in-person services and telephone, e-mail, live videoconference, and store-and-

forward services. Given the supplemental and substitute nature of the visits, it is likely that one may be more sensitive to cost sharing, but there is no evidence to quantify that difference.

AB 2507 impact on volume of in-person visits

CHBRP estimates that telephonic and electronic visits would have the following impact on in-person visits:

- On the low end, a 2.3% decline in in-person visits (from 69.2 million to 67.6 million), but a net increase of 1.5% in all visits — in-person and telehealth — to 70.2 million.
- On the high end, a 9.5% decline in in-person visits (from 69.2 million to 62.6 million), but a net increase of 6.4% in all visits — in-person and telehealth — to 73.6 million.

Table 6 compares CHBRP's high- and low-end utilization estimates.

AB 2507 impact on volume of hospitalizations and ER visits

As previously discussed in the *Medical Effectiveness* section, CHBRP assumes telehealth services would not have an impact on hospital utilization as most hospitalization studies found telehealth had no statistically significant effect on volume regardless of the technology used. Similarly, CHBRP assumes telephone, e-mail, and other electronic messaging services would not have an impact on volume of emergency room (ER) visits as the body of literature suggests there is no consistent impact. Please see the *Medical Effectiveness* section for a more detailed summary of the literature.

Postmandate Per-Unit Cost

CHBRP assumes that there is no impact on the per-unit costs of each of the telehealth services for health insurance carriers because AB 2507 requires that physicians and billable non-physician providers be reimbursed at the same rate as a comparable in-person visit. Comparability is driven by length of visit, whether a patient is new or existing, and complexity of the condition and services delivered during the visit. CHBRP used existing CPT codes with telehealth modifiers to understand the current provision of telehealth and the potential for telehealth visits upon implementation of AB 2507. The per unit cost for a specific CPT code based on PricewaterhouseCoopers' analysis of MarketScan data was based upon the in-person reimbursement rate for the CPT code, rather than the current CPT code-based reimbursement with the telehealth modifier. In the case that there are types of telehealth services that do not currently have specific codes, CHBRP assumes that they will be developed or that standards will be developed to allow for reimbursement. For example, CPT code 99444 (non–face-to-face online evaluation and management) is currently reimbursed at a lower level than an in-person visit and does not use a GT/GQ modifier to indicate telehealth separately. However, because there is no benchmark in-person code CHBRP assumed that it is analogous to a 99212 CPT code. In that case, the benchmark for the in-person visit would come from an analogous CPT code, rather than from dropping the CPT modifier that indicates a telehealth visit and using the CPT code without modifier to calculate the cost of the benchmark in-person visit.

Postmandate Administrative Expenses and Other Expenses

CHBRP estimates that the increase in administrative costs of DMHC-regulated plans and/or CDI-regulated policies will remain proportional to the increase in premiums. CHBRP assumes that if health care costs increase as a result of increased utilization or changes in unit costs, there is a corresponding proportional increase in administrative costs. CHBRP assumes that the administrative cost portion of

premiums is unchanged. All health plans and insurers include a component for administration and profit in their premiums.

The low-end scenario, assuming 25% adoption of telephone and e-mail services, represents a realistic possibility. Even though providers could potentially bill for the services if AB 2507 were enacted, they could not unless they have secure e-mail and electronic messaging. Given recent developments in electronic health record adoption, it is likely that physicians and other providers have the capacity currently but would still need to adopt the technology, use it, and bill for services that are now reimbursable. During the first year, it is unlikely that telehealth will be uniformly adopted from a technological, billing, and time standpoint.

Postmandate Expenditures

CHBRP assumes that increases in utilization of telehealth services with the introduction of AB 2507 would not occur for salary-based systems (such as Kaiser). For plans that contract with external medical groups, CHBRP assumed utilization of telehealth services would increase. CHBRP recognizes that capitation rates for specific medical groups might not increase immediately to reflect any anticipated increase in the total cost to provide professional services. Capitated systems pay providers a flat fee per member per month to deliver care, thus they are presumably incentivized to provide efficient care, including the use of telephone and e-mail (Stroetmann et al., 2010). AB 2507 would not affect this arrangement and would not permit physicians and billable non-physician providers to bill for additional reimbursement above their capitated rate because the telehealth services provided would continue to be part of the benefit package, albeit in a new alternative setting. Utilization could drive future capitation rates higher based on the actual spending in a given year, but in 2017 because the benefits do not change and the settings do not vary in pricing, that might occur later through adjustments to contracts — especially if providers are not required to provide telehealth at all. However, to the extent CHBRP assumed an increase in the utilization of the five modalities of telehealth services, and, in particular, supplemental telehealth services, the 2017 cost and premium estimates in this report assume the impact is reflected completely in all provider capitation rates for commercial HMOs. Providers are not required to offer telehealth services through their practice to their patients, and could continue to provide the necessary care via in-person visits only if they did not have the capacity, expertise, or desire to expand their telehealth services available to patients.

Changes in expenditures

On the low end, AB 2507 would increase total net annual expenditures by $96.8 million, or 0.07% (Table 1) for enrollees with DMHC-regulated plans and CDI-regulated policies. This scenario assumes enrollees would pay between $23.08 and $32.29 in cost sharing, depending on the type of telehealth modality (see Table 5 for a cost-share summary) on average for telephone, e-mail and synchronous text and chat, live videoconference, or store-and-forward services. Scenario A also assumes that of the possible 15% increase predicted through the Kaiser Permanente experience, only 25% of the increase in use would be realized. That means only 25% (3.75%) of potentially billable services under full implementation (15%) would actually be delivered and billed.

On the high end (Scenario B), assuming 100% of eligible telehealth services (estimated to represent 15% of all visits) are billed, total net annual expenditures is $402.6 million or 0.28%, of total expenditures (Table 1). This scenario also assumes $26.70 average cost sharing for telehealth services.

Changes in premiums

Changes in insurance premiums and enrollee out-of-pocket costs vary by market segment. Please see Tables 1, 8 and 9 for changes. Note that the total population in Tables 8 and 9 reflect the full 25.2 million enrollees in DMHC-regulated plans and CDI-regulated policies subject to AB 2507.

Among publicly funded DMHC-regulated health plans, CalPERS HMO plans' premiums would increase between $0.25 PMPM on the low end and $1.03 PMPM on the high end.

Under the low adoption scenario, the mandate is estimated to increase premiums by about $56.4 million. The distribution of the impact on premiums is as follows (figures are rounded):

- Total premiums for private employers purchasing group health insurance are estimated to increase by $29,2 million, or 0.05%.
- Total employer premium expenditures for CalPERS HMOs are estimated to increase by $2 million, or 0.04%.
- Of the amount CalPERS would pay in additional total premium, about $1.6 million would be the cost borne by the General Fund for CalPERS HMO members who are state employees or their dependents.
- Enrollee contributions toward premiums for group insurance are estimated to increase by $9.5 million, or 0.05%.
- Total premiums for purchasers of individual market health insurance are estimated to increase by $13.9 million, or 0.06%.

Under the low adoption scenario, state expenditures for Medi-Cal Managed Care Plans are estimated to increase by $26.6 million, or 0.16%.

Under the high adoption scenario, the mandate is estimated to increase premiums by about $234.4 million. The distribution of the impact on premiums is as follows (figures are rounded):

- Total premiums for private employers purchasing group health insurance are estimated to increase by $121.8, or 0.19%.
- Total employer premium expenditures for CalPERS HMOs are estimated to increase by $8.5 million, or 0.18%.
- Of the amount CalPERS would pay in additional total premium, about $6.8 million would be the cost borne by the General Fund for CalPERS HMO members who are state employees or their dependents.
- Enrollee contributions toward premiums for group insurance are estimated to increase by $39.6 million or 0.19%.
- Total premiums for purchasers of individual market health insurance are estimated to increase by $57.9 million or 0.26%.

Under the high adoption scenario, state expenditures for Medi-Cal Managed Care Plans are estimated to increase by $110.1 million, or 0.66%.

Medi-Cal Managed Care plans currently provide coverage for live videoconferencing and store-and-forward as part of their capitated rates. Medi-Cal Managed Care does not currently pay for telephone, e-mail, or electronic messaging delivered treatment. Medi-Cal's capitated rates are set by the state to cover the cost of health care services for capitated beneficiaries in managed care plans. The capitated rates assume that the Medi-Cal Managed Care plans manage the utilization and costs of healthcare services appropriately and effectively. These assumptions reflect that plans will invest in ongoing improvements, including the costs associated with emerging healthcare technology and services. Although utilization of

telehealth services are likely to increase in Medicaid managed care as providers and plans start or continue to offer them, the plans accepting the capitated price from Medi-Cal to provide services to program enrollees will not have the ability to negotiate or be paid higher amounts explicitly due to telehealth services. We would anticipate that the actuarial analysis done by Medi-Cal's contractors to develop managed care rates in each county will integrate new substitute and supplemental potential use of telehealth by Medi-Cal managed care providers.

Medi-Cal Managed Care plans, and their contracted medical groups, may already use forms of telehealth services if they believe it is a cost-effective way to deliver health care within the available Medi-Cal capitation rates. However, CHBRP notes that rate-setting, specifically, has not been discussed with the California Department of Health Care Services, and their actuaries may use different assumptions when setting rates if AB 2507 is enacted.

Potential cost offsets or savings in the first 12 months after enactment

CHBRP assumes that any cost offsetting or savings is unlikely to occur in the first 12 months following implementation.

AB 2507 and Essential Health Benefits

In the case of AB 2507, services would simply be delivered in a different way, rather than be considered a new benefit; therefore, these telehealth services would not trigger the ACA requirement that the state defray the cost of additional benefit coverage for enrollees in qualified health plans (QHPs)[37] in Covered California. EHBs define the minimum benefit coverage that enrollees with health insurance must have, and do not regulate how health insurance carriers pay providers for that coverage. Capitated rates in the commercial HMO market or Medi-Cal HMO market already capture services that could be provided via the five telehealth modalities, so the addition of telehealth settings would not necessarily change the benefits offered or require physicians to engage in providing services via telehealth.

Postmandate Changes in Uninsured and Public Program Enrollment

Changes in the number of uninsured persons

CHBRP does not anticipate loss of health insurance, changes in availability of the benefits beyond those subject to the mandate, changes in offer rates of health insurance, changes in employer contribution rates, changes in take-up of health insurance by employees, or purchase of individual market policies, due to the small size of the increase in premiums after the mandate.

Changes in public program enrollment

CHBRP estimates that the mandate would produce no measurable impact on enrollment in publicly funded insurance programs or on utilization of covered benefits in the publicly funded insurance market.

[37] In California, QHPs are nongrandfathered small-group and individual market DMHC-regulated plans and CDI-regulated policies sold in Covered California, the state's online marketplace.

Table 7. Premandate (Baseline) Per Member Per Month Premiums and Total Expenditures by Market Segment, California, 2017: Scenario A "Low" and Scenario B "High"

	DMHC-Regulated						CDI-Regulated			
	Commercial Plans (by Market) (a)			Publicly Funded Plans			Commercial Plans (by Market) (a)			
	Large Group	*Small Group*	*Individual*	*CalPERS HMOs (b)*	*MCMC (Under 65) (c)*	*MCMC (65+) (c)*	*Large Group*	*Small Group*	*Individual*	**TOTAL**
Enrollee Counts										
Total enrollees in plans/policies subject to state Mandates (d)	9,138,000	2,805,000	3,840,000	861,000	6,331,000	561,000	309,000	731,000	579,000	25,155,000
Total enrollees in plans/policies subject to AB 2507	9,138,000	2,805,000	3,840,000	861,000	6,331,000	561,000	309,000	731,000	579,000	25,155,000
Premium Costs										
Average portion of premium paid by Employer	$444.39	$309.74	$0.00	$460.33	$180.00	$445.00	$523.71	$426.22	$0.00	$86,263,866,000
Average portion of premium paid by Employee	$109.27	$160.90	$423.95	$115.08	$0.00	$0.00	$138.66	$159.06	$365.22	$42,569,604,000
Total Premium	**$553.67**	**$470.64**	**$423.95**	**$575.41**	**$180.00**	**$445.00**	**$662.37**	**$585.28**	**$365.22**	**$128,833,470,000**
Enrollee Expenses										
Enrollee expenses for covered benefits (Deductibles, copays, etc.)	$44.43	$93.55	$112.36	$31.43	$0.00	$0.00	$111.69	$177.13	$108.98	$16,248,327,000
Enrollee expenses for benefits not covered (e)	*Unknown*	*Unknown*	*Unknown*	*Unknown*	*Unknown*	*Unknown*	*Unknown*	*Unknown*	*Unknown*	*Unknown*
Total Expenditures	**$598.10**	**$564.19**	**$536.30**	**$606.84**	**$180.00**	**$445.00**	**$774.06**	**$762.41**	**$474.20**	**$145,081,797,000**

Source: California Health Benefits Review Program, 2016.

Notes: (a) Includes enrollees with grandfathered and nongrandfathered health insurance, inside and outside the exchange.

(b) As of September 2015, 57% of CalPERS HMO members were state retirees under age 65, state employees or their dependents. CHBRP assumes the same ratio for 2017.

(c) Medi-Cal Managed Care Plan expenditures for members over 65 include those who also have Medicare coverage. This population does not include enrollees in COHS.
(d) This population includes both persons who obtain health insurance using private funds (group and individual) and through public funds (e.g., CalPERS HMOs, Medi-Cal Managed Care Plans). Only those enrolled in health plans or policies regulated by the DMHC or CDI are included. Population includes all enrollees in state-regulated plans or policies aged 0 to 64 years, and enrollees 65 years or older covered by employer-sponsored health insurance.

(e) Includes only those expenses that are paid directly by enrollees or other sources to providers for services related to the mandated benefit that are not currently covered by insurance.

This only includes those expenses that will be newly covered, postmandate. Other components of expenditures in this table include all health care services covered by insurance.

Key: CalPERS HMOs = California Public Employees' Retirement System Health Maintenance Organizations; CDI = California Department of Insurance; DMHC = Department of Managed Health Care; MCMC = Medi-Cal Managed Care.

Table 8. Postmandate AB 2507 Impacts on Per Member Per Month Premiums and Total Expenditures by Market Segment, California, 2017: Scenario A "Low"

	DMHC-Regulated						CDI-Regulated			
	Commercial Plans (by Market) (a)			Publicly Funded Plans			Commercial Plans (by Market) (a)			
	Large Group	*Small Group*	*Individual*	*CalPERS HMOs (b)*	*MCMC (Under 65) (c)*	*MCMC (65+) (c)*	*Large Group*	*Small Group*	*Individual*	**TOTAL**
Enrollee Counts										
Total enrollees in plans/policies subject to state Mandates (d)	9,138,000	2,805,000	3,840,000	861,000	6,331,000	561,000	309,000	731,000	579,000	25,155,000
Total enrollees in plans/policies subject to AB 2507	9,138,000	2,805,000	3,840,000	861,000	6,331,000	561,000	309,000	731,000	579,000	25,155,000
Premium Costs										
Average portion of premium paid by Employer	$0.19	$0.17	$0.00	$0.20	$0.32	$0.32	$0.20	$0.19	$0.00	$57,839,000
Average portion of premium paid by Employee	$0.05	$0.09	$0.26	$0.05	$0.00	$0.00	$0.05	$0.07	$0.26	$23,435,000
Total Premium	$0.24	$0.26	$0.26	$0.25	$0.32	$0.32	$0.25	$0.26	$0.26	**$81,274,000**
Enrollee Expenses										
Enrollee expenses for covered benefits (Deductibles, copays, etc.)	$0.07	$0.07	$0.07	$0.07	$0.00	$0.00	$0.07	$0.07	$0.07	$15,542,000
Enrollee expenses for benefits not covered (e)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
Total Expenditures	$0.31	$0.33	$0.33	$0.32	$0.32	$0.32	$0.32	$0.34	$0.33	**$96,816,000**
Postmandate Percent Change										
Percent change insured premiums	0.0432%	0.0553%	0.0619%	0.0429%	0.1784%	0.0722%	0.0381%	0.0452%	0.0722%	0.0631%
Percent Change Total Expenditures	0.0518%	0.0587%	0.0622%	0.0523%	0.1784%	0.0722%	0.0419%	0.0440%	0.0706%	0.0667%

Source: California Health Benefits Review Program, 2016.

Note: (a) Includes enrollees with grandfathered and nongrandfathered health insurance, both on Covered California and outside the exchange.

(b) As of September 2015, 57% of CalPERS HMO members were state retirees under age 65, state employees or their dependents. CHBRP assumes the same ratio for 2017.

(c) Medi-Cal Managed Care Plan expenditures for members over 65 include those who also have Medicare coverage. This population does not include enrollees in COHS.

(d) This population includes both persons who obtain health insurance using private funds (group and individual) and through public funds (e.g., CalPERS HMOs, Medi-Cal Managed Care Plans). Only those enrolled in health plans or policies regulated by the DMHC or CDI are included. Population includes all enrollees in state-regulated plans or policies aged 0 to 64 years, and enrollees 65 years or older covered by employer-sponsored health insurance.

(e) Includes only those expenses that are paid directly by enrollees or other sources to providers for services related to the mandated benefit that are not currently covered by insurance. This only includes those expenses that will be newly covered, postmandate. Other components of expenditures in this table include all health care services covered by insurance.
Key: CalPERS HMOs=California Public Employees' Retirement System Health Maintenance Organizations; CDI=California Department of Insurance; DMHC=Department of Managed Health Care; COHS=County Operated Health Systems
MCMC = Managed Care Medi-Cal

Table 9. Postmandate AB 2507 Impacts on Per Member Per Month Premiums and Total Expenditures by Market Segment, California, 2017: Scenario B "High"

	DMHC-Regulated						CDI-Regulated			
	Commercial Plans (by Market) (a)			Publicly Funded Plans			Commercial Plans (by Market) (a)			
	Large Group	*Small Group*	*Individual*	*CalPERS HMOs (b)*	*MCMC (Under 65) (c)*	*MCMC (65+) (c)*	*Large Group*	*Small Group*	*Individual*	**TOTAL**
Enrollee Counts										
Total enrollees in plans/policies subject to state Mandates (d)	9,138,000	2,805,000	3,840,000	861,000	6,331,000	561,000	309,000	731,000	579,000	25,155,000
Total enrollees in plans/policies subject to AB 2507	9,138,000	2,805,000	3,840,000	861,000	6,331,000	561,000	309,000	731,000	579,000	25,155,000
Premium Costs										
Average portion of premium paid by Employer	$0.80	$0.71	$0.00	$0.82	$1.33	$1.33	$0.82	$0.80	$0.00	$240,312,000
Average portion of premium paid by Employee	$0.20	$0.37	$1.09	$0.21	$0.00	$0.00	$0.22	$0.30	$1.09	$97,500,000
Total Premium	$1.00	$1.08	$1.09	$1.03	$1.33	$1.33	$1.03	$1.09	$1.09	**$337,812,000**
Enrollee Expenses										
Enrollee expenses for covered benefits (Deductibles, copays, etc.)	$0.30	$0.30	$0.30	$0.30	$0.00	$0.00	$0.30	$0.30	$0.30	$64,762,000
Enrollee expenses for benefits not covered (e)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
Total Expenditures	$1.29	$1.38	$1.39	$1.32	$1.33	$1.33	$1.33	$1.39	$1.39	**$402,573,000**
Postmandate Percent Change										
Percent change insured premiums	0.1801%	0.2298%	0.2577%	0.1786%	0.7393%	0.2991%	0.1560%	0.1870%	0.2994%	0.2622%
Percent Change Total Expenditures	0.2161%	0.2441%	0.2588%	0.2180%	0.7393%	0.2991%	0.1718%	0.1823%	0.2930%	0.2775%

Source: California Health Benefits Review Program, 2016.

Note: (a) Includes enrollees with grandfathered and nongrandfathered health insurance, both on Covered California and outside the exchange.

(b) As of September 2015, 57% of CalPERS HMO members were state retirees under age 65, state employees or their dependents. CHBRP assumes the same ratio for 2017.

(c) Medi-Cal Managed Care Plan expenditures for members over 65 include those who also have Medicare coverage. This population does not include enrollees in COHS.

(d) This population includes both persons who obtain health insurance using private funds (group and individual) and through public funds (e.g., CalPERS HMOs, Medi-Cal Managed Care Plans). Only those enrolled in health plans or policies regulated by the DMHC or CDI are included. Population includes all enrollees in state-regulated plans or policies aged 0 to 64 years, and enrollees 65 years or older covered by employer-sponsored health insurance.

(e) Includes only those expenses that are paid directly by enrollees or other sources to providers for services related to the mandated benefit that are not currently covered by insurance. This only includes those expenses that will be newly covered, postmandate. Other components of expenditures in this table include all health care services covered by insurance.
Key: CalPERS HMOs=California Public Employees' Retirement System Health Maintenance Organizations; CDI=California Department of Insurance; DMHC=Department of Managed Health Care; COHS=County Operated Health Systems
MCMC = Managed Care Medi-Cal

PUBLIC HEALTH IMPACTS

As discussed in the *Policy Context* section, Assembly Bill (AB) 2507 would require state-regulated health plans and policies to cover telehealth services provided by physicians and billable non-physician providers, beginning in January 2017. CHBRP estimates that approximately 25.2 million (65.2%) Californians will have health insurance in 2017 that would be subject to this state health benefit mandate law.

This section estimates the short-term[38] public health impact of AB 2507 on access to care/utilization, adherence to recommended care, health outcomes, potential treatment harms, social determinants of health (including disparities by geography and access to technology), and financial burden. See the *Long-Term Impacts* section for a discussion of access to care beyond the first 12 months of the bill implementation.

Estimated Public Health Outcomes

As presented in the *Medical Effectiveness* section, the scope of AB 2507 applies to virtually all diseases and conditions. The telehealth literature generally focuses on a limited number of conditions (e.g., dermatology, neurology, psychiatry/psychology) and may not be generalizable to other conditions. Overall, CHBRP found insufficient evidence to determine whether medical care provided via telephone or e-mail is as effective as medical care provided in-person (with the exception of effective glycemic control for patients with diabetes who communicated via e-mail with their provider). Conversely, CHBRP found a low preponderance of evidence across multiple conditions that store-and-forward is at least as effective as in-person visits in terms of health outcomes and diagnostic accuracy for; however, live videoconferencing is found to be at least as effective as in-person visits for mental health and dermatology (see the Medical Effectiveness section).

As presented in Table 1, CHBRP estimates that the number of enrollees with new coverage for videoconferencing, and store-and-forward would increase by 10% while coverage for e-mail, text, chat, and phone would increase by 29% post mandate.

To show the magnitude of difference between its model assumptions, CHBRP presents low-end and high-end scenarios estimating the uptake of various technologies in the first year post mandate (Figure 4). Specifically, patient-initiated telephone would increase between 1.1 million and 4.5 million encounters. Patient-initiated e-mail/text/chat communications would increase between 402,000 and 1.7 million visits. The use of live videoconferencing between patients and providers would increase between 86,000 and 364,000, while store-and-forward would increase by between 1 million and 4.4 million encounters (see Table 6 in the *Benefit Coverage, Utilization, and Cost Impacts* section). CHBRP assumes that 60% of these new encounters would be substitutes for in-person visits and 40% would be supplemental visits (encounters already occurring, but unreimbursed or new encounters with patients who would have previously avoided in-person visits due to distance or inconvenience). Overall, CHBRP estimates that between 3.75% and 15% of all visits would occur through telehealth post mandate.

Health Outcomes

As previously mentioned, the scope of health conditions potentially affected by AB 2507 is vast and measures of effectiveness in the literature are limited to a handful of conditions, such as diabetes, mental

[38] CHBRP defines short-term impacts as changes occurring within 12 months of bill implementation.

health, neurology, and dermatology. Of all modalities, CHBRP found only clear and convincing evidence that live videoconferencing and in-person visits had similar effects on mental health outcomes for individuals treated for psychiatric conditions and for dermatologic outcomes; evidence also suggested that store-and-forward yielded similar dermatologic outcomes as in-person visits as did the aforementioned study regarding e-mail and glycemic control for patients with diabetes.

CHBRP found insufficient evidence to determine whether services provided via *telephone* or *e-mail/text/chat* are as effective as in-person visits, with the exception of e-mail communication for glycemic control among diabetic patients. Therefore, although telephone encounters would increase between 1.1 million to 4.5 million encounters, and e-mail, text and chat communication would increase between 402,000 to 1.7 million encounters, the public health impact of AB 2507 is unknown. Note that the absence of evidence is not "evidence of no effect." It is possible that an impact — positive or negative — could result, but current evidence is insufficient to inform a definite estimate.

For mental health and dermatology, evidence indicated that outcomes for *live videoconferencing* and *store-and-forward* were equivalent to in-person care; however, these results may not be generalizable to other conditions. CHBRP estimates that utilization would increase between 86,000 to 364,000 live videoconferencing encounters and between 1.1 million to 4.4 million store-and-forward encounters. For those newly covered enrollees seeking mental health and dermatologic care via telehealth, CHBRP estimates that positive outcomes could occur for some with these conditions; however, the public health impact for other conditions is unknown.

Patient Experience

One key aspect to estimating the potential impact of AB 2507 is gauging patient interest and uptake of technologies to communicate with their providers. Of the five technologies, CHBRP assumes that telephone and e-mail are the most common and familiar modes of communication between patients and providers. Although patients are integral to the use of live videoconferencing, CHBRP only found literature addressing encounters occurring at medical facilities that were facilitated through another provider. CHBRP found no literature evaluating patient-initiated live videoconferencing encounters (i.e., from home), but believes that these types of encounters do occur and will become more common in the future (see *Medical Effectiveness* section).

There appears to be variation in patient interest in the use of telehealth services. Some data provides an indication of interest in this communication tool. A 2010 Harris poll reported that 79% of U.S. adults go online. Of those, 88% of use the Internet to get medical information and 53% discuss their findings with their physicians (The Harris Poll, 2010). According to a 2013 survey from the California Public Policy Institute, most Californians (86%) use the Internet at least occasionally, an increase of 21 percentage points since 2000 (Baldassare et al., 2013). The same survey found that 69% of Californians have high-speed broadband access at home, but differences in access are apparent by income, education, race, ethnicity, and geographic location. Thirty-two percent of Californians use the Internet to contact a health insurance provider or medical professional (32%), whereas over half (55%) seek out medical information online. Nearly 92% of Californians report having a cell phone, and 58% have a smart phone, with younger age groups (i.e., 18–34 years) more likely to use a smart phone. Smart phone usage also increases with higher education and income levels (Baldassare et al., 2013). This information combined with data about available technology (see *Background* section) indicates that many patients have the ability and the desire to communicate with their providers via e-mail, telephone, or even chat.

CHBRP estimates that, post mandate, patient experience would improve as providers increase their e-mail and telephone responses to patient-initiated inquiries. The improvement is partly attributable to

increased access to (specialty or primary) care as well as improved convenience for patients, such as reduced wait times for some visits.

Potential Harms From the Use of Telehealth

When data are available, CHBRP estimates the marginal change in relevant harms associated with interventions affected by the proposed mandate. In the case of AB 2507, CHBRP found that potential harms frequently mentioned in the telehealth literature included further fragmentation of care (especially when patients access out-of-network providers); misdiagnosis (which varies greatly with technology type and disease condition due in part to the lack of context and nonverbal clues obtained in an in-person visit) (Heinzelmann et al., 2005; Kassirer, 2000); higher rates of follow-up; and potential delays of immediate care seeking in the emergency department, which could pose a significant safety risk for patients with urgent or emergent conditions (Hall and McGraw, 2014; Lewis et al., 2005; Nelson, 2014). Other potential harms associated with e-mail care included those associated with provider lack of adherence to security protocol, informed consent, breaches in patient privacy, and unauthorized access to and/or use of patient health care information (Burke and Hall, 2015; Hall and McGraw, 2014; Menachemi et al., 2011). Two of the barriers to the diffusion and utilization of telehealth in practice from a health provider's perspective were concerns about increased physician liability and the medical responsibility of maintaining privacy during the exchange of sensitive data necessary for treatment (Timpano et al., 2013).

There is a concern that telehealth, especially store-and-forward and e-mail use, would increase the potential for fraud and abuse. This argument is based on the idea that upcoding would be used to bill for telehealth when it was not necessary. However, medical coding and documentation standards act as an impediment to that type of gaming and exploitation of telehealth billing. Alaska adopted telehealth in 2001 and has not experienced either problem based on a review of 1,300 providers and more than 50,000 billed store-and-forward telehealth visits between years 2001 and 2007 (Ferguson, 2008).

It is unknown whether patient-initiated telehealth services would result in harms to patients. Note that an unknown finding could result in positive, negative, or no impacts.

Social Determinants of Health and Disparities

CHBRP defines social determinants of health (SDoH) as conditions in which people are born, grow, live, work, learn, and age. These social determinants of health (e.g., economic factors, social factors, education, physical environment) are shaped by the distribution of money, power, and resources and impacted by policy (adapted from Healthy People 2020, 2015; CDC, 2014). These factors generally occur prior to or outside of the health care system and are highly correlated with downstream events such as avoidable illnesses and premature death. However, the relationship between SDoH and health status/outcomes is complex and, periodically, health insurance mandates can influence SDoH.[39] CHBRP considers SDoH (e.g., income, education, transportation, or social construct around age, race/ethnicity, gender, and gender identity/sexual orientation) that are relevant to AB 2507 and where evidence is available.

In the case of AB 2507, key determinants that may be affected by the mandate include transportation, rural living, and socioeconomic characteristics (age, race/ethnicity, income, language). See below for further discussion.

[39] For more information about SDoH, see CHBRP's publication: *Incorporating Relevant Social Determinants of Health into CHBRP Benefit Mandate Analyses.*

Disparities in Use of Telehealth

Impact on patient travel and rural health disparities

Patients must travel to obtain their health care, which can be a burden especially for those who live in rural areas, have limited transportation options, or complex conditions that make travel difficult. As described in the *Background* section, the difference in health status and health care access between urban and rural communities in California is large. Travel costs include the direct costs of transportation and the indirect costs such as lost productivity and income, and delays in treatment associated with the travel. For patients experiencing these types of barriers, CHBRP finds that telehealth may improve access from the patient's perspective. Patients in both urban and rural areas who cannot take time away from work, have difficulty traveling, or have questions or problems occurring after usual office hours may find the convenience of e-mail, phone, and live videoconferencing to be beneficial. For patients (and their caregivers), traveling from home in a rural location to an urban-based health clinic for treatment can be a potential barrier, as public transportation is often limited. In urban areas, where public transportation is more likely to be available, some patients must contend with traffic delays, indirect routes, related transportation costs (such as transportation fares, tolls, parking, etc.) and time (e.g., bus/train schedules, multiple transfers, etc.).

Wootton and colleagues (2011) performed a review of the teledermatology literature and found 20 studies (both U.S. and non-U.S.) that measured the percentage of avoided travel through telemedicine (n = 5,199 subjects). About 43% of patients were able to avoid travel through the use of store-and-forward compared to usual care ($p < 0.001$). In the seven live videoconferencing and one hybrid telehealth studies, an average of 70% of the patients avoided travel compared to usual care ($p = 0.014$) (Wootton et al., 2011). Cusack et al. modeled the use of several telehealth modalities to compare and contrast cost outcomes associated with the use of telehealth as compared with in-person visits. They estimated savings in travel costs for just referral visits would be achieved by using telehealth: $736 million saved through store-and-forward technologies, $160 million saved through live videoconferencing, and $912 million save using a hybrid approach (Cusack et al., 2007). These model estimations are based on 2007 costs of $0.445 per mile and the assumption that the telehealth consult was successful, in that no additional in-person visits were required. The video and hybrid approaches were estimated to have a success rate of 75% and 33%, respectively (Cusack et al., 2007). Finally, a retrospective review of the use of store-and-forward telehealth in Alaska found that travel was avoided in one of five primary care visits and three of four specialist visits, saving over $14 million for 15,6000 patient encounters over 7 years (Ferguson, 2008).

CHBRP estimates that, postmandate, travel costs and travel time would likely decrease for some urban and rural enrollees using newly-covered, patient-initiated telehealth services. As a result, some enrollees with transportation challenges may have better outcomes because they would no longer delay or avoid in-person visits by favoring telephonic or electronic communications with physicians; however, CHBRP is unable to quantify the exact impact due to a lack of data

Impact on socioeconomic disparities

There is limited evidence about disparities in use of or outcomes related to technologies covered by AB 2507. The use of e-mail as a mode of patient–physician communication requires access to and familiarity with computers. Three observational studies considered use of telephone and electronic health care in California and found some disparities by age, race/ethnicity, income, and literacy. Technology users were generally younger, healthier, and lived in more affluent communities (Pearl, 2014; Uscher-Pines and Mehrotra, 2013). Non-Hispanic whites were also more likely to use online services than other ethnic groups (Pearl, 2014). Other studies considered access to and use of computers by various sociodemographic categories including age, gender, income, education level, race, ethnicity, disability,

and geography and documented disparities in all categories (Baldassare et al., 2013; Gibbons, 2008). Specific to the use of e-mail for health care advice and treatment, CHBRP found that *older persons, low-income persons, and minorities* (African Americans, Hispanics) were less likely to be interested in or use e-mail to communicate with a physician (Baldassare et al., 2013; Dudas and Crocetti, 2013; Mitchell et al., 2014). They were also less likely to have access to broadband Internet (Baldassare et al., 2013) and an e-mail account (Gibbons, 2008).

Another important topic related to Internet use between patients and providers is *health literacy*. Internet use between a patient and a physician requires both the ability to read and interpret the other person's written word (Gibbons, 2008). CHBRP found little evidence on the impact of health literacy on health outcomes associated with telehealth. A 2006 study found that diabetes patients at Kaiser reporting limited health literacy were less likely to access and navigate an Internet-based patient portal than those with adequate health literacy. Specifically, minorities (African American, Latino, and Filipino) and those with limited health literacy had higher odds of never signing on to the patient portal (odds ratio [OR]: 1.7]) compared with those who did not report any health literacy limitation (Sarkar et al., 2011). CHBRP found no body of literature regarding disparate use of or access to live videoconferencing or store-and-forward technologies.

Age, income, and racial/ethnic disparities exist in rural areas (see the *Background* section), and to the extent that health care access for the rural population is improved through telehealth, AB 2507 may help reduce disparities. However, the disparities gap could be expanded because telehealth communication tools are disproportionately accessed by those not underserved, thus continuing to improve health outcomes for this group. CHBRP found no literature regarding use of telephone, store-and-forward or live videoconferencing by sociodemographic characteristics.

It is unknown whether AB 2507 would reduce disparities in access to care by ameliorating the effects of certain social determinants of health (transportation and geography). As noted, barriers to care could be reduced for some; however, AB 2507 also could exacerbate disparities in access to care for some enrollees with certain socioeconomic characteristics (e.g., age, language, income, etc.) that impede the use of telehealth modalities.

Estimated Impact on Economic Loss

CHBRP found little literature addressing the prevention of loss of productivity due to travel and in-person wait time. One employer with more than 20,000 employees offered a contracted, independent telehealth service and self-reported saving almost $800,000 in direct health costs and averted lost productivity (Zappe, 2012). In Alaska, store-and-forward telehealth decreased the time to see a specialist, leading to earlier diagnoses and treatments. In this case, the specialty consults were provided largely within the same working day (Ferguson, 2008).

CHBRP estimates AB 2507 would decrease lost productivity associated with travel to in-person visits; however, CHBRP is unable to quantify the effect due to the lack of data.

Estimated Impact on Financial Burden

When possible, CHBRP estimates the marginal impact of mandates on financial burden, defined as uncovered medical expenses paid by the enrollee as well as out-of-pocket expenses (i.e., deductibles, copayments, and coinsurance). Under AB 2507, all enrollees would share in both the cost of substitute telehealth services and supplemental telehealth services (patient care that would not have occurred or been billed because telehealth was not covered or reimbursed.) Depending on the change in the

utilization for telehealth modalities, enrollee out-of-pocket expenses may increase by between 0.10% ($15.5 million) to 0.40% ($64.8 million).

CHBRP estimates that AB 2507 would modify coverage and increase enrollees' net financial burden for additional telehealth services by between $15.5 and $64.8 million, depending on the rate of telehealth adoption and includes the cost of the telehealth visits billed at the same rate as an in-person visit. The net increase in financial burden would be offset by an unknown amount associated with the reduction in time missed from work and travel costs.

LONG-TERM IMPACTS OF AB 2507

Long-Term Utilization and Cost Impacts

Utilization Impacts

In the 12 months following enactment, CHBRP estimates that between 3.75% (Scenario A) and 15% (Scenario B) of diagnostic would be delivered using either live video, store-and-forward transfers, telephone, e-mail, and synchronous text or chat conferencing modalities. There is limited literature suggesting that application of telehealth for delivery of certain types of health care visits would be as effective as in-person visits in the long term in improving patient health, reducing unnecessary health care use, and improving access to diagnostic, treatment, services.

CHBRP's review of the literature and expert interviews indicate that there is not sufficient evidence to determine that access to telehealth services specifically would decrease emergency department visits or inpatient discharges over time. However, there is evidence suggesting that outpatient office visits help to reduce emergency room use and inpatient stays for ambulatory care–sensitive conditions, so it is also reasonable to assume that over time improved access to telehealth services would lead to long-term reductions in avoidable emergency room use and hospitalizations, resulting in long-term reductions in spending growth. This argument hinges on the assumption that telehealth-based services would be equivalent in quality and utility to in-person visits that the patient may be currently unable to receive due to distance or transportation. The time and reimbursement on the physician side would be the same as an in-person visit, according to the requirements of AB 2507.

Based on the Kaiser Permanente example (Pearl, 2014), CHBRP estimated that use of telehealth would be 15% for services for established patients under Scenario B (i.e., full adoption within one year), which reflects the overall 26.4% Kaiser utilization rate during its first year implementing telehealth technology, adjusted to reflect the requirement in AB 2507 that visits are both patient-initiated and may include cost sharing. Over time, the proportion of all visits in the Kaiser model increased from 26.4% to 45% within a five-year period of time. That finding indicates that from 2016 on, there is likely to be increased use of telehealth to conduct both substitute and supplementary health care visits. However, the adoption would be based upon patient preferences (since copayments are identical) and physician capacity (e.g., technology for secure e-mail and other electronic messaging, secure live videoconferencing, documentation, billing, and ability to collect copayments for remote telehealth visits). Based on the Pearl (2014) study, CHBRP anticipates a commensurate increase due to access to telehealth created by AB 2507. Once offered to enrollees, telehealth services would experience increases of more than 30% year-over-year according to the rate of growth reported by Pearl (2014). Although there has been a growth in third-party services (e.g., Teladoc, MDLive, etc) providing telephonic physician consultation for between $0 and $60, those services could be covered by AB 2507 if current providers of those services were able to adapt their model to become a billable, network provider for insurance carriers and plans by working with medical groups and ensuring their billable providers have California licenses. Currently, it appears they are contracted by or partnered with plans to provide a service to the patients, but it is not a covered benefit and the patients who use the service typically have to pay out-of-pocket for the virtual visit.

Cost Impacts

The additional costs of reimbursing live video, store-and-forward transfers, telephone, e-mail, and synchronous text or chat conferencing are likely to increase with health care inflation and increased use of services. There is no evidence that health care costs would go down due to the reimbursement of telehealth services, as there is no evidence that expensive services such as emergency department visits or inpatient discharges would be reduced because of better access to telehealth services. However, as mentioned previously, if telehealth visits are assumed to replace in-person diagnostic, treatment, evaluation and management services, the supplementary telephone and email visits that would have not occurred in the absence of the mandate could have a long-term impact, especially in chronically ill populations, rural areas, and ambulatory care–sensitive conditions.

In future years, there is the potential for gaming or fraud with supplemental visits because doctors could "encourage" additional patient-initiated interaction beyond what is needed. Even in the Kaiser model (which does not contain those incentives for additional fees for additional utilization), the Pearl (2014) article found that in-person office visits did not decrease at all despite the large increase in telehealth use. Coding standards and the specific requirements for billing telehealth and providing documentation equivalent to office visits that are based upon medical necessity would serve as an impediment to fraud, gaming, upcoding, or abuse. For this reason, CHBRP assumes that there will be no more incentive to commit fraud or provide inappropriate care via telehealth in comparison to in-person visits.

In estimating the long-term cost impacts of AB 2507, CHBRP considers the following issues: Adoption of telehealth: CHBRP assumed phased-in adoption in Scenario A, with a 25% adoption rate by 2017. In Scenario B, CHBRP assumed full 100% adoption. Although Scenario B represents an upper-bound in terms of adoption in 2017 it may represent a realistic scenario over time as increased use (based on the Kaiser experience), availability of technology, and incentives to provide convenience to patients (while being paid equivalent to in-person care) is likely to continue to increase spending on telehealth in subsequent years. Provider network implications: Network expansion and access improvements could be encouraged through reimbursement for telehealth. Because the reimbursement for telehealth is equivalent to in-person visits in AB 2507, there are incentives to substitute telehealth visits for existing in-person visits. In the short-term, CHBRP assumed that 60% of the new telehealth use would replace in-person visits (i.e., substitution), while 40% would be new supplementary services that could be effectively used in care coordination, follow-up care more than seven days after a billed visit, or to provide services to people with access barriers (like remote location or lack of convenient transportation). This may provide opportunities for health plans and providers to meet a diverse set of needs for more population groups, especially those in rural areas or those facing transportation problems. However, there are still treatments, diagnostic procedures, and other services that require in-person contact between providers and patients, so CHBRP does anticipate that telehealth services and office visits will eventually reach an equilibrium. Pearl (2014) estimates that the Kaiser telehealth visits will exceed office visits after eight years, but is careful to point out that the number of office visits is likely to stay steady rather than decrease.

Long-Term Public Health Impacts

When possible, CHBRP estimates the long-term public health effects of a proposed mandate (beyond CHBRP's 12-month analytic timeframe) to capture possible impacts to the public's health that would be attributable to the mandate, including impacts on premature death and economic loss. CHBRP is unable to estimate the long-term impact of AB 2507 on overall health outcomes and disparities due to the breadth of conditions telehealth affects and the unknown impact of future technology development. To the extent that advances in telehealth technology improve patient-initiated access and provider capacity,

CHBRP projects some improvements in patient care (through a reduction in transportation barriers and/or more timely services).

Access to Telehealth

CHBRP assumes that technology will continue to drive changes in telehealth. This includes increased penetration of electronic health records (EHR), associated patient portals and office management systems; increased use of mobile and remote communication devices (such as cellular telephones and or medical devices) and their applications; increased broadband coverage, which allows not only better Internet coverage but easier and more rapid transfer of large data files; and increased demand for these types of services from consumers, insurers, and providers. CHBRP projects that this trend, along with changes in reimbursement, would likely increase use of telephone, e-mail, and other telehealth services between patients and providers; however, the impact of telehealth on health outcomes requires further study.

APPENDIX A TEXT OF BILL ANALYZED

On February 11, 2016, the California Assembly Committee on Health requested that CHBRP analyze AB 2507.

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. Section 2290.5 of the Business and Professions Code is amended to read:

2290.5. (a) For purposes of this division, the following definitions ~~shall~~ apply:

(1) "Asynchronous store and forward" means the transmission of a patient's medical information from an originating site to the health care provider at a distant site without the presence of the patient.

(2) "Distant site" means a site where a health care provider who provides health care services is located while providing these services via a telecommunications system.

(3) "Health care provider" means either of the following:

(A) A person who is licensed under this division.

(B) A marriage and family therapist intern or trainee functioning pursuant to Section 4980.43.

(4) "Originating site" means a site where a patient is located at the time health care services are provided via a telecommunications system or where the asynchronous store and forward service originates.

(5) "Synchronous interaction" means a real-time interaction between a patient and a health care provider located at a distant site.

(6) "Telehealth" means the mode of delivering health care services and public health via information and communication technologies to facilitate the diagnosis, consultation, treatment, education, care management, and self-management of a patient's health care while the patient is at the originating site and the health care provider is at a distant site. Telehealth facilitates patient self-management and caregiver support for patients and includes synchronous interactions and asynchronous store and forward ~~transfers.~~ *transfers, including, but not limited to, video communications, telephone communications, email communications, and synchronous text or chat conferencing.*

(b) Prior to the delivery of health care via telehealth, the health care provider initiating the use of telehealth shall inform the patient about the use of telehealth and obtain ~~verbal or written~~ *oral, written, or digital* consent from the patient for the use of telehealth as an

acceptable mode of delivering health care services and public health. The consent shall be documented.

(c) Nothing in this section shall preclude a patient from receiving in-person health care delivery services during a specified course of health care and treatment after agreeing to receive services via telehealth.

(d) The failure of a health care provider to comply with this section shall constitute unprofessional conduct. Section 2314 shall not apply to this section.

(e) This section shall not be construed to alter the scope of practice of any health care provider or authorize the delivery of health care services in a setting, or in a manner, not otherwise authorized by law.

(f) All laws regarding the confidentiality of health care information and a patient's rights to his or her medical information shall apply to telehealth interactions.

(g) This section shall not apply to a patient under the jurisdiction of the Department of Corrections and Rehabilitation or any other correctional facility.

(h) (1) Notwithstanding any other provision of law and for purposes of this section, the governing body of the hospital whose patients are receiving the telehealth services may grant privileges to, and verify and approve credentials for, providers of telehealth services based on its medical staff recommendations that rely on information provided by the distant-site hospital or telehealth entity, as described in Sections 482.12, 482.22, and 485.616 of Title 42 of the Code of Federal Regulations.

(2) By enacting this subdivision, it is the intent of the Legislature to authorize a hospital to grant privileges to, and verify and approve credentials for, providers of telehealth services as described in paragraph (1).

(3) For the purposes of this subdivision, "telehealth" shall include "telemedicine" as the term is referenced in Sections 482.12, 482.22, and 485.616 of Title 42 of the Code of Federal Regulations

SEC. 2. Section 1374.13 of the Health and Safety Code is amended to read:

1374.13. (a) For the purposes of this section, the definitions in subdivision (a) of Section 2290.5 of the Business and Professions Code ~~shall~~ apply.

(b) It is the intent of the Legislature to recognize the practice of telehealth as a legitimate means by which an individual may receive health care services from a health care provider without in-person contact with the health care provider.

(c) ~~No~~ *A* health care service plan shall *not* require that in-person contact occur between a health care provider and a patient before payment is made for the covered services appropriately provided through telehealth, subject to the terms and conditions of the contract entered into between the enrollee or subscriber and the health care service plan, and between the health care service plan and its participating providers or provider groups.

(d) ~~No~~ *A* health care service plan shall *not* limit the type of setting where services are provided for the patient or by the health care provide before payment is made for the covered services appropriately provided through telehealth, subject to the terms and conditions of the contract entered into between the enrollee or subscriber and the health care service plan, and between the health care service plan and its participating providers or provider groups.

(e) The requirements of this section shall also apply to health care service plan and Medi-Cal managed care plan contracts with the State Department of Health Care Services pursuant to Chapter 7 (commencing with Section 14000) or Chapter 8 (commencing with Section 14200) of Part 3 of Division 9 of the Welfare and Institutions Code.

(f) Notwithstanding any ~~other provision,~~ *law,* this section shall not be interpreted to authorize a health care service plan to require the use of telehealth when the health care provider has determined that it is not appropriate.

(g) Notwithstanding any law, this section shall not be interpreted to authorize a health care provider to require the use of telehealth when a patient prefers to be treated in an in-person setting. Telehealth services should be physician- or practitioner-guided and patient-preferred.

(h) A health care service plan shall include in its plan contract coverage and reimbursement for services provided to a patient through telehealth to the same extent as though provided in person or by some other means.

(1) A health care service plan shall reimburse the health care provider for the diagnosis, consultation, or treatment of the enrollee when the service is delivered through telehealth at a rate that is at least as favorable to the health care provider as those established for the equivalent services when provided in person or by some other means.

(2) A health care service plan may subject the coverage of services delivered via telehealth to copayments, coinsurance, or deductible provided that the amounts charged are at least as favorable to the enrollee as those established for the equivalent services when provided in person or by some other means.

(i) A health care service plan shall not limit coverage or reimbursement based on a contract entered into between the health care service plan and an independent telehealth provider, or interfere with the physician-patient relationship based on the modality utilized for services appropriately provided through telehealth.

SEC. 3. Section 10123.85 of the Insurance Code is amended to read:

10123.85. (a) For purposes of this section, the definitions in subdivision (a) of Section 2290.5 of the Business and Professions Code shall apply.

(b) It is the intent of the Legislature to recognize the practice of telehealth as a legitimate means by which an individual may receive health care services from a health care provider without in-person contact with the health care provider.

(c) No health insurer shall require that in-person contact occur between a health care provider and a patient before payment is made for the services appropriately provided through telehealth, subject to the terms and conditions of the contract entered into between the policyholder or contractholder and the insurer, and between the insurer and its participating providers or provider groups.

(d) No health insurer shall limit the type of setting where services are provided for the patient or by the health care provider before payment is made for the covered services appropriately provided by telehealth, subject to the terms and conditions of the contract between the policyholder or contract holder and the insurer, and between the insurer and its participating providers or provider groups.

(e) Notwithstanding any other provision, this section shall not be interpreted to authorize a health insurer to require the use of telehealth when the health care provider has determined that it is not appropriate.

(f) Notwithstanding any law, this section shall not be interpreted to authorize a health care provider to require the use of telehealth when a patient prefers to be treated in an in-person setting. Telehealth services should be physician- or practitioner-guided and patient-preferred.

(g) A health insurer shall include in its policy coverage and reimbursement for services provided to a patient through telehealth to the same extent as though provided in person or by some other means.

(1) A health insurer shall reimburse the health care provider for the diagnosis, consultation, or treatment of the insured when the service is delivered through telehealth at a rate that is at least as favorable to the health care provider as those established for the equivalent services when provided in person or by some other means.

(2) A health insurer may subject the coverage of services delivered via telehealth to copayments, coinsurance, or deductible provided that the amounts charged are at least

as favorable to the insured as those established for the equivalent services when provided in person or by some other means.

(h) A health insurer shall not limit coverage or reimbursement based on a contract entered into between the health insurer and an independent telehealth provider or interfere with the physician-patient relationship based on the modality utilized for services appropriately provided through telehealth.

Sec.4. No reimbursement is required by this act pursuant to section 6 of Article XIII B of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within the meaning of Section 6 of Article XIII B of the California Constitution.

APPENDIX B LITERATURE REVIEW METHODS

Appendix B describes methods used in the medical effectiveness literature review conducted for this report. A discussion of CHBRP's system for grading evidence follows, along with lists of Medical Subject Headings (MeSH) terms, keywords, and publication types.

As previously detailed, AB 2507 defines telehealth as the use of electronic communication tools, including live videoconferencing, telephone, e-mail, and synchronous text and chat conferencing as telehealth modalities. AB 2507 also requires reimbursement parity to equivalent in-person visits and allows for cost-sharing at least as favorable to the enrollee as equivalent in-person visits.

The literature search was limited to studies published in English from January 2015 to present; these results were added to the literature search from proposed AB 1771 and SB 289 completed in 2014 and 2015, respectively. Studies that enrolled persons of all ages in any country were included. The following databases of peer-reviewed literature were searched: MEDLINE (PubMed), the Cochrane Database of Systematic Reviews, the Cochrane Register of Controlled Clinical Trials, the Cumulative Index of Nursing and Allied Health Literature, EconLit, and Web of Science. In addition, websites maintained by the following organizations that index or publish systematic reviews and evidence-based guidelines were searched: the Agency for Healthcare Research and Quality, International Network of Agencies for Health Technology Assessment, National Health Service Centre for Reviews and Dissemination, National Guidelines Clearinghouse, National Institute for Health and Clinical Excellence, World Health Organization, and the Scottish Intercollegiate Guideline Network.

Studies were included in the medical effectiveness literature review if they addressed the use of live videoconferencing, telephone, e-mail, and synchronous text and chat conferencing technologies to provide patient care. Studies of other telehealth technologies, such as remote patient monitoring, were excluded, because AB 2507 does not address them. CHBRP also excluded studies of the use of telehealth technologies for educational purposes because AB 2507 concerns coverage and reimbursement for patient care.

Two reviewers screened the title and abstract of each citation retrieved by the literature search to determine eligibility for inclusion. The reviewers acquired the full text of articles that were deemed eligible for inclusion in the review and reapplied the initial eligibility criteria.

Of 615 articles found in the literature review, 93 were reviewed for potential inclusion in this report, and a total of 41 articles were included in the medical effectiveness review for AB 2507.

Evidence Grading System

In making a "call" for each outcome measure, the medical effectiveness lead and the content expert consider the number of studies as well the strength of the evidence. Further information about the criteria CHBRP uses to evaluate evidence of medical effectiveness can be found in CHBRP's *Medical Effectiveness Analysis Research Approach.*[40]. To grade the evidence for each outcome measured, the team uses a grading system that has the following categories:

- Research design;
- Consistency of findings;

[40] Available at: www.chbrp.org/analysis_methodology/docs/medeffect_methods_detail.pdf.

- Generalizability of findings to the population whose coverage would be affected by a mandate; and
- Cumulative impact of evidence.

CHBRP uses a hierarchy to classify studies' research designs by the strength of the evidence they provide regarding a treatment's effects. CHBRP classifies research by levels I–V. Level I research includes well-implemented randomized controlled trials (RCTs) and cluster RCTs. Level II research includes RCTs and cluster RCTs with major weaknesses. Level III research consists of nonrandomized studies that include an intervention group and one or more comparison groups, time series analyses, and cross-sectional surveys. Level IV research consists of case series and case reports. Level V represents clinical/ practical guidelines based on consensus or opinion.

CHBRP evaluates consistency of findings across three dimensions: statistical significance, direction of effect, and size of effect.

Generalizability refers to the extent to which a study's findings can be generalized to a population of interest. For CHBRP, the population of interest is the segment of California's diverse population to which a proposed mandate or repeal would apply.

The grading system also contains an overall conclusion that encompasses findings in these four domains. The conclusion is a statement that captures the strength, consistency, and generalizability of the evidence of an intervention's effect on an outcome. The following terms are used to characterize the body of evidence regarding an outcome:

- Clear and convincing evidence;
- Preponderance of evidence;
- Ambiguous/conflicting evidence; and
- Insufficient evidence.

A grade of *clear and convincing evidence* indicates that there are multiple studies of a treatment and that the large majority of studies have strong research designs, consistently find that the treatment is either effective or not effective, and have findings that are highly generalizable to the population whose coverage would be affected. This grade is assigned in cases in which it is unlikely that publication of additional studies would change CHBRP's conclusion about the effectiveness of a treatment.

A grade of *preponderance of evidence* indicates that the majority of the studies reviewed are consistent in their findings that treatment is either effective or not effective and that the findings are generalizable to the population whose coverage would be affected. Bodies of evidence that are graded as *preponderance of evidence* are further subdivided into three categories based on the strength of their research designs: strong research designs, moderate research designs, and weak research designs.

A grade of *ambiguous/conflicting evidence* indicates that although some studies included in the medical effectiveness review find that a treatment is effective, a similar number of studies with equally strong research designs suggest the treatment is not effective.

A grade of *insufficient* evidence indicates that there is not enough evidence available to know whether or not a treatment is effective, either because there are too few studies of the treatment or because the available studies have weak research designs. It does not indicate that a treatment is not effective.

In addition to grading the strength of evidence regarding a treatment's effect on specific outcomes, CHBRP also assigns an overall grade to the whole body of evidence included in the medical effectiveness review. A statement of the overall grade is included in *Medical Effectiveness* section of the text of the report. The statement is accompanied by a graphic to help readers visualize the conclusion. In the case of AB 2507, the report includes two overall grades and two figures because the amount and strength of evidence differs for telephone calls and e-mails on the one hand and live videoconferencing and store-and-forward on the other.

Search Terms

The search terms used to locate studies relevant to AB 2507 were as follows:

MeSH terms used to search PubMed

- Communication
- Cost-Benefit Analysis
- Costs and Cost Analysis
- Electronic Mail/utilization
- Emergency Health Service
- Emergency Medical Services/utilization
- Emergency Service, Hospital/utilization
- Health Services Accessibility
- Hospital/utilization
- Hospitalization
- Medication Compliance
- Office Visits/utilization
- Outcome Assessment (Health Care)
- Patient Satisfaction
- Physician-Patient Relations
- Primary Health Care/utilization
- Quality of Health Care
- Quality of Life
- Remote Consultation/utilization
- Rural population
- Telecommunication
- Teleconsultation
- Telehealth
- Telemedicine/economics/utilization
- Telephone
- Telepsychotherapy
- Time factors
- Treatment Outcome
- Utilization Review
- Videoconferencing

Keywords used to search PubMed, Cochrane Library, Scopus and Web of Science

- communication
- consultation
- costs
- effects
- e-mail
- emergency visits
- ER visits
- face-to-face
- health
- hospitalization
- impacts
- insurance

- office visits
- outcomes
- patients and providers
- patient satisfaction
- phone consultation
- physician- patient
- primary care
- provider and patient
- quality of life
- reimbursement
- secure messaging
- service use
- store-and-forward
- teleconsultation
- teledermatology
- telehealth
- telemedicine
- telephone consultation
- telepsychiatry
- utilization
- videoconference
- videoconferencing
- web messaging

Publication types

- Clinical Trial
- Comparative Study
- Controlled Clinical Trial
- Meta-Analysis
- Practice Guideline
- Randomized Control Trial
- Systematic Reviews

APPENDIX C COST IMPACT ANALYSIS: DATA SOURCES, CAVEATS, AND ASSUMPTIONS

This appendix describes data sources, estimation methodology, as well as general and mandate-specific caveats and assumptions used in conducting the cost impact analysis. For additional information on the cost model and underlying methodology, please refer to the CHBRP website at: www.chbrp.org/analysis_methodology/cost_impact_analysis.php.

The cost analysis in this report was prepared by the members of the cost team, which consists of CHBRP task force members and contributors from the University of California, Los Angeles, and the University of California, Davis, as well as contracted actuarial firms, Milliman, Inc, and Pricewaterhouse Coopers (PwC).[41]

Data Sources

This subsection discusses the variety of data sources CHBRP uses. Key sources and data items are listed below, in Table C-1.

Table C-1. Data for 2017 Projections

Data Source	Items
California Department of Health Care Services (DHCS) administrative data for the Medi-Cal program, data available as of end of December 2014	Distribution of enrollees by managed care or FFS distribution by age: 0–17; 18–64; 65+ Medi-Cal Managed Care premiums
California Department of Managed Health Care (DMHC) data from the interactive website "Health Plan Financial Summary Report," August–October, 2015	Distribution of DMHC-regulated plans by market segment*
California Department of Insurance (CDI) Statistical Analysis Division data; data as of December 31, 2015	Distribution of CDI-regulated policies by market segment
California Health Benefits Review Program (CHBRP) Annual Enrollment and Premium Survey of California's largest (by enrollment) health care service plans and health insurers; data as of September 30, 2015; responders' data represent approximately 97% of persons not associated with CalPERS or Medi-Cal with health insurance subject to state mandates(full-service (nonspecialty) DMHC-regulated plan enrollees and of full-service (nonspecialty) CDI-regulated policy enrollees).	Enrollment by: • Size of firm (2–50 as small group and 51+ as large group) • DHMC vs. CDI regulated • Grandfathered vs. nongrandfathered Premiums for individual policies by: • DMHC vs. CDI regulated • Grandfathered vs. nongrandfathered

[41] CHBRP's authorizing statute, available at www.chbrp.org/docs/authorizing_statute.pdf, requires that CHBRP use a certified actuary or "other person with relevant knowledge and expertise" to determine financial impact.

Data Source	Items
California Employer Health Benefits Survey, 2014 (conducted by NORC and funded by CHCF)	Enrollment by HMO/POS, PPO/indemnity self-insured, fully insured, Premiums (not self-insured) by: • Size of firm (3–25 as small group and 25+ as large group) • Family vs. single • HMO/POS vs. PPO/indemnity vs. HDHP employer vs. employer premium share
California Health Interview Survey (CHIS)	Uninsured, age: 65+ Medi-Cal (non-Medicare), age: 65+ Other public, age: 65+ Employer-sponsored insurance, age: 65+
California Public Employees' Retirement System (CalPERS) data, enrollment as of October 1, 2015	CalPERS HMO and PPO enrollment • Age: 0–17; 18–64; 65+ • HMO premiums
California Simulation of Insurance Markets (CalSIM) (projections for 2017)	Uninsured, age: 0–17; 18–64 Medi-Cal (non-Medicare) (a), age: 0–17; 18–64 Other public (b), age: 0–64 Individual market, age: 0–17; 18–64 Small group, age: 0–17; 18–64 Large group, age: 0–17; 18–64
Centers for Medicare and Medicaid (CMS) administrative data for the Medicare program, annually (if available) as of end of September	HMO vs. FFS distribution for those 65+ (noninstitutionalized)
Milliman estimate	Medical trend influencing annual premium increases

Notes: (*) CHBRP assumes DMHC-regulated PPO group enrollees and POS enrollees are in the large-group segment.
Key: CDI = California Department of Insurance; CHCF = California HealthCare Foundation; CHIS = California Health Interview Survey; CMS = Centers for Medicare & Medicaid Services; DHCS = Department of Health Care Services; DMHC = Department of Managed Health Care; FFS = fee-for-service; HMO = health maintenance organization; NORC = National Opinion Research Center; POS = point of service; PPO = preferred provider organization.

Further discussion of external and internal data follows.

Internal data

- CHBRP's Annual Enrollment and Premium Survey collects data from the six largest providers of health insurance in California (including Aetna, Anthem Blue Cross of California, Blue Shield of California, CIGNA, Health Net, and Kaiser Foundation Health Plan,) to obtain estimates of enrollment not associated with CalPERS or Medi-Cal by purchaser (i.e., large and small group and individual), state regulator (DMHC or CDI), grandfathered and nongrandfathered status, and average premiums. CalSIM and market trends were applied to project 2017 health insurance enrollment in DMHC-regulated plans and CDI-regulated policies.

- CHBRP's other surveys of the largest plans/insurers collect information on benefit coverage relevant to proposed benefit mandates CHBRP has been asked to analyze. In each report, CHBRP indicates the proportion of enrollees—statewide and by market segment—represented by responses to CHBRP's bill-specific coverage surveys. The proportions are derived from data provided by CDI and DMHC.

External sources

- California Department of Health Care Services (DHCS) data are used to estimate enrollment in Medi-Cal Managed Care (beneficiaries enrolled in Two-Plan Model, Geographic Managed Care, and County Operated Health System plans), which may be subject to state benefit mandates, as well as enrollment in Medi-Cal Fee For Service (FFS), which is not. The data are available at: www.dhcs.ca.gov/dataandstats/statistics/Pages/Monthly_Trend_Report.aspx.

- California Employer Health Benefits Survey data are used to make a number of estimates, including: premiums for employment-based enrollment in DMHC-regulated health care service plans (primarily health maintenance organizations [HMOs] and point of service [POS] plans) and premiums for employment-based enrollment in CDI-regulated health insurance policies regulated by the (primarily preferred provider organizations [PPOs]). Premiums for fee-for-service (FFS) policies are no longer available due to scarcity of these policies in California. This annual survey is currently released by the California Health Care Foundation/National Opinion Research Center (CHCF/NORC) and is similar to the national employer survey released annually by the Kaiser Family Foundation and the Health Research and Educational Trust. More information on the CHCF/NORC data is available at: www.chcf.org/publications/2014/01/employer-health-benefits.

- California Health Interview Survey (CHIS) data are used to estimate the number of Californians aged 65 and older, and the number of Californians dually eligible for both Medi-Cal and Medicare coverage. CHIS data are also used to determine the number of Californians with incomes below 400% of the federal poverty level. CHIS is a continuous survey that provides detailed information on demographics, health insurance coverage, health status, and access to care. More information on CHIS is available at: www.chis.ucla.edu.

- California Public Employees Retirement System (CalPERS) data are used to estimate premiums and enrollment in DMHC-regulated plans, which may be subject to state benefit mandates, as well as enrollment in CalPERS' self-insured plans, which is not. CalPERS does not currently offer enrollment in CDI-regulated policies. Data are provided for DMHC-regulated plans enrolling non-Medicare beneficiaries. In addition, CHBRP obtains information on current scope of benefits from evidence of coverage (EOC) documents publicly available at: www.calpers.ca.gov. California Simulation of Insurance Markets (CalSIM) estimates are used to project health insurance status of Californians aged 64 and under. CalSIM is a microsimulation model that projects the effects of the Affordable Care Act on firms and individuals. More information on CalSIM is available at: http://healthpolicy.ucla.edu/programs/health-economics/projects/CalSIM/Pages/default.aspx.

- To estimate the premium impact of certain mandates, PwC's projections may derive from its proprietary comprehensive pricing model, which provides benchmark data and pricing capabilities for commercial health plans. The pricing model factors in health plan features such as deductibles, copays, out-of-pocket maximums, covered services, and degree of healthcare management. The pricing model uses normative data and benefit details to arrive at estimates of allowed and net benefit costs. The normative benchmarking utilization metrics within the pricing model are developed from a database of commercial (under 65) health plan experience representing approximately 20 million annual lives.

- The MarketScan databases, which reflect the health care claims experience of employees and dependents covered by the health benefit programs of large employers, are used to estimate utilization and unit cost. These claims data are collected from insurance companies, Blue Cross Blue Shield plans, and third party administrators. These data represent the medical experience of insured employees and their dependents for active employees, early retirees, individuals with COBRA continuation coverage, and Medicare-eligible retirees with employer-provided Medicare Supplemental plans. No Medicaid or Workers Compensation data are included.
- Ingenix MDR Charge Payment System, which includes information about professional fees paid for health care services, based upon claims from commercial insurance companies, HMOs, and self-insured health plans.

Projecting 2017

This subsection discusses adjustments made to CHBRP's Cost and Coverage Model to project 2017, the period when mandates proposed in 2016 would, if enacted, generally take effect. It is important to emphasize that CHBRP's analysis of specific mandate bills typically addresses the incremental effects of a mandate—specifically, how the proposed mandate would impact benefit coverage, utilization, costs, and public health, *holding all other factors constant*. CHBRP's estimates of these incremental effects are presented in the *Benefit Coverage, Utilization, and Cost Impacts* section of this report.

Baseline premium rate development methodology

The key components of the baseline model for utilization and expenditures are estimates of the per member per month (PMPM) values for each of the following:

- Insurance premiums PMPM;
- Gross claims costs PMPM;
- Member cost sharing PMPM; and
- Health care costs paid by the health plan or insurer.

For each market segment, we first obtained an estimate of the insurance premium PMPM by taking the 2015 reported premium from the abovementioned data sources and trending that value to 2017. CHBRP uses trend rates published in the Milliman HCGs to estimate the health care costs for each market segment in 2017.

The large-group market segments for each regulator (CDI and DMHC) are split into grandfathered and nongrandfathered status. For the small-group and individual markets, further splits are made to indicate association with Covered California, the state's health insurance marketplace. Doing so allows CHBRP to separately calculate the impact of ACA and of specific mandates, both of which may apply differently among these subgroups. The premium rate data received from the CHCF/NORC California Employer Health Benefits survey did not split the premiums based on grandfathered or exchange status. However, CHBRP's Annual Enrollment and Premium (AEP) survey asked California's largest health care service plans and health insurers to provide their average premium rates separately for grandfathered and nongrandfathered plans. The ratios from the CHBRP survey data were then applied to the CHCF/NORC aggregate premium rates for large and small group, to estimate premium rates for grandfathered and nongrandfathered plans that were consistent with the NORC results. For the individual market, the premium rates received from CHBRP's AEP survey were used directly.

The remaining three values were then estimated by the following formulas:

- Health care costs paid by the health plan = insurance premiums PMPM × (1 − profit/administration load);
- Gross claims costs PMPM = health care costs paid by the health plan ÷ percentage paid by health plan; and
- Member cost sharing PMPM = gross claims costs × (1 − percentage paid by health plan).

In the above formulas, the quantity "profit/administration load" is the assumed percentage of a typical premium that is allocated to the health plan/insurer's administration and profit. These values vary by insurance category, and under the ACA, are limited by the minimum medical loss ratio requirement. CHBRP estimated these values based on actuarial expertise at Milliman, and their associated expertise in health care.

In the above formulas, the quantity "percentage paid by health plan" is the assumed percentage of gross health care costs that are paid by the health plan, as opposed to the amount paid by member cost sharing (deductibles, copays, etc.). In ACA terminology, this quantity is known as the plan's "actuarial value." These values vary by insurance category. For each insurance category, Milliman estimated the member cost sharing for the average or typical plan in that category. Milliman then priced these plans using the Milliman Health Cost Guidelines to estimate the percentage of gross health care costs that are paid by the carrier.

General Caveats and Assumptions

This subsection discusses the general caveats and assumptions relevant to all CHBRP reports. The projected costs are estimates of costs that would result if a certain set of assumptions were exactly realized. Actual costs will differ from these estimates for a wide variety of reasons, including:

- Prevalence of mandated benefits before and after the mandate may be different from CHBRP assumptions.
- Utilization of mandated benefits (and, therefore, the services covered by the benefit) before and after the mandate may be different from CHBRP assumptions.
- Random fluctuations in the utilization and cost of health care services may occur.

Additional assumptions that underlie the cost estimates presented in this report are:

- Cost impacts are shown only for plans and policies subject to state benefit mandate laws.
- Cost impacts are only for the first year after enactment of the proposed mandate.
- Employers and employees will share proportionately (on a percentage basis) in premium rate increases resulting from the mandate. In other words, the distribution of the premium paid by the subscriber (or employee) and the employer will be unaffected by the mandate.
- For state-sponsored programs for the uninsured, the state share will continue to be equal to the absolute dollar amount of funds dedicated to the program.
- When cost savings are estimated, they reflect savings realized for 1 year. Potential long-term cost savings or impacts are estimated if existing data and literature sources are available and provide adequate detail for estimating long-term impacts. For more information on CHBRP's criteria for estimating long-term impacts, please see: www.chbrp.org/analysis_methodology/docs/longterm_impacts08.pdf.

There are other variables that may affect costs, but which CHBRP did not consider in the estimates presented in this report. Such variables include, but are not limited to:

- Population shifts by type of health insurance: If a mandate increases health insurance costs, some employer groups and individuals may elect to drop their health insurance. Employers may also switch to self-funding to avoid having to comply with the mandate.
- Changes in benefits: To help offset the premium increase resulting from a mandate, deductibles or copayments may be increased. Such changes would have a direct impact on the distribution of costs between health plans/insurers and enrollees, and may also result in utilization reductions (i.e., high levels of cost sharing result in lower utilization of health care services). CHBRP did not include the effects of such potential benefit changes in its analysis.
- Adverse selection: Theoretically, persons or employer groups who had previously foregone health insurance may elect, postmandate, to enroll in a health plan or policy because they perceive that it is now to their economic benefit to do so.
- Medical management: Health plans/insurers may react to the mandate by tightening medical management of the mandated benefit. This would tend to dampen the CHBRP cost estimates. The dampening would be more pronounced on the plan/policy types that previously had the least effective medical management (i.e., PPO plans).
- Geographic and delivery systems variation: Variation exists in existing utilization and costs, and in the impact of the mandate, by geographic area and by delivery system models. Even within the health insurance plan/policy types CHBRP modeled (HMO, including HMO and POS plans, and non-HMO, including PPO and FFS policies), there are likely variations in utilization and costs. Utilization also differs within California due to differences in the health status of the local population, provider practice patterns, and the level of managed care available in each community. The average cost per service would also vary due to different underlying cost levels experienced by providers throughout California and the market dynamic in negotiations between providers and health plans/insurers. Both the baseline costs prior to the mandate and the estimated cost impact of the mandate could vary within the state due to geographic and delivery system differences. For purposes of this analysis, however, CHBRP has estimated the impact on a statewide level.
- Compliance with the mandate: For estimating the postmandate impacts, CHBRP typically assumes that plans and policies subject to the mandate will be in compliance with the benefit coverage requirements of the bill. Therefore, the typical postmandate coverage rates for persons enrolled in health insurance plans/policies subject to the mandate are assumed to be 100%.

Analysis Specific Caveats and Assumptions

Bill specific technical calculations, assumptions, and the full approach for the cost model is explained in the body of the report. AB 2507.

CHBRP examined billing codes specific to telephone, e-mail, and electronic messaging. CHBRP also examined CPT billing codes associated with diagnosis, treatment, and management delivered traditionally in-person or “modified” to denote that the service was delivered via live videoconference or store-and-forward. CHBRP also included Healthcare Common Procedure Coding System (HCPCS) temporary telehealth codes that have not yet been added to the AMA’s official CPT code manual. The full list of CPT codes is in Table C-2.

Table C-2. CPT/HCPCS Codes used for the AB 2507 Analysis.

CPT/HCPCS Codes used for the AB 2507 Analysis						
0188T	G0443	90839	90965	99212	99308	99441
0189T	G0444	90840	90966	99213	99309	99442
G0108	G0445	90845	93005	99214	99310	99443
G0109	G0446	90846	96116	99215	99334	99444
G0247	G0447	90847	96150	99221	99335	99446
G0270	G0459	90853	96151	99222	99336	99447
G0396	M0064	90863	96152	99223	99347	99448
G0397	Q3014	90899	96153	99231	99348	99449
G0406	S9110	90951	96154	99232	99349	99490
G0407	T1014	90952	97012	99233	99354	99495
G0408	85018	90954	97535	99241	99355	99496
G0420	87621	90955	97802	99242	99356	
G0421	90785	90956	97803	99243	99357	
G0425	90791	90957	97804	99244	99401	
G0426	90792	90958	99199	99245	99402	
G0427	90832	90959	99201	99251	99403	
G0436	90833	90960	99202	99252	99404	
G0437	90834	90961	99203	99253	99406	
G0438	90836	90962	99204	99254	99407	
G0439	90837	90963	99205	99255	99408	
G0442	90838	90964	99211	99307	99409	

Source: California Health Benefits Review Program, 2016.

Note: Apart from the following codes, all codes in Table C-2 were pulled if they had a GT or GQ modifier. The following codes did not require a GT or GQ modifier: 99441, 99442, 99443, 99444, 99446, 99447, 99448, 99449. “GT” signifies the service was delivered via interactive audio and video telecommunications system while modifier “GQ” signifies that the service was delivered via an asynchronous telecommunications system.

Determining Public Demand for the Proposed Mandate

This subsection discusses public demand for the benefits AB 2507 would mandate. Considering the criteria specified by CHBRP's authorizing statute, CHBRP reviews public demand for benefits relevant to a proposed mandate in two ways. CHBRP:

- Considers the bargaining history of organized labor; and
- Compares the benefits provided by self-insured health plans or policies (which are not regulated by the DMHC or CDI and therefore not subject to state-level mandates) with the benefits that are provided by plans or policies that would be subject to the mandate.

On the basis of conversations with the largest collective bargaining agents in California, CHBRP concluded that unions currently do not include negotiations for telehealth services in their health insurance negotiations. In general, unions negotiate for broader contract provisions such as coverage for dependents, premiums, deductibles, and broad coinsurance levels.

Among publicly funded self-insured health insurance policies, the preferred provider organization (PPO) plans offered by CalPERS currently have the largest number of enrollees. The CalPERS PPOs currently provide benefit coverage similar to what is available through group health insurance plans and policies that would be subject to the mandate.

To further investigate public demand, CHBRP used the bill-specific coverage survey to ask carriers who act as third-party administrators for (non-CalPERS) self-insured group health insurance programs whether the relevant benefit coverage differed from what is offered in group market plans or policies that would be subject to the mandate. The majority of plan respondents did not act as third-party administrators for self-insured group health insurance programs; it is unclear whether benefit coverage differs in this segment.

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CALIFORNIA HEALTH BENEFITS REVIEW PROGRAM COMMITTEES AND STAFF

A group of faculty, researchers, and staff complete the analysis that informs California Health Benefits Review Program (CHBRP) reports. The CHBRP **Faculty Task Force** comprises rotating senior faculty from University of California (UC) campuses. In addition to these representatives, there are other ongoing contributors to CHBRP from UC that conduct much of the analysis. The **CHBRP staff** coordinates the efforts of the Faculty Task Force, works with Task Force members in preparing parts of the analysis, and manages all external communications, including those with the California Legislature. As required by CHBRP's authorizing legislation, UC contracts with a certified actuary, PricewaterhouseCoopers, to assist in assessing the financial impact of each legislative proposal mandating or repealing a health insurance benefit.

The **National Advisory Council** provides expert reviews of draft analyses and offers general guidance on the program to CHBRP staff and the Faculty Task Force. CHBRP is grateful for the valuable assistance of its National Advisory Council. CHBRP assumes full responsibility for the report and the accuracy of its contents.

Faculty Task Force

Janet Coffman, MA, MPP, PhD, *Vice Chair for Medical Effectiveness*, University of California, San Francisco
Sara McMenamin, PhD, *Vice Chair for Medical Effectiveness and Public Health*, University of California, San Diego
Joy Melnikow, MD, MPH, *Vice Chair for Public Health*, University of California, Davis
Ninez Ponce, PhD, Co-*Vice Chair for Cost*, University of California, Los Angeles
Nadereh Pourat, PhD, Co-*Vice Chair for Cost*, University of California, Los Angeles
Susan L. Ettner, PhD, University of California, Los Angeles
Sheldon Greenfield, MD, University of California, Irvine
Sylvia Guendelman, PhD, LCSW, University of California, Berkeley
Marilyn Stebbins, PharmD, University of California, San Francisco

Task Force Contributors

Wade Aubry, MD, University of California, San Francisco
Diana Cassady, DrPH, University of California, Davis
Shana Charles, PhD, MPP, University of California, Los Angeles, and California State University, Fullerton
Shauna Durbin, MPH, University of California, Davis
Margaret Fix, MPH, University of California, San Francisco
Ronald Fong, MD, MPH, University of California, Davis
Brent Fulton, PhD, University of California, Berkeley
Erik Groessl, PhD, University of California, San Diego
Sarah Hiller, MA, University of California, San Diego
Jeffrey Hoch, PhD, University of California, Davis
Michelle Ko, MD, PhD, University of California, Los Angeles
Gerald Kominski, PhD, University of California, Los Angeles
Alicia LaFrance, MPH, MSW, University of California, San Francisco
Meghan Maiya, MA, University of California, San Diego

CHBRP Staff

Garen Corbett, MS, Director
John Lewis, MPA, Associate Director
Erin Shigekawa, MPH, Principal Policy Analyst
AJ Scheitler, EdD, Principal Policy Analyst
Karla Wood, Program Specialist

California Health Benefits Review Program
University of California
Office of the President
1111 Broadway, Suite 1400
Oakland, CA 94607
Tel: 510-287-3876 Fax: 510-763-4253
chbrpinfo@chbrp.org www.chbrp.org

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Please direct any questions concerning this document to:

California Health Benefits Review Program
University of California, Office of the President
UC Health
1111 Broadway, Suite 1400
Oakland, CA 94607
Tel: 510-287-3876
Fax: 510-763-4253
www.chbrp.org

A group of faculty and staff undertakes most of the analysis that informs reports by the California Health Benefits Review Program (CHBRP). The CHBRP Faculty Task Force comprises rotating representatives from six University of California (UC) campuses. In addition to these representatives, there are other ongoing contributors to CHBRP from UC. This larger group provides advice to the CHBRP staff on the overall administration of the program and conducts much of the analysis.

CHBRP staff coordinates the efforts of the Faculty Task Force, works with Task Force members in preparing parts of the analysis, and coordinates all external communications, including those with the California Legislature.

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CHBRP assumes full responsibility for the report and the accuracy of its contents. All CHBRP bill analyses and other publications are available at www.chbrp.org.

Garen Corbett, MS
Director