

California Health Benefits Review Program

Analysis of California Assembly Bill 744 Telehealth

A Report to the 2019–2020 California State Legislature

April 16, 2019



Key Findings:

Analysis of California Assembly Bill 744 Telehealth

Summary to the 2019–2020 California State Legislature, April 16, 2019



AT A GLANCE

The version of California Assembly Bill 744 analyzed by CHBRP would require reimbursement parity between telehealth services and the equivalent in-person visit.

1. CHBRP estimates that, in 2020, all 24.5 million Californians enrolled in state-regulated health insurance would have insurance subject to AB 744.
2. **Benefit coverage.** More than half (51% to 80%) of enrollees currently have coverage for telehealth paid at parity with equivalent in-person services. AB 744 would not exceed essential health benefits (EHBs).
3. **Utilization.** Of the 20% to 49% of enrollees receiving new coverage for various services reimbursed at parity under AB 744, CHBRP estimates a marginal increase in use among commercial and CalPERS enrollees ranging from a low of 3/1,000 emergency department visits, diagnostic services and other services to a high of 12.1/1,000 primary care and urgent care visits. Among Medi-Cal Managed Care enrollees, utilization would increase by 2.2/1,000 outpatient mental health and substance use disorder visits and a high of 51.6/1,000 primary care and urgent care visits.
4. **Expenditures.** In 2020, total net annual expenditures would increase by \$278,298,000, or 0.17%.
 - a. Although some services are currently paid at parity, for services *not* paid at parity, commercial insurers and CalPERS would need to pay at rates that are 42% to 137% higher to be equivalent to the corresponding in-person visits.
 - b. Medi-Cal Managed Care plans would need to pay at rates that are 15% to 30% higher to be equivalent to the corresponding in-person visits.

AT A GLANCE, Cont.

5. **Medical effectiveness.** Evidence of effectiveness is mixed for services delivered via telehealth. Among the telehealth modalities and services reviewed, there is evidence that most modalities and services improve health outcomes. Evidence regarding effects on process of care, access, and utilization is insufficient or inconclusive for most modalities and services.
6. **Public health.** The public health impact of AB 744 is unknown, although CHBRP anticipates that some newly covered patients will be able to obtain more timely specialty or primary care, especially for those in rural regions. These patients will also experience reduced travel time and associated costs.
7. **Long-term impacts.** CHBRP assumes that technology improvements, the 2019 Centers for Medicare & Medicaid (CMS) reimbursement policy, and continued adoption of value-based, bundled care reimbursement models will likely increase use of e-mail, videoconferencing, and other telehealth services between patients and providers.

CONTEXT

Telehealth is defined by AB 744 as “the mode of delivering healthcare 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.”¹

CHBRP focuses on the most common types of telehealth modalities:

- **Live video** — uses two-way, interactive video to connect users. Occurs provider-to-provider at a distant site or between a patient and a provider;

¹ Refer to CHBRP’s full report for full citations and references.

- **Store and forward** — provider captures medical information (e.g., photo, recording) and transmits information to a remote provider for later review;
- **E-mail and synchronous text and chat conferencing** — health system portals provide email, chat or text options for patients to contact providers; and
- **Telephone** — landline, cell phone.

Telehealth modalities may be used to facilitate patient-to-provider or provider-to-provider communication. These modalities are also used to support eConsults (provider-to-provider) and remote patient monitoring (passive patient-provider interaction) services. Additional definitions of telehealth modalities are included in Table 2 of the full report.

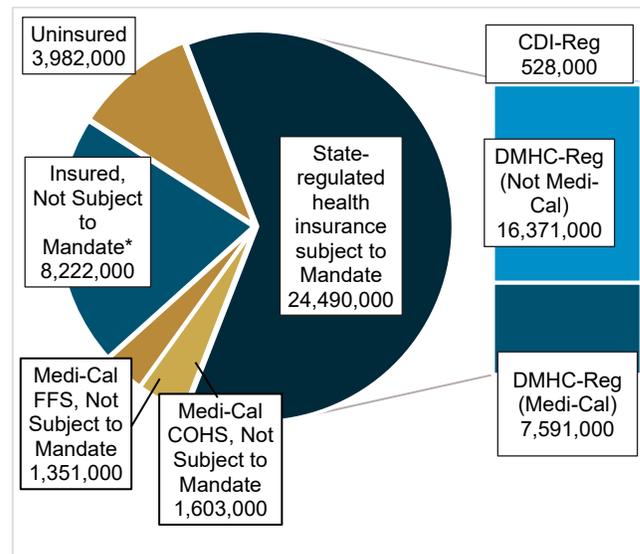
BILL SUMMARY

AB 744 would:

- Require health plans and policies to reimburse telehealth services on the same basis and to the same extent the plans and policies reimburse for the same service through in person diagnosis, consultation, or treatment.
- Allow plans and policies to apply cost-sharing to telehealth services, not to exceed cost-sharing for the equivalent in-person service.
- Prohibit plans and policies from limiting telehealth services to only those provided by third-party providers and from denying coverage for a service solely because it is provided via telehealth.

Figure A notes how many Californians have health insurance that would be subject to AB 744.

Figure A. Health Insurance in CA and AB 744



Source: California Health Benefits Review Program, 2019.

Notes: *Medicare beneficiaries, enrollees in self-insured products, etc.

IMPACTS

Benefit Coverage, Utilization, and Cost

Benefit Coverage

The baseline coverage and payment parity across all modalities for telehealth services varied by type of health care service, with the fewest enrollees (50.9%) having coverage for radiology and lab/pathology services delivered via telehealth and a high of 80.3% of enrollees having coverage for outpatient mental health and substance use disorder services via telehealth. Overall, the majority of enrollees have coverage through health plans and insurers that pay providers for telehealth services at parity with equivalent in-person services.

Some telehealth services may delivered through third-party vendors (e.g., Teladoc). Approximately 10% of commercial insurance enrollees and 17% of Medi-Cal enrollees have access to these third-party services. CHBRP assumes that postmandate, this type of encounter will remain ineligible for reimbursement because the encounter may be with a nonbillable provider (e.g., because nonbillable 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).

Utilization

CHBRP estimates that, postmandate, telehealth visits would represent 5.7% of all visits for those newly covered enrollees due to the added coverage and reimbursement parity required by AB 744; this would match the utilization rate of those enrollees already covered at baseline. The increases are attributable to areas where telehealth would likely substitute for in-person services (i.e., teleradiology, telestroke, teleICU, and lab/pathology) and/or supplement existing in-person services (i.e. office visits, telepsychiatry). About 29% of the marginal increase in telehealth utilization is attributable to substitution and 71% is attributable to supplemental visits (visits previously provided, but not reimbursed, or not previously provided).

Of the 20% to 49% of enrollees receiving new coverage for various services reimbursed at parity under AB 744, CHBRP estimates a marginal increase in use among commercial and CalPERS enrollees ranging from a low of 3/1,000 emergency department visits, diagnostic services and other services to a high of 12.1/1,000 primary care and urgent care visits. Among Medi-Cal Managed Care enrollees, utilization would increase between 2.2/1,000 for outpatient mental health and substance use disorder visits and a high of 51.6/1,000 primary care and urgent care visits.

The increase in telehealth services postmandate is accompanied by a slight decrease in the use of in-person services. Estimated increases are larger in the Medi-Cal managed care enrollee population due to a lack of current coverage across all modalities at parity, along with the lack of cost-sharing requirements in Medi-Cal.

Per-Unit Cost

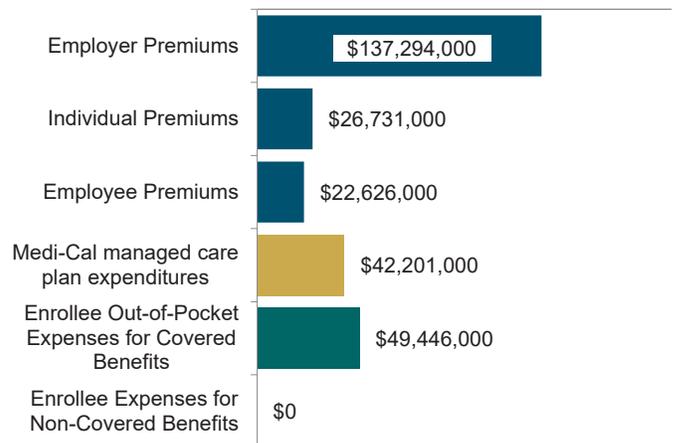
Telehealth services not currently paid at parity with equivalent in-person services include office visits for primary and urgent care, dermatology, other specialists, and outpatient mental health and substance use disorder. To reach parity, commercial insurers and CalPERS would need to pay rates that are 23% to 120% higher to be equivalent to in-person visits for the same services. Medi-Cal Managed Care plans would need to pay at rates that are 15% to 30% higher to be equivalent to the corresponding in-person visits.

Expenditures

AB 744 would increase total net annual expenditures by \$278,298,000 or 0.17% for enrollees with DMHC-regulated plans and CDI-regulated policies. This increase is primarily driven by increases of \$132,415,000 (0.15%) in spending by private group employers, \$22,526,000 (0.24%) in spending by enrollees with individually purchased Covered California policies and \$42,201,000 (0.15%) in spending by Medi-Cal managed care plans.

This increase in total net annual expenditures is due to a \$228,853,000 change in total premiums (0.16% increase in total health insurance premiums paid by employers, Medi-Cal, and enrollees for newly covered benefits), adjusted by an \$49,446,000 (0.34%) increase in enrollee expenses for covered benefits.

Figure B. Expenditure Impacts of AB 744



Source: California Health Benefits Review Program, 2019.

Medi-Cal

Total expenditures would increase by \$42,201,000 (0.15%) for Medi-Cal Managed Care Plans.

CalPERS

Total expenditures would increase by \$4,879,000 (0.16%) for CalPERS HMO.

Number of Uninsured in California

Because the change in average premiums does not exceed 1% for any market segment, CHBRP would expect

no measurable change in the number of uninsured persons due to the enactment of AB 744.

Medical Effectiveness

Most studies pertinent to AB 744 examine the use of telehealth as a substitute for in-person care. In these cases, 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.

Evidence regarding the effectiveness of telehealth modalities and services is mixed depending on the type of outcome studied: access and utilization, process of care, or health outcomes.

Access and Utilization:

- There is clear and convincing evidence that remote patient monitoring is effective.
- Preponderance of evidence that store and forward and eConsult are effective.
- Preponderance of evidence that live video does not reduce use of in-person health care services.
- Inconclusive evidence that e-mail, synchronous text and chat conferencing, telephone, and telerehabilitation are effective.
- Insufficient evidence that telestroke is effective.

Process of Care:

- Clear and convincing evidence that live video is effective.
- Preponderance of evidence that telestroke is effective.
- Limited evidence that e-mail, synchronous text and chat conferencing, and telephone are effective.
- Inconclusive evidence that store and forward is effective.
- Insufficient evidence that telerehabilitation, eConsult, and remote patient monitoring are effective.

Health Outcomes:

- Clear and convincing evidence that live video and remote patient monitoring are effective.
- Preponderance of evidence that telephone, telestroke, and telerehabilitation are effective.
- Limited evidence that store and forward and e-mail, synchronous text and chat conferencing are effective.
- And insufficient evidence that eConsult is effective.

Public Health

Patient access to care could improve through provider use of live video, store and forward, eConsults, and remote patient monitoring; however, there is limited or insufficient evidence of other modalities (e-mail, chat, texting, telephone) improving access to care. Therefore, the public health impact of AB 744 is unknown, although CHBRP anticipates that at least some patients would be able to obtain more timely specialty or primary care. Those patients would also experience reduced travel time and associated costs.

CHBRP is unable to assess changes in public health outcomes due to vast differences in study quality and findings of effectiveness across health conditions and telehealth modalities. For areas where stronger evidence exists, such as live videoconferencing, telephone, and remote patient monitoring, and for certain specialty areas (e.g., mental health, dermatologic or diabetes care) enrollees could see equivalent or improved health outcomes as compared with in-person care.

Long-Term Impacts

In Year 2 of implementation, AB 744 is expected to result in additional use of telehealth services such that telehealth represents 6.54% of all visits. This is due to a 21% increase above the 2020 estimated share of all outpatient visits that are telehealth visits (5.7%). If telehealth use continues to expand in subsequent years, it is likely that increased spending on telehealth will occur. One reason is that CHBRP projects that the majority of growth will occur in new (i.e., supplemental) telehealth services.

CHBRP assumes that technology will continue to drive adoption and integration of telehealth. CHBRP projects

that this trend, along with changes in CMS reimbursement policy in 2019, and continued adoption of value-based, bundled care reimbursement models will likely increase use of e-mail, videoconferencing, and other telehealth services between patients and providers. However, estimated cost-offsets from substitution and supplemental telehealth visits and in-person visits are unknown.

Essential Health Benefits and the Affordable Care Act

AB 744 would not require coverage of a new state benefit mandate and appears not to exceed the definition of EHBs in California.

A Report to the California State Legislature

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Telehealth

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ABOUT CHBRP

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

An analytic staff based at the University of California, Berkeley, supports a task force of faculty and research staff from multiple University of California campuses 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. 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, authorizing statute, as well as all CHBRP reports and other publications are available at www.chbrp.org.

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Table 1. AB 744 Impacts on Benefit Coverage, Utilization, and Cost, 2020

	Baseline	Postmandate	Increase/ Decrease	Percentage Change
Benefit coverage				
Total enrollees with health insurance subject to state-level benefit mandates (a)	24,490,000	24,490,000	0	0%
Total enrollees with health insurance subject to AB 744	24,490,000	24,490,000	0	0%
Have telehealth coverage for service category:				
... Office visits – primary care and urgent care visits	56.1%	100.0%	44%	78%
... Office visits – ophthalmology	70.4%	100.0%	30%	42%
... Office visits – dermatology	70.4%	100.0%	30%	42%
... Office visits – other specialists	70.4%	100.0%	30%	42%
... Emergency department visits	55.7%	100.0%	44%	80%
... Cardiovascular	61.3%	100.0%	39%	63%
... Radiology	50.9%	100.0%	49%	96%
... Lab/pathology	50.9%	100.0%	49%	96%
... Outpatient mental health and SUD	80.3%	100.0%	20%	25%
Utilization and unit cost				
Commercial and CalPERS HMOs				
Average utilization per 1,000 for telehealth services for service category				
Telehealth services				
...Office visits – Primary Care and Urgent Care Visits	52.9	65.1	12.1	23%
...Office visits – ophthalmology, dermatology, and other specialists	47.2	58.0	10.8	23%
... Outpatient mental health and SUD	30.5	37.5	7.0	23%
... Emergency department visits, diagnostic services and other services	12.7	15.6	3.0	23%
In-person services				
... Office visits – primary care and urgent care visits	1,081.1	1,077.5	-3.5	0%
... Office visits – ophthalmology, dermatology, and other specialists	964.2	961.0	-3.2	0%
... Outpatient mental health and SUD	622.4	620.3	-2.0	0%
... Emergency department visits, diagnostic services and other services	4,007.5	4,006.6	-0.9	0%
Average cost per telehealth service for service category				
Telehealth services				
... Office visits – primary care and urgent care visits	\$57	\$134	\$77	137%
... Office visits – ophthalmology, dermatology, and other specialists	\$66	\$137	\$71	109%

... Outpatient mental health and SUD	\$105	\$148	\$44	42%
... Emergency department visits, diagnostic services and other services	\$186	\$187	\$0	0%
In-person services				
... Office visits – primary care and urgent care visits	\$134	\$134	\$0	0%
... Office visits – ophthalmology, dermatology, and other specialists	\$137	\$137	\$0	0%
... Outpatient mental health and SUD	\$148	\$148	\$0	0%
... Emergency department visits, diagnostic services and other services	\$59	\$59	\$0	0%
Medi-Cal Managed Care Plans				
Average utilization per 1,000 for telehealth services for service category				
Telehealth services				
... Office visits – primary care and urgent care visits	0.0	51.6	51.6	N/A
... Office visits – ophthalmology, dermatology, and other specialists	32.6	70.8	38.1	117%
... Outpatient mental health and SUD	7.6	9.8	2.2	28%
... Emergency department visits, diagnostic services and other services	2.4	41.2	38.8	1619%
In-person services				
... Office visits – primary care and urgent care visits	869.5	854.4	-15.0	-2%
... Office visits – ophthalmology, dermatology, and other specialists	1,182.9	1,171.8	-11.1	-1%
... Outpatient mental health and SUD	163.1	162.5	-0.6	0%
... Emergency department visits, diagnostic services and other services	5,551.5	5,540.2	-11.3	0%
Average cost per telehealth service for service category				
Telehealth services				
... Office visits – primary care and urgent care visits	\$37	\$37	\$0	0%
... Office visits – ophthalmology, dermatology, and other specialists	\$42	\$48	\$6	15%
... Outpatient mental health and SUD	\$87	\$87	\$0	0%
... Emergency department visits, diagnostic services and other services	\$53	\$69	\$16	30%
In-person services				
... Office visits – primary care and urgent care visits	\$37	\$37	\$0	0%
... Office visits – ophthalmology, dermatology, and other specialists	\$48	\$48	\$0	0%
... Outpatient mental health and SUD	\$87	\$87	\$0	0%

... Emergency department visits, diagnostic services and other services	\$28	\$28	\$0	0%
Expenditures				
<u>Premiums by payer</u>				
Private employers for group insurance	\$86,438,375,000	\$86,570,790,000	\$132,415,000	0.1532%
CalPERS HMO employer expenditures (c) (b)	\$3,098,551,000	\$3,103,430,000	\$4,879,000	0.1575%
Medi-Cal Managed Care Plan expenditures	\$28,492,273,000	\$28,534,474,000	\$42,201,000	0.1481%
Enrollees with individually purchased insurance	\$12,045,324,000	\$12,072,055,000	\$26,731,000	0.2219%
Enrollees with group insurance, CalPERS HMOs, Covered California, and Medi-Cal Managed Care (c)	\$2,486,222,000	\$2,490,427,000	\$4,205,000	0.1691%
<u>Enrollee expenses</u>				
For covered benefits (deductibles, copayments, etc.)	\$14,750,880,000	\$14,800,326,000	\$49,446,000	0.3352%
For noncovered benefits (d)	\$0	\$0	\$0	0.00%
Total expenditures	\$159,301,797,000	\$159,301,797,000	\$159,580,095,000	0.1747%

Source: California Health Benefits Review Program, 2019.

Notes: (a) Enrollees in plans and policies regulated by DMHC or CDI aged 0 to 64 years as well as enrollees 65 years or older in employer-sponsored health insurance. This group includes commercial enrollees (including those associated with Covered California or CalPERS) and Medi-Cal beneficiaries enrolled in DMHC-regulated plans.²

(b) Approximately 56.17% of CalPERS enrollees in DMHC-regulated plans are state retirees, state employees, or their dependents.

(c) Enrollee premium expenditures include contributions by employees to employer-sponsored health insurance, health insurance purchased through Covered California, and contributions to Medi-Cal Managed Care.

(d) Includes only expenses 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. Unable to estimate because data related to non-covered benefits are not available.

(e) Lab and pathology services represent a large source of utilization in our health care system overall. Laboratory tests can occur in a fairly high frequency, and the increase seen in this table is commensurate with the increases for other services.

Key: CalPERS = California Public Employees' Retirement System; CDI = California Department of Insurance; DMHC = Department of Managed Health Care; HMO = Health Maintenance Organizations; SUD = substance use disorder.

² For more detail, see *Estimates of Sources of Health Insurance in California*, available at http://chbrp.com/analysis_methodology/cost_impact_analysis.php.

POLICY CONTEXT

The California Assembly Committee on Health has requested that the California Health Benefits Review Program (CHBRP)³ conduct an evidence-based assessment of the medical, financial, and public health impacts of AB 744, Telehealth.

Bill-Specific Analysis of AB 744, Telehealth

Bill Language Summary

AB 744 would require reimbursement parity between telehealth services and the equivalent in-person visit. The full text of AB 744 can be found in Appendix A.

AB 744 defines telehealth as “the mode of delivering healthcare 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.”

Specifically, AB 744 would:

- Remove requirements for patients to be at a specified originating site or for providers to be at a specified distant site when using telehealth services.
- Require health plans and policies to reimburse telehealth services on the same basis and to the same extent the plans and policies reimburse for the same service through in-person diagnosis, consultation, or treatment.
- Allow plans and policies to apply cost-sharing (i.e. deductible, copay, coinsurance) to telehealth services, not to exceed the cost-sharing for the same services delivered through in-person diagnosis, consultation, or treatment.
- Prohibit health plans and policies from placing limits on the type of telehealth setting in which services are provided for the patient or by the healthcare provider.
- Additionally, although AB 744 does not require plans and policies to provide telehealth services, if telehealth services are provided, the telehealth services must be covered if the plan and policy provides coverage for the equivalent in person service.
- Coverage of telehealth services cannot be limited to services delivered through third-party corporate telehealth providers and plans and policies cannot deny coverage for a service solely because it is provided via telehealth.

More information about AB 744 and the changes it would make to current law is included in Table 3.

Welfare and Institutions Code

AB 744 removes a notification requirement that states that Medi-Cal enrollees are entitled to interactive communication with a provider if they are participating in asynchronous communications. CHBRP is unable to analyze the marginal change in utilization of telehealth services based on the removal of this notification requirement.

³ CHBRP’s authorizing statute is available at <http://chbrp.org/faqs.php>.

Relevant Populations

If enacted, AB 744 would affect the health insurance of approximately 24.5 million enrollees (63% of all Californians). This represents 100% of the 24.5 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 CDI-regulated policies, exempting specialized health plans and policies.

Telehealth Terminology

A standardized lexicon is still developing within the telehealth field as evidenced by the inconsistent classification and organization of telehealth modalities, users, and technologies. Initially, telehealth focused primarily on provider-to-provider communications (with or without patient presence). However, as technology continues to improve, telehealth’s fastest growing segments are direct-to-consumer (DTC) and remote patient monitoring (MedPAC, 2018). The definitions below provide an orientation to the relationships between modalities, services, and telehealth users, many of which intersect or overlap.

Table 2. Telehealth Terminology Relevant to AB 744

Modality/Service	Service Description	Example
Live video	Uses two-way, interactive video to connect users. Occurs provider-to-provider at a distant site or between a patient and a provider.	Patients receive counseling sessions via live video (telepsychiatry); or local provider contacts distant specialist (with or without a patient present) for consultation or treatment.
Store and forward	Provider captures medical information (e.g. photo, recording) and transmits information to a remote provider for later review.	X-rays or CT scans sent to a distant radiologist to perform a diagnostic review.
E-mail, synchronous text and chat conferencing	Health system portals provide email, chat or text options for patients to contact provider	Patient emails provider describing rash symptoms (with or without a picture). Provider responds via email with prescription for topical antibiotic.
Telephone	Landline, cell phone	Patient telephones the provider for diagnosis and receives prescription for urinary tract infection.
e-Consultation (eConsult)	A form of store and forward: Referring provider requests uses webportal or EHR for clinical input from specialists, who answer the question, request more information/tests, or schedule an office visit.	PCPs refer patients with A1c levels >9% for diabetes team e-consult. Hematology and endocrinology are consistently among the top five specialties receiving these e-consults across systems.
mHealth (mobile health)	A general term for the use of mobile phones and other wireless technology in medical care.	The most common application of mHealth is the use of mobile devices to educate consumers about preventive healthcare services. However, mHealth is also used for disease surveillance, treatment support, epidemic outbreak tracking and chronic disease management

Modality/Service	Service Description	Example
Remote patient monitoring	Medical devices measure physiologic data, which is uploaded to provider site or communicated by patient to provider	Patient or device automatically uploads glucose or blood pressure readings for review by provider. Provider–patient consultation for abnormal readings may follow.

Source: California Health Benefits Review Program, 2019. Based on information from NCTRC, 2018; Player et al., 2018; Vimalananda et al., 2015; Wicklund, 2018.

Key: CT = computed tomography; EHR = electronic health record; PCP = primary care physician.

Interaction With Existing Requirements

Health benefit mandates may interact and align with the following state and federal mandates or provisions.

California Policy Landscape

AB 744 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 744 would add: Sections 1341.46 and 1374.14 to the Health and Safety Code and Section 10123.855 of the Insurance Code.

California law and regulations

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 consent for use of telehealth services (CCHP, 2015).

Existing law defines two modalities of telehealth: synchronous interactions and asynchronous store and forward transfers. The definition of telehealth under current law (“information communication technologies”) does not specify or exclude specific telehealth modalities. 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.

State law also currently limits the coverage of telehealth modalities (store and forward⁴ and live video⁵) for Medi-Cal. Medi-Cal reimburses for telehealth services only under specific circumstances. Medi-Cal reimburses for live video and does not limit to certain specialties. For store and forward, Medi-Cal reimburses providers only for teledermatology, teledentistry, and teleophthalmology. The program does not reimburse for contacts with patients via phone, e-mail, or fax.⁶ However, the Department of Health Care Services (DHCS) recently released draft regulations that would expand coverage of and reimbursement for telehealth services. CHBRP analyzes the impact of proposed legislation on the current laws and regulations; therefore, should the DHCS regulations become finalized, the impacts CHBRP predicts may be altered.

Table 3 below describes the changes AB 744 Telehealth would make to existing California regulation.

⁴ CA Business & Professions Code Sec. 2290.5, CA Welfare & Institutions Code Sec. 14132.725.

⁵ CA Health & Safety Code Sec. 1374.13. CA Welfare & Institutions Code Sec. 14132.72.

⁶ CA Department of Health Care Services. Medi-Cal Part 2 General Medicine Manual. Telehealth. Pg. 5. (Dec. 2013).

Table 3. Current California Telehealth Regulations Compared to AB 744 Telehealth.

Current California Regulations	AB 744 Telehealth
Definitions	
<p>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.</p>	<p>Removes requirements for patients to be at a specified originating site or for providers to be at a specified distant site.</p>
<p>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.</p>	<p>Removes “asynchronous” and “without the presence of the patient”.</p>
<p>Synchronous interaction means a real-time interaction between a patient and a health care provider located at a distant site.</p>	<p>No change</p>
Patient rights and notifications	
<p>Does not prevent a patient from receiving in-person health care delivery services after agreeing to receive services via telehealth.</p>	<p>No change</p>
<p>All laws regarding confidentiality of health care information and a patient’s rights to the patient’s medical information applies to telehealth interactions.</p>	<p>No change</p>
<p>Plans and policies cannot require in-person contact occur between a health care provider and a patient before telehealth services are covered.</p>	<p>No change</p>
<p>Plans and policies are not able to limit the settings where services are provided for the patient or by the health care provider.</p>	<p>No change</p>
<p>Providers are required to notify Medi-Cal enrollees that they are entitled to interactive communication with a provider if they are participating in asynchronous communications.</p>	<p>AB 744 removes this notification requirement.</p>
Reimbursement policy	

Current California Regulations	AB 744 Telehealth
N/A	Requires health plans and policies to reimburse telehealth services on the same basis and to the same extent the plans and policies reimburse for the same service through in person diagnosis, consultation, or treatment.
N/A	Allows plans and policies to apply cost-sharing (i.e. deductible, copay, coinsurance) to the telehealth service that does not exceed the cost-sharing for the same services delivered through in-person diagnosis, consultation, or treatment.
N/A	Prohibits health plans and policies from placing limits on the type of applicable telehealth setting in which services are provided for the patient or by the health care provider.
N/A	Coverage of telehealth services cannot be limited to services delivered through third-party corporate telehealth providers and plans and policies cannot deny coverage for a service solely because it is provided via telehealth.

Source: California Health Benefits Review Program, 2019. Based on current law and provisions of AB 744 Telehealth.

Note: AB 744 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 744 would add: Sections 1341.46 and 1374.14 to the Health; and Safety Code and Section 10123.855 of the Insurance Code.

Similar legislation to AB 744 has been introduced in California in previous years. AB 2507, introduced in 2017, would have required reimbursement parity and specified telehealth modalities. SB 289, introduced in 2015, would have required reimbursement of specific telehealth services. AB 1771, introduced in 2014, also would have required reimbursement for telehealth services. CHBRP’s analyses of AB 2507, SB 289, and AB 1771 are available at www.chbrp.org.

Other recent California legislation would have required coverage and reimbursement for telehealth for specific services, such as substance use disorder treatment or mental health services.

Similar requirements in other states

States vary greatly in the definition and regulation of telehealth. Forty-nine states and the District of Columbia have a codified definition of telehealth (or telemedicine) in law, regulations or in their Medicaid programs. Alabama is the only state that does not have an established legal definition for telehealth (CCHP, 2018).

Almost all states (49) and the District of Columbia reimburse for some type of telehealth service in their Medicaid programs (CCHP, 2018). This is an increase from the 44 state Medicaid programs in 2014. Among these states, live video is the most commonly reimbursed form of telehealth, with all 49 states reimbursing for live video. However, the terms and conditions related to live video reimbursement vary widely across states. As of October 2018, California is 1 of 11 states that reimburses for store-and-

forward in its Medicaid program; the other states are Alaska, Arizona, Connecticut, Georgia, Maryland, Minnesota, New Mexico, Nevada, Virginia and Washington (CCHP, 2018). Twenty states' Medicaid programs reimburse for remote patient monitoring⁷; California does not. Eight states' Medicaid programs (Alaska, Arizona, Maryland, Minnesota, Mississippi, Nevada, Virginia, and Washington) reimburse for live video, store and forward, and remote patient monitoring (CCHP, 2018).

Thirty-nine states and the District of Columbia have laws in place that regulate telehealth reimbursement among private payers (CCHP, 2018). There is much variation among these laws; not all states require reimbursement parity between telehealth services and the same service delivered in-person. At least seven states (Arizona, Delaware, Maryland, Minnesota, Mississippi, New Jersey, and Virginia) have laws in place that are similar to AB 744 in that they require **reimbursement parity** between telehealth and in-person services. Another seven states (Connecticut, Indiana, Montana, Nevada, North Dakota, Oregon, and Vermont) and the District of Columbia have laws in place that require **coverage parity** between telehealth and in-person services.

Federal Policy Landscape

The following federal requirements (e.g., Medicare, Veterans Affairs) provide context for the state of telehealth nationally, but some do not interact directly with AB 744.

Affordable Care Act

A number of Affordable Care Act (ACA) provisions have the potential to or do interact with state benefit mandates. Below is an analysis of how AB 744 may interact with requirements of the ACA as presently exists in federal law, including the requirement for certain health insurance to cover essential health benefits (EHBs).⁸

Any changes at the federal level may impact the analysis or implementation of this bill, were it to pass into law. However, CHBRP analyzes bills in the current environment, given current law and regulations.

Essential Health Benefits

AB 744 would not require coverage for a new state benefit mandate and appears not to exceed the definition of EHBs in California. Additionally, the Centers for Medicare & Medicaid (CMS) has released guidance stating that antidiscrimination laws relating to service delivery method are not considered to be state-required benefits and would therefore not exceed EHBs.⁹

Medicare

Medicare defines “telehealth services” as services that are ordinarily furnished in-person, but are instead furnished using interactive, real-time telecommunication technology. 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:

⁷ Medical devices measure physiologic data, which is uploaded to provider site or communicated by patient to provider.

⁸ 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: http://www.chbrp.org/other_publications/index.php.

⁹ CCIIO, Information on Essential Health Benefits Benchmark Plans. Available at: <https://www.cms.gov/ccio/resources/data-resources/ehb.html>.

- 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, 2018)

If a patient's originating site meets the above qualifications, Medicare will reimburse for synchronous live video. Medicare only reimburses for store-and-forward in telehealth demonstration programs in Alaska and Hawaii (CMS, 2018).

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, 2018).

Medicare does not currently pay for telephone or e-mail encounters between patients and providers.

The Calendar Year 2019 Physician Fee Schedule finalized by the Centers for Medicare & Medicaid (CMS) in Fall 2018 expands telehealth reimbursement rules for Medicare fee-for-service and Medicare Advantage plans, effective January 1, 2019 (CMS, 2019). By differentiating "Medicare telehealth services" from "communication technology-based services," CMS now enables providers to provide some telehealth services, regardless of geographic region or originating site. Newly reimbursable services include virtual check-ins via audio or video, remote evaluation via store and forward, and interprofessional internet consultation via telephone or internet (CMS, 2019). Virtual check-ins and remote evaluation must be provided by a billable provider. Medicare is often used as a benchmark among private insurers and changes in Medicare billing may lay the groundwork for billing changes among private insurers.

Department of Veterans Affairs

Over the past 2 decades, the federal Department of Veterans Affairs (VA) has invested heavily in and experimented with telehealth to address the needs of its patients, nearly half of whom live in remote rural areas with limited access to a VA facility (Boyle, 2019). The VA is widely considered a leader in the integration and use of telehealth. To improve care delivery, in 2016, the VA merged its Office of Telehealth Services and Connected Care into a single VA organizational unit — the Office of Connected Care. In 2018, the VA delivered 2.29 million episodes of telehealth care, across more than 50 specialties to about 13% of veterans (782,000 patients) in their system. More than 1 million visits were delivered through video, a 19% increase over the previous year.

The VA provides multiple telehealth¹⁰ services, including:

- 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 adding competencies in other areas of live videoconferencing, such as cardiology, genomics, neurology, nutrition, intensive care unit, and primary care.
- Store and forward used for teleretinal imaging and teledermatology services.
- 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.

Analytic Approach and Key Assumptions

AB 744 does not specify which telehealth modalities would fall under the reimbursement parity provision. CHBRP focuses on the following common types of telehealth modalities:

- Video communications (live video, synchronous “real time”): uses two-way, interactive video to connect users;
- 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; and
- Services using multiple modalities, such as telestroke and telerehabilitation.

Some services such as e-consults and remote patient monitoring may use the above types of telehealth but are not in themselves a modality. Additional information about and definitions of these services are provided below and in the *Background* section.

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.

Types of visits

Unlike in previous telehealth bills introduced in California, AB 744 does not limit telehealth reimbursement parity to a certain type of visit (e.g., evaluation and management), patient-initiated interactions, or established patients.

Some telehealth services, such as remote patient monitoring, and telephonic disease management would likely be provided by a third party disease management vendor or typically do not rise to the level of a

¹⁰ www.telehealth.va.gov.

billable office visit.¹¹ 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 contractual basis (i.e., per call or per member per month). CHBRP anticipates that any services focused on managing chronic disease being delivered by billable providers in-person or via telephone are subject to AB 744 and are at least partially captured in claims data. Similarly, e-consult is not a currently billable service for private insurance, but due to the changes in Medicare effective January 1, 2019, private insurers may enable billing for e-consult services in the future.

CHBRP assumes that postmandate telehealth visits are visits that either replace existing in-person visits (substitute) or are new (supplemental) visits that would not have taken place in-person or would not have been billed as a telehealth visit. Evidence from the Government Accountability Office (GAO) suggests that telehealth services are already being delivered and inappropriately billed as in-person visits due to constraints on coverage, originating site locations, lack of knowledge by billing managers, and other barriers to obtaining reimbursement (GAO, 2017). Additional information about substitute and supplemental visits is provided in the *Benefit Coverage, Cost, and Utilization Impacts* section.

Types of providers

Although the bill language references licensed health care providers in the state and associate marriage and family therapists, this analysis focuses on providers eligible for reimbursement, including physicians and billable non-physician providers (i.e., nurse practitioner, physician assistant, mental health professional delivering a service with a supervising physician) to estimate the cost impact of AB 744.

¹¹ For additional information about the types of CPT codes included in CHBRP's analysis, please see information provided in Appendix C.

BACKGROUND ON TELEHEALTH

This section provides context for consideration of AB 744 and includes information about patient access to technology, telehealth use by patients and providers, and a description of relevant social determinants of health and disparities among subpopulations, including rural populations.

Access to Technology in California

Consumer access to the Internet, telephone, or other electronic communication devices is necessary for communicating with physicians for health care treatment and advice via telehealth. Connectivity ranges between 87% and 98% of Californians depending on the data source. A report by the California Public Utilities Commission stated that although 98% of the state’s households have broadband access, only about 47% have access at speeds that meet government adequacy standards (Kollers, 2018). Table 4 shows results from a 2017 survey of 1,628 adult Californians that found 87% reported access to broadband Internet connectivity at home (broadband was defined as high-speed Internet access through wireline or wireless) (CETF, 2017). About 70% had access through a computer or tablet and about 20% had access exclusively through a smart phone. See the *Social Determinants of Health* section for discussion about racial, income and urban/rural disparities.

Table 4. California Broadband Internet Connectivity at Home, 2017

	Computing Device (%)	Smart Phone Only (%)	Total (%)
California	69	18	87
Sex			
Men	68	17	85
Women	69	19	88
Race/ethnicity			
White	83	8	91
Asian American	64	20	84
Hispanic	54	28	82
African American (a)	63	30	93
Age group			
18–29	78	17	95
30–39	67	23	90
40–49	70	24	94
50–64	67	18	85
65+	60	9	69
Disability status			
Disabled	60	15	75
Not disabled	72	19	91
Region (b)			

	Computing Device (%)	Smart Phone Only (%)	Total (%)
Los Angeles County	65	23	88
Inland Empire	60	20	80
Orange/San Diego	77	9	86
Central Valley	64	20	84
San Francisco	78	15	93
Other California	61	24	85

Source: California Health Benefits Review Program based on data from the California Emerging Technology Fund (CETF, 2017).

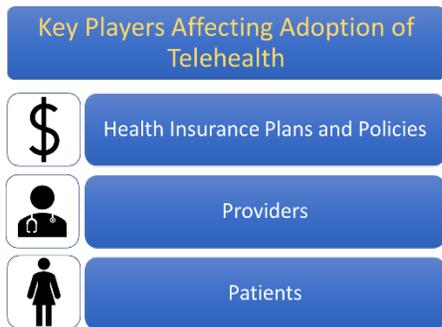
Notes: (a) Based on small sample size.

(b) Inland counties reported less broadband use than coastal counties (82% compared with 89%) and higher use of smart phone only (22% as compared with 17%).

Of the 13% of respondents reporting no internet connectivity, 69% reported cost as a reason; 42% reported the ability to connect through another site than home; and 19% reported no internet service available in their community (CETF, 2017).

Use of Telehealth by Insurers, Providers, and Patients

Access to and utilization of telehealth is increasing due to changes in reimbursement policies by purchasers and payers; greater uptake of telehealth modalities by providers; and increased use of digital communication by patients. Park et al. (2018) explain that adoption of telehealth is uneven across sectors and geographic regions. This section presents information about the use of telehealth from different perspectives in the health care system.



Health Insurance Plans and Policies

The peer-reviewed literature shows an increase in telehealth use nationally between 2013 and 2016 (Park et al., 2018). In particular, state parity laws requiring coverage of telehealth in parity with in-person visits by commercial insurers is contributing to the steady expansion of telehealth (MedPAC, 2018).

According to a 2017 survey conducted by the Medicare Payment Advisory Commission (MedPAC), most commercial plans covered at least some type telehealth services with limitations based on originating site, and type of clinical care (e.g., telepsychiatry, telestroke, evaluation and management visits, etc.) (MedPAC, 2018). In the last few years, Kaiser Permanente health plan reported more than 50% of its patient encounters occurred through telehealth, and 13% of Veteran’s Administration beneficiaries received telehealth services (Park et al., 2018). This contrasts with 0.2% of Medicare beneficiaries using telehealth services (due in part to strict limitations on reimbursement for telehealth services), although the January 2019 expansion of Medicare telehealth reimbursement policies establishes new telehealth reimbursement codes. These new codes may increase the rate of utilization among Medicare enrollees and may encourage private insurers to add more reimbursement codes (see the *Policy Context* for details) (CMS, 2019).

Providers

In addition to insurance coverage, providers play a key role in the telehealth market. Providers encompass both individual clinicians as well as hospitals and health systems. Historically, hospitals and health systems have been the primary adopters of telehealth and uptake among smaller clinics and physician groups has lagged behind. An industry-sponsored survey of health system providers concluded that providers continue to invest in telehealth technology, outpacing the uptake by patients (Wicklund, 2017). Health systems respondents reported that telehealth was used most commonly for provider-to-provider stroke consults (72%, an increase from 37% in 2016), behavioral health (41%) and intensive care (20%). For health systems not using telehealth, the most common barriers reported were due to reimbursement issues (41%), program costs (40%), and provider resistance (22%).

Data regarding clinician uptake are sparse. CHBRP found one recent study that reported about 15% of physicians work in practices using telehealth for patient interactions and 11% work in practices using telehealth for professional consultations (Kane and Gillis, 2018). Larger practices were more likely to use telehealth than smaller practices (26.5% vs. 8.2%, respectively) and specialists were most likely to use telehealth, with radiologists (39.5%), psychiatrists (27.8%), and cardiologists (24.1%) being the most frequent users (Kane and Gillis, 2018).

Patients

Patients represent another key group that affects the telehealth market. Studies indicate that patients are willing and interested in participating in telehealth visits, but that current utilization is still low. For example, a 2017 Avizia survey reported that 18% of patient respondents used telehealth in the last year. Two-thirds of those surveyed reported being unsure of their insurance coverage for such services, and half reported finding an in-person visit more comfortable than a video visit (Wicklund, 2017). A more recent survey about consumer adoption of digital health care reported that video-based telehealth use increased from 7% in 2015 to 34% in 2018, and that, in 2018, 30% of the telehealth visits were self-pay, 11% paid by insurance, and 10% paid directly by employers (remaining payers included “free service”, pharmacy, or physician) (Day and Zweig, 2018).

Similarly, another industry-sponsored survey, by Software Advice, reported that 17% of 400 medical consumers had experience with telemedicine services and 72% of were unsure of their coverage (Hedges, 2019). Between 16% and 26% of the telehealth users cited advantages associated with telehealth including no need to travel, comfort of home, quick access to care and short wait time as benefits of telehealth and 11% cited high quality of care. However, respondents cited disadvantages, such as no physical exam (43%), lack of in-person interaction (27%), quality of care (13%) and having to use technology (9%). When asked about 10 symptoms (i.e., headache, joint pain, stomach pain/nausea, etc.) for which a patient might seek telehealth care, respondents preferred an in-person visit more often than a telehealth visit (Hedges, 2019).

For those patients who use telehealth, patient experience studies show high levels of satisfaction (Player et al., 2018; Reed et al., 2018; Soegaard Ballester et al., 2017). In a survey of 1,734 patients who used a third-party telehealth company (41% of whom were uninsured), 94% to 99% reported being very satisfied with various characteristics of the telehealth service including ease of seeing images, hearing/seeing the provider, quality of care received, and convenience of using the service (Polinski et al., 2016). A randomized control trial of 205 patients undergoing knee surgery found that those using the in-home telerehabilitation program reported comparable levels of satisfaction with care as those who were enrolled in the face-to-face rehabilitation program (Moffet et al., 2017).

California Telehealth Experience

A subset of telehealth is the “video-visit,” first implemented by Kaiser Permanente Northern California (KPNC) in 2014. Reed et al., 2018 reported that between 2015 and 2017, KPNC had 210,383 scheduled video visits for 152,809 patients. Of those visits, 66% of patients connected successfully (the rest changed their mind or connected in a different way). Among the 81,549 primary care visits, 70% were with the patient’s own primary care doctor, an important aspect of continuity of care. Of 994 video-visit patients surveyed, more than 90% reported that the visit met their needs (Reed et al., 2018).

CHBRP found one recent study about use of the telehealth in California. This study is limited to a single health system that contracts with multiple distant clinic sites across California. Kaufman et al. (2017) used geocoding to compare California communities with and without telehealth services to ascertain allocation of services by level of need. Using five measures of barriers to health care access¹² to categorize low (1) to very high need (5) communities, the authors reported that among the 1,621 communities across California, 340 communities were rated as “very high need” (5) and 466 rated as “high need” (4) of health care services. Of the 194 telemedicine clinics associated with the single health care system, 71.4% were in the above-average-need communities (3-5) and 33.2% were in the very-high-need areas (4-5). The study showed good distribution of telehealth resources by the associated health system; however, it also demonstrated remaining unmet needs for the majority of California’s “very high” and “high need communities” (Kaufman et al., 2017).

Social Determinants of Health¹³ and Disparities¹⁴

SDoH include factors outside of the traditional medical care system that influence health status and health outcomes. Where evidence is available, CHBRP presents the 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.

Disparities in Telehealth Access by Geography and Race/Ethnicity

The National Advisory Committee on Rural Health and Human Services 2018 report on rural health insurance challenges noted that rural-urban health disparities exist nationally (HRSA, 2018). Rural populations are generally older and sicker than urban populations, with less access to insurance and health care than their urban counterparts (HRSA, 2018). CHBRP’s 2016 analysis of AB 2507 reported similar conclusions for rural Californians. Specifically, 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).

¹² Barriers were income, culture (language and race); education (< high school diploma); insurance (unemployment and uninsured); and housing (rental tenure).

¹³ 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.

¹⁴ 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).

Travel barriers and inadequate provider–patient ratios are telehealth-relevant factors that contribute to rural health disparities (Marcin et al., 2016; Weinhold and Gurtner, 2014). About 14% (5 million) of California’s 38 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 (Coffman et al., 2018; CHCF, 2012).

Telehealth may help to overcome some of the disparities in health care access by redistributing knowledge and expertise when and where it is needed, including rural areas of California (Marcin et al., 2016; Nesbitt, 2012). However, data show that California racial/ethnic and geographic disparities remain regarding the availability and quality of connectivity (cellular data plans and broadband) (Lopez, 2019). Reliable broadband is still generally less available in rural areas. This impedes both patient and clinician access to health care support. A national survey of consumers’ video-telehealth-use found a geographic disparity; among those aged 18-34 years, 60% of urban residents reported using video telehealth compared with 36% of rural residents. Similarly, for those aged 35 years and older, 46% of urban residents reported using video telehealth versus 17% of their rural counterparts (Day and Zweig, 2018).

Additionally, the quality of connectivity can inhibit the use of telehealth. Because U.S. fixed broadband connections are faster than mobile connections, smart phone-only access can limit some people’s access to telehealth. Table 4 shows a disparity in access for African Americans, Hispanics, and Asian Americans who use smart phones-only at a higher rate than whites. Similarly, those in rural regions have higher rates of smart phone-only use than their urban counterparts.

California entities continue efforts to develop and diffuse telehealth services across the state especially in rural areas, including a coordinated initiative from the California Health Care Foundation, California Telehealth Resource Center, and the Center for Care Innovations (CHCF, 2018).

MEDICAL EFFECTIVENESS

As discussed in the *Policy Context* section, AB 744 would require state-regulated health insurance to cover and reimburse telehealth services at parity with services delivered in-person, principally telephone and electronic diagnosis, consultation, treatment, education, care management and self-management encounters delivered by physicians or billable non-physician providers. Because CHBRP had conducted previous medical effectiveness reviews through literature searches on this topic in 2014, 2015, and 2016, the current medical effectiveness review summarizes findings from the literature from 2016 to the present on the effectiveness of the common telehealth modalities as discussed in the *Policy Context*. This review encompasses studies of patients with a wide range of diseases and conditions because AB 744 would require coverage and reimbursement for telehealth modalities for all enrollees.

Research Approach and Methods

Studies of telephone, live videoconferencing, store and forward, e-mail, synchronous text or chat conferencing, telestroke systems, telerehabilitation, electronic consults, and remote patient monitoring, were identified through searches of PubMed, Web of Science, Scopus, EconLit, the Cumulative Index of Nursing and Allied Health Literature, and PsycINFO. Websites maintained by the following organizations that produce and/or index meta-analyses and systematic reviews were also searched: the Agency for Healthcare Research and Quality (AHRQ), the International Network of Agencies for Health Technology Assessment (INAHTA), the National Health Service (NHS) Centre for Reviews and Dissemination, the National Institute for Health and Clinical Excellence (NICE), and the Scottish Intercollegiate Guideline Network. The current search was limited to abstracts of peer-reviewed research studies that were published in English in 2016 through present. For studies published prior to 2016, CHBRP relied on literature searches conducted in 2014, 2015, and 2016 for reports on previous bills regarding coverage for telehealth services.

Of the 2719 articles found in the current literature review, 650 were reviewed for potential inclusion in this report. Studies were eliminated because they did not report findings from clinical research studies, were of poor quality, or did not focus on the telehealth modalities relevant to AB 744. The 41 studies previously included in the medical effectiveness review for AB 2507 (2016) and SB 289 (2015) were also reconsidered. In total, 66 studies were included in the medical effectiveness review for AB 744, based on the quality of the studies and their relevance to AB 744. When systematic reviews had inclusion criteria broader than the mandate of this bill, CHBRP only summarized findings from the relevant studies.

The conclusions below are based on the best available evidence from peer-reviewed and grey literature. Unpublished studies are not reviewed because the results of such studies, if they exist, cannot be obtained within the 60-day timeframe for CHBRP reports.

Key Questions

1. What are the effects of the use of telehealth modalities for persons with all diseases and conditions?
 - a. What are the effects on access to care and utilization, (e.g., wait time for specialty care, or number of outpatient, emergency department visits and hospitalizations)?
 - b. What are the effects on process of care, including treatment adherence and accuracy of diagnoses and treatment plans?

- c. What are the effects on health outcomes, including both physiological measures and patient-reported outcomes?
2. Are there any harms associated with use of telehealth modalities?

Methodological Considerations

Most studies pertinent to AB 744 examine the use of e-mail, live videoconferencing, store and forward, synchronous text or chat conferencing, telestroke, telerehabilitation care, e-consultation (eConsults), or remote patient monitoring as a substitute for in-person care. In these cases, 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 telestroke care, 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.

Most of the literature reviewed by CHBRP consisted of systematic reviews of randomized controlled trials. Randomization of subjects substantially limits the possibility of selection bias, which occurs when people in intervention and comparison groups are not equivalent in all respect except receipt of the treatment. Motivation may be an important form of selection bias for studies of telehealth because people who use telehealth may be more motivated to improve their health than people who do not receive the treatment. Random assignment to receipt of telehealth services or a control condition increases the likelihood participants in intervention and control groups are equally motivated to improve their health. However, in some cases, most notably email and eConsults, the literature consists of studies in which subjects were not randomized. Motivation could affect the results of studies of email because patients who are more motivated to improve their health may be quicker to contact their providers and more willing follow their advice. Selection bias could occur in one of two ways for eConsults, if primary care providers have discretion over which patients receive eConsults. Primary care physicians may preferentially refer more severely ill patients for eConsults if they feel confident treating less severely ill patients. Conversely, primary care physicians may request eConsults for less severely ill people and in-person visits for more severely ill people.

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.

The literature search for AB 744 used general terms for telehealth services because the bill would apply to coverage for telehealth services for any disease or condition. This broad search strategy may have failed to retrieve peer-reviewed literature that was indexed using terms associated with particular diseases or conditions.

Outcomes Assessed

Three sets of outcomes assessed by studies included in this review were considered separately: (1) access to care and utilization outcomes, such as wait time for 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.

Study Findings¹⁵

The findings are summarized by the following groupings of telehealth modalities: (1) live videoconferencing (2) store and forward (3) e-mail, and synchronous text or chat; and (4) telestroke, (5) telerehabilitation care, (6) electronic consultation (eConsult), and (7) remote patient monitoring. The findings from telestroke and telerehabilitation are presented separately because delivery of these services involve multiple telehealth modalities and the literature does not report findings separately for specific modalities. Telerehabilitation encompasses a range of rehabilitation services including remote patient monitoring, assessment, consultation and education through any of the telehealth modalities discussed. Telestroke involves a remote neurologist offering services to a geographically distant hospital through a variety of different modalities including telephone, videoconferencing and teleradiology. In addition, findings for electronic consultation are summarized separately from findings for email and synchronous text and chat, because electronic consultation is asynchronous, consultative, provider-to-provider communication within a shared electronic medical record or web-based platform. Because patient portals are necessary for increased information security, most studies of the effectiveness of e-mail have assessed patient-to-provider communication through a web portal that patients could access directly.

Findings for Live Videoconferencing

Access to care and utilization

An analysis of baseline data from an RCT (479 patients) of live videoconferencing for headache estimated the potential reductions in travel distance and travel time associated with substituting live videoconferencing for in-person visits with a specialist, Muller et al. (2017)⁶ reported that for persons in rural areas of northern Norway live videoconference consultations could result in a median reduction in travel distance of 526 kilometers and a reduction in median travel time of 7.8 hours.

Previous CHBRP reviews of studies of live videoconferencing used in place of in-person care identified one study that showed improvements in timely treatment compared to outpatient specialty care (Ferrer-Roca et al., 2010). Four studies found that live videoconferencing was not associated with changes in 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).

Process of care

In a systematic review of neurocognitive test assessment administered via videoconferencing for patients with mild cognitive impairment, Alzheimer's disease, and/or substance use disorder, Brearly et al. (2017: 12 studies; 497 participants) found that there was no significant difference in test scores based on assessments made by live videoconference visits and test scores based on in-person assessments. However, Brearly et al. reported that studies with older participants (65 years and older) and slower

¹⁵ The following figures in this section summarize CHBRP's findings regarding the strength of the evidence for the effects of telehealth modalities addressed by AB 744. For test, treatments, and services for which CHBRP concludes that there is clear and convincing, preponderance, limited, or inconclusive evidence, the placement of the highlighted box indicates the strength of the evidence. If CHBRP concludes that evidence is insufficient, a figure that states "Insufficient Evidence" will be presented.

internet connections reported more variability in their findings which suggests that demographic characteristics of the patient population and access to internet could impact the accuracy of neurocognitive tests administered via live videoconferencing.

In a 2019 retrospective cohort study using claims data (528,213 total pediatric visits), Ray et al. (2019) compared the quality of antibiotic prescribing for acute respiratory infections among children in three different health care settings: live videoconferencing telehealth consultations, urgent care, and primary care provider offices. The study reported that clinicians who cared for children via live videoconferencing were less likely to prescribe antibiotics in a manner that was consistent with clinical practice guidelines than clinicians who cared for children in urgent care or primary care settings (59% of telemedicine visits versus 67% urgent care and 78% primary care provider visits). For visits with a diagnosis of streptococcal pharyngitis (strep throat), live videoconferencing providers were less likely to order a streptococcal test to confirm the diagnosis (4% of telemedicine visits versus 75% urgent care and 68% primary care provider visits). The lack of use of laboratory testing to confirm this diagnosis could have led live videoconferencing providers to prescribe antibiotics unnecessarily because some children who they suspected had strep throat may not have had it. Antibiotics are not indicated if a child has a sore throat that is not caused by streptococcal bacteria.

The 2016 report for AB 2507 found two systematic reviews and one randomized controlled trial (RCT) (Fortney, 2015; Simpson and Reid, 2014; Warshaw et al., 2011) that addressed use of live videoconferencing in place of in-person care on processes of care. These studies found diagnoses via patient-physician live videoconferencing for dermatology are highly accurate (Warshaw et al., 2011: 10 studies; 1,290 subjects), that therapeutic relationships between providers and clients are at least as strong as with in-person psychotherapy among persons with a wide variety of mental health conditions (Simpson and Reid, 2014: 23 studies), and that there are no statistically significant differences among intervention and control groups in medication adherence or number of prescribed medications for veterans diagnosed with post-traumatic stress disorder (PTSD) (Fortney et al., 2015: 265 subjects).

Health outcomes

CHBRP found three RCTs published since 2016 that examined the effect of live videoconferencing on health outcomes (Maieritsch et al., 2016; Taylor-Gjevre et al., 2017; Tsai et al., 2017).

Researchers who conducted an RCT of veterans randomized to receive cognitive processing therapy (CPT) for PTSD in-person or over live videoconferencing, reported that CPT via videoconferencing may be equivalent to in-person care. There were significant decreases on post-treatment measures of depression and PTSD among both veterans who received CPT via live videoconferencing and those who were treated in person. However, the sample size was insufficient to conclude that the treatments were equivalent due to high dropout rates among both groups of veterans (43.3% across the study). (Maieritsch et al., 2016: 51 patients).

The authors of RCT that compared rheumatoid arthritis patients allocated to either video-conferencing or in-person care, researchers reported no significant differences between the groups in disease activity measures, quality of life, or patient satisfaction (Taylor-Gjevre et al., 2017: 85 patients).

One RCT randomized people with chronic obstructive pulmonary disease (COPD) to receive either a supervised home-based exercise training program via real-time videoconferencing group three times a week or to receive usual care without exercise training. The researchers found that people who received home-based exercise training via real-time videoconferencing group had significantly better scores on measures of exercise endurance and self-efficacy than people in the control group (Tsai et al., 2017: 36 patients).

Literature reviews that CHBRP conducted for its reports on SB 289 and AB 2507 identified 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). These studies report that quality of life and clinical outcomes, such as severity of depression symptoms, are similar between people who participate in live videoconferencing and people who receive in-person care.

CHBRP also identified two studies that found that live videoconferencing was associated with better health outcomes than usual care. One multisite RCT found that veterans receiving psychological care via live videoconferencing had significantly larger decreases in scores measuring severity PTSD compared to those receiving usual care (Fortney et al., 2015). Another RCT of live videoconferencing for children with attention deficit/hyperactivity disorder (ADHD) and their caregivers found that receipt of live videoconferencing was associated with greater reductions in ADHD severity, hyperactivity, oppositional defiant disorder and inattention than the usual care (Myers et al., 2015).

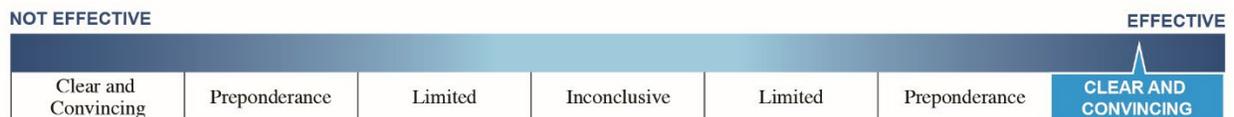
Summary of findings regarding the effectiveness of health services delivered by live videoconferencing: There is a preponderance of evidence based on 6 studies that care delivered by live video conferencing is at least as effective as in-person care for access to care and utilization.

There is clear and convincing evidence from a systematic review of 10 studies that dermatology diagnoses made via live videoconferencing are as accurate as diagnoses made during in-person visits. There is a preponderance of evidence from a systematic review of 12 studies that scores on neurocognitive tests administered via live videoconferencing are similar to scores obtained when tests are administered in person.

There is clear and convincing evidence based on 13 studies that mental health services for ADHD depression, and PTSD delivered by live video conferencing are at least as effective as in-person care for processes of care and health outcomes.

There is limited evidence based on findings from 2 small RCTs that care delivered by live video conferencing is at least as effective as in-person care for health outcomes among persons with rheumatoid arthritis and COPD.

Figure 1. Effectiveness of Health Services Delivered by Live Videoconferencing



Findings for Store and Forward

While teleradiology is the most widely recognized and used type of store and forward consultation, usually between providers, CHBRP found no recent high quality studies of teleradiology that reported outcomes on access to care and utilization, process of care, or health outcomes. Most studies of store-and-forward consultation concern teledermatology or teleophthalmology.

Access to care and utilization

The 2015 report for SB 289 found a systematic review about the impact of store and forward dermatology care on access to 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: 42 studies; 6,634 subjects).

A more recent systematic review and meta-analysis on teledermatology (Finnane et al., 2017: 21 studies) found seven studies that reported that store and forward teledermatology reduced wait times compared to in-person appointments, diagnosis, and surgery.

A recent systematic review and meta-analysis of teleophthalmology examined patients receiving care from any trained provider through teleophthalmology compared to in-person care (Kawaguchi et al., 2018: 2 studies; 626 patients). The authors found teleophthalmology increases the odds of having a screening eye examination for diabetic retinopathy (Kawaguchi et al., 2018). In one study, 77% percent of the teleophthalmology patients compared to 14% of in-person care patients received a screening. The other study reported 94% teleophthalmology patients compared to 56% in-person care patients received a screening, respectively ($p < 0.001$).

Process of care

In studies of store and forward technology, findings regarding diagnostic accuracy are inconsistent across medical specialties. A large RCT cited in the AB 2507 report found very high reliability between store and forward and in-person dermatology for both diagnosis and treatment plans (Nami et al., 2015). One small cohort study that compared in-person visits with a physician to store and forward and videoconferencing methods to diagnose dermatological conditions found a 100% rate of agreement between the consultation types, 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). However, a systematic review of the use of store and forward in dermatology found poorer accuracy compared to in-person diagnosis, especially for malignant and premalignant lesions (Warshaw et al., 2011; 42 studies; 6634 subjects). A recent meta-analysis (Finnane et al., 2017: 8 studies) also found the diagnostic accuracy of in-person diagnosis is higher (67% to 85% agreement with reference standard, Cohen κ , 0.90) when compared with teledermatology (51% to 85% agreement with reference standard, κ , 0.41–0.63) for the diagnosis of skin cancer.

Studies of use of store and forward for other conditions have found that diagnoses are at least as accurate as in-person consultations. Studies included in the literature review for CHBRP's report for AB 2507 found that store and forward diagnosing has been shown to be highly accurate in diabetic retinopathy and pediatric heart murmurs (Dahl et al., 2002; Saari et al., 2004). More recently, Kawaguchi (2018) found no statistically significant difference between the ability of teleophthalmology and in-person examination on an ophthalmologist's ability to detect choroidal neovascularization.

Health outcomes

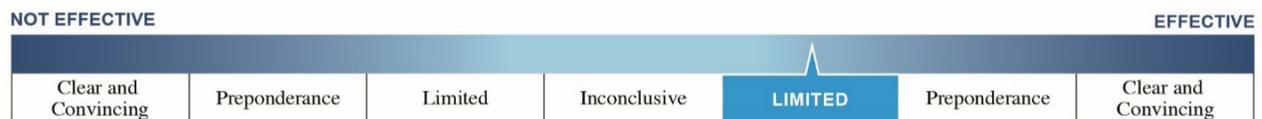
The evidence for the effect of store and forward technology on health outcomes is limited to dermatology and ophthalmology. CHBRP found no studies published since 2016 that examined the effect of store-and-forward technology on health outcomes.

For the 2015 report for SB 289, CHBRP found one systematic review that reported insufficient evidence to evaluate clinical outcomes of store and forward teledermatology (Warshaw et al., 2011). Another RCT found that teledermatology was equivalent to in-person care, with respect to both disease-specific and

general health outcomes (Whited et al., 2013a,b). A 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).

Summary of findings regarding the effectiveness of health services delivered by store and forward: There is *limited* evidence that health services delivered by store and forward are at least as effective as in-person care based on 13 studies. Although there is evidence that store and forward improves access to care and utilization, the findings for processes of care are inconsistent and findings regarding health outcomes are limited to dermatology and ophthalmology. Two systematic reviews have found that diagnoses of dermatological conditions made via store and forward are less accurate than diagnoses that are made during in-person visits, especially for malignant and premalignant lesions.

Figure 2. Effectiveness of Health Services Delivered by Store and Forward



Findings for E-Mail, Synchronous Text and Chat Conferencing

CHBRP found no studies examining of the effect of synchronous text or chat conferencing on access to care and utilization of health services, process of care or health outcomes.

Access to care and utilization

CHBRP found no studies published since 2016 that examined the effect of e-mail, and synchronous text or chat conferencing on access to care and utilization of health services.

For the 2015 report for SB 289, CHBRP identified several studies of e-mail access to physicians in the United States and conducted within an integrated health system that provided email access to physicians as part of a multifaceted web portal (such as Kaiser). The findings from these large and well-designed studies were also inconsistent, 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).

Process of care

CHBRP found no studies published since 2016 that examined the effect of e-mail, and synchronous text or chat on process of care.

The 2015 report for SB 289 reported findings from studies of patients with diabetes with e-mail access to physicians via a multifaceted web portal. These studies found that people who had email access to their physicians had better 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 limits the reliability of the findings. It is also difficult to generalize from people with diabetes to the entire population of insured individuals.

Health outcomes

CHBRP found no studies published since 2016 that examined the effect of e-mail, and synchronous text or chat communication on health outcomes for the general population.

For the 2015 report for SB 289, CHBRP found five studies of the effect of e-mail communication as part of a multifaceted web portal on health outcomes among people with diabetes. These studies consistently found that use of secure e-mail was associated with better glycemic control as measured by HbA1c. There was less consistency in the findings regarding other conditions, such as hypertension or hyperlipidemia (Harris et al., 2009, 2013; Lau et al., 2014; Ralston et al., 2009; Zhou et al., 2010).

Summary of findings regarding the effectiveness of health services delivered by e-mail, synchronous text, and chat conferencing: CHBRP concludes that there is inconclusive evidence that health services delivered by email, synchronous text, and chat conferencing improves access to care and utilization.

Diabetes is the only condition for which the impact of care provided by email, synchronous text, and chat has been studied. For this population, there is a limited evidence that email, synchronous text, and chat improve adherence to screening recommendations and a preponderance of evidence that these telehealth modalities are associated with better glycemic control.

Figure 3. Effectiveness of Health Services Delivered by E-Mail, Synchronous Text, and Chat Conferencing



Findings for Telephone

Access to care and utilization

CHBRP found no studies published since 2016 that examined the effect of telephone-based telehealth on access to care and utilization of health services.

The 2015 report for SB 289 found inconclusive evidence from RCTs and time-series studies of the effect of telephone consultation services on access to care and utilization, with studies showing different effects for use of the same type of service (e.g., emergency department, hospitalization, or primary care) (Bunn et al., 2004; Flores-Mateo et al., 2012). Of the five studies that examined physician visits, Bunn et al. (2004) reported that three found a decrease in visits to primary care physicians and two found a significant increase in return visits. Additionally, of the seven studies examining emergency department visits, six showed no difference between telephone triage and normal care.

Processes of care

CHBRP found no studies that examined the effect of patient-initiated telephone-based telehealth on process of care.

Health outcomes

The 2016 report for AB 2507 found telephone consultations were as effective as in-person consultations based on three studies examining of the effect of telephone-based telehealth on health outcomes (Akobeng et al., 2015; Fann et al., 2015; Kotb et al., 2015). 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 than people who received usual care (Fann et al., 2015). Similarly, a meta-analysis of 30 RCTs that directly compared the effectiveness of forms of telemedicine for patients with heart failure found that structured telephone support significantly reduced the odds of death (15 RCTs), hospitalizations due to heart failure (11 RCTs), and all-cause hospitalization(12 RCTs) compared to usual care (Kotb et al., 2015).

In a meta-analysis (11 RCTs; 1,104 subjects), Proctor et al. (2018) found a moderately better scores on a measure of depression for patients who received telephone psychotherapy interventions and a small to moderately better short-term scores on measures of fatigue, quality of life, multiple sclerosis symptoms, physical activity, and medication adherence, in people with multiple sclerosis compared with controls and other interventions (Proctor et al., 2018).

Summary of findings regarding the effectiveness of health services delivered by telephone:
 CHBRP concludes that, for the diseases and conditions studied, findings from studies of the effect of telephone consultations on access to care and utilization are inconsistent; therefore, the evidence that medical care provided by telephone compared to medical care provided in person is inconclusive.

There is insufficient evidence to determine whether services provided by telephone are as effective as medical care provided in person for processes of care. CHBRP notes that the absence of evidence does not mean there is no effect; it means the effect is unknown.

CHBRP concludes that, for the diseases and conditions studied, the preponderance of evidence from studies of the effect of telephone consultations suggests that telephone consultations were at least as effective as in-person consultations on health outcomes.

Figure 4. Effectiveness of Health Services Delivered by Telephone



Findings for Telestroke

Access to care and utilization

Access to telestroke services enables people who have a stroke to obtain specialized stroke care at a local hospital instead of traveling a longer distance to a comprehensive stroke center.

One cross sectional study examining access to telestroke networks using geoinformatics in Ontario, Canada, found that adding telestroke services increases the percentage of people in the province who are within 30-minutes of a hospital providing specialized care for stroke. In the study, 71.86% of the population was within a 30-minute drive of a regional or district stroke center. When the telestroke program was included, 91.28% of the population was within 30-minutes of a hospital providing specialized care for stroke (Jewett et al., 2017).

Al Kasab et al. (2017: 7,694 consults) reported a substantial reduction (from 36% to 14%) in the percentage of patients transferred of from community hospitals to an academic health center following the implementation of web-based telestroke program that allows patients presenting with acute ischemic stroke at a rural hospital to receive consultation within minutes from a neurologist with expertise in the care of people with acute stroke. The program has reduced travel time by enabling more people with acute stroke who live in rural areas to be treated safely and effectively in local hospitals.

Process of care

The findings for telestroke process of care and health outcomes are based on two systematic reviews and meta-analyses (Baratloo et al., 2018: 26 studies; 6,605 patients; Kepplinger et al., 2016: 7 studies; 1,863 patients). These studies examine telestroke compared to acute stroke care at a comprehensive stroke center with access to thrombolysis and specialized stroke expertise.

It is widely accepted that in acute stroke, time-to-treatment is important and that the earlier intravenous thrombolysis (IVT) treatment is administered, the better the outcome (Jauch et al., 2013). One large meta-analysis (Baratloo et al., 2018: 9 studies; 3,193 patients) found that onset to door duration (OTD) (5 studies; 833 patients) was significantly faster (10 minutes) for the telemedicine-guided thrombolysis patients compared to patients with thrombolysis performed at a comprehensive stroke center. Additionally, hospital length of stay (9 studies; 2,850 patients) was significantly shorter (-0.55 days).

Health outcomes

Health outcomes associated with telestroke systems have been well studied. Two meta-analyses examined the effect of telestroke on mortality (Baratloo et al., 2018: 9 studies; 3,193 patients; Kepplinger et al., 2016: 3 studies; 1,490 patients) and found no significant difference in 90-day mortality between telemedicine-guided thrombolysis compared to thrombolysis performed at a stroke center. One meta-analysis (18 studies; 4,907 patients) also found no significant difference in in-hospital mortality for telemedicine-guided thrombolysis compared to thrombolysis performed at a stroke center or care at a stroke center (Baratloo et al., 2018).

Both meta-analyses also found no significant difference in symptomatic intracranial hemorrhage (sICH), a serious complication of intravenous thrombolysis treatment (Baratloo et al., 2018: 21 studies; 4,022 patients; Kepplinger et al., 2016: 4 studies; 1,489 patients), and favorable clinical outcomes on the NIH Stroke Scale (NIHSS) or the modified Rankin scale (mRS), at discharge and at 30-day follow-up for telemedicine-guided thrombolysis patients compared to patients with thrombolysis performed at a comprehensive stroke center (Baratloo et al., 2018; Kepplinger et al., 2016).

Summary of findings regarding the effectiveness of telestroke services: There is limited evidence that telestroke can improve access to care and utilization of health services. There is a *preponderance* of evidence based on 2 large systematic reviews and meta analyses of 33 studies that health services delivered by telestroke systems are at least as effective as in-person care at a comprehensive stroke center for processes of care and health outcomes, including onset to door duration (OTD), hospital length of stay, functional independence, and mortality.

Figure 5. Effectiveness of Health Services Delivered by Telestroke



Findings for Telerehabilitation

Access to care and utilization

CHBRP found no studies published since 2016 that examined the effect of telerehabilitation on access to care and utilization of health services.

CHBRP’s literature review for SB 289 identified one systematic review of studies of telerehabilitation (Kairy et al., 2009). The authors of the systematic review found that the studies they included in their review reported inconsistent findings regarding the impact of telerehabilitation on visits to emergency rooms and physician’s offices.

Process of care

In a study of the accuracy of diagnoses of musculoskeletal disorders of the knee, Richardson et al. (2017) conducted a repeated-measures design in 18 subjects for knee pain treatment. All subjects had both an in person assessment and a remote telerehabilitation assessment. The authors reported that there was a high level of agreement between diagnoses based on in-person assessment and remote telerehabilitation assessment. The study enrolled persons with a mean age of 23 years which resulted in a high prevalence of acute and subacute conditions relative to chronic conditions which limits the generalizability of the findings to middle-aged and older adults who are more likely to have chronic conditions, such as osteoarthritis.

Health outcomes

The authors of the systematic review included in CHBRP’s literature review for the SB 289 report found that the studies they included in their review reported that clinical outcomes experienced by persons who received telerehabilitation were as good or better than outcomes of treatments to which telerehabilitation was compared (Kairy et al., 2009).

The findings for health outcomes for telerehabilitation are based on two systematic reviews and meta-analyses (Shukla et al., 2016; Tchero et al., 2018). Tchero et al. examined the effectiveness of multiple modalities of telerehabilitation on stroke survivor patients compared to standard rehabilitation or home-based exercise programs. Modalities included video-based therapy programs, remote patient monitoring, telephone calls and videoconferencing with providers including physiotherapists, physical therapists,

occupational therapists, neurologists, or physicians. The systematic review included 15 RCTs (1,339 patients), 12 of which were included in a meta-analysis (1,246 patients) The meta-analysis found no statistically significant differences for activities of daily living or motor function between the patients in the telerehabilitation and patients in the usual care groups (Tchero et al., 2018).

Shukla examined the effectiveness of home telerehabilitation via videoconferencing compared to conventional rehabilitation among patients who underwent total knee arthroscopy (Shukla et al., 2016: 6 studies; 408 patients). There were no statistically significant differences in change for active knee extension and flexion, physical activity, or functional status in the home telerehabilitation group compared to the conventional rehabilitation group.

Summary of findings regarding the effectiveness of telerehabilitation services: CHBRP concludes that there is inconclusive evidence to determine whether services provided by telerehabilitation are as effective as medical care provided in person for access to care.

There is insufficient evidence to determine whether services provided by telerehabilitation are as effective as medical care provided in person for processes of care. CHBRP notes that the absence of evidence does not mean there is no effect; it means the effect is unknown.

There is a preponderance of evidence that telerehabilitation is effective in improving health outcomes such as activities of daily living, motor function, and physical activity based on two meta-analyses of 21 studies .

Figure 6. Effectiveness of Health Services Delivered by Telerehabilitation on Health Outcomes



Findings for Electronic Consultation (eConsult)

Access to care and utilization

CHBRP found three systematic reviews and seven observational studies that addressed the effects of eConsult on access to care and utilization across multiple specialties, including otolaryngology-head and neck surgery, rheumatology, dermatology, orthopedics, and psychiatry (Archibald et al., 2018; Kohlert et al., 2018; Lai et al., 2018; Liddy et al., 2019, 2018, 2019; Lowenstein et al., 2017; Naka et al., 2018; Rostom et al., 2018; Vimalananda et al., 2015). The studies consistently found that e-consultation was associated with shorter time to treatment, shorter wait time for specialist input, and fewer avoidable specialist visits.

One systematic review (27 studies: 22 research studies, 5 system descriptions) reported that the time between placing a referral and specialist input was shorter with e-consults than with traditional referrals (Vimalananda et al., 2015). In this review, Vimalananda et al. (2015) reported E-consultation time was most commonly reported as less than 3 days (3 studies). Liddy et al. (2018) reported that the average/median time for the PCPs to receive a response from the specialists to the eConsult requests ranged from <1 to <6 days (5 studies). A previous systematic review by Liddy et al. (2019) also found that eConsults were associated with short response times (4.6 hours to 3.9 days). Many of the studies included in the systematic reviews were conducted at San Francisco General Hospital, the Mayo Clinic, and Department of Veterans Affairs medical centers.

In a case study of eConsults conducted at the University of California, San Francisco, Lowenstein et al. (2017) performed a content analysis of the first 50 eConsults to psychiatry after the program was implemented. The authors found that the psychiatrists were able to address all requested eConsults with an average response time of 1.4 days. The primary care physicians implemented the treatment recommendations provided by the psychiatrist in 76% of consults and the majority of eConsults. The majority of consultations (74%) concerned management of medications used to treat mental health conditions.

Five individual studies of eConsults provided through the Champlain Building Access to Specialists through eConsultation system in Ontario, Canada, have been published since the studies included in this systematic review. In a study of eConsults in an otolaryngology-head and neck surgery practice, Kohlert et al. (2018) reported the median response time was nearly 29 times faster than traditional in-person consultation, with over 40% of eConsults receiving a response within 24 hours and nearly all eConsults answered within 7 calendar days. In a cross-sectional study of eConsult cases in a multispecialty practice (n = 14,105), Liddy et al. (2018) reported a median response time of 21 hours. Similarly, in a pediatric specialty referral system, Lai et al. (2018) found median specialist response time was 0.9 days (range <1 hour to 27 days). Rostom et al. (2018) reported that the median response time by the rheumatologists was 1.9 days. Archibald et al. (2018) reported the average response time for eConsults with psychiatrists was 2.3 days and that the electronic consults took less than 15 minutes on average for the psychiatrist to complete. The PCPs participating in this study noted that the response time for eConsults was much shorter than for traditional referrals.

Liddy et al. (2018) reported that the average time for specialists to respond to eConsult requests sent by PCPs ranged from 1 to 6 days (3 studies) compared to typical wait times for an in-person visit with a specialist, which is usually 4 weeks in Canada. Another study in Canada found patient wait time was significantly shorter for an eConsult referral (1 day, 95% confidence interval [CI]: 0.9 to 1.2 days) compared with a referral for an in-person visit (132 days; 95% CI: 127 to 136 days) (Lai et al., 2018). In a retrospective cohort study of 2,385 dermatology referrals in a medically underserved community health center in the United States, Naka et al. (2018) found that before implementation of eConsults, 11% of 1,258 referrals resulted in a confirmed appointment with a median wait time of 77 days. After implementation, 49% of 1,127 consults received a diagnosis or treatment plan within 1 day on average. Of those, 16% required an in-person visit, with a median wait time of 28 days.

Studies have found eConsult allows primary care physicians to manage patients who may otherwise need a specialist visit (Liddy et al., 2019; Vimalananda et al., 2015). The studies that Vimalananda and colleagues included in their systematic review found that specialists reported fewer inappropriate visits, fewer avoidable follow-up visits, and more eConsult based follow-up visits versus paper-based referrals. The authors noted the greatest impact for hematology, endocrinology, and dermatology, with one study reporting that over 50% of in-person specialty visits were avoided through the use of e-consult (1 study; 406 e-consultations) (Vimalananda et al., 2015). Liddy et al. (2019) systematic review reported reductions in the numbers of patients referred for in-person visits with specialists (12–84%). Another systematic review (Liddy et al., 2019: 43 studies) found most studies (30 of 43 studies) reported between 7.4% and 78% reductions in the number of in-person specialist visits. Lowenstein et al. (2017) found that in 74% of eConsults, psychiatrists recommended that the primary care physician continue to manage the patient without referral for an in-person psychiatry visit. Three individual studies of eConsults provided through the Champlain Building Access to Specialists through eConsult system that were published after the literature searches for the systematic reviews addressed the impact of eConsults on referrals to otolaryngologists for in-person care. Kohlert et al. (2018) reported unnecessary referrals to specialists for in-person visits were avoided in 33.4% of all eConsults. Liddy et al. (2018) reported that 65% of all eConsults were resolved without a specialist in-person visit and Archibald et al. (2018) reported that 30.7% of the eConsults eliminated the need for a patient referral to a psychiatrist.

Process of care

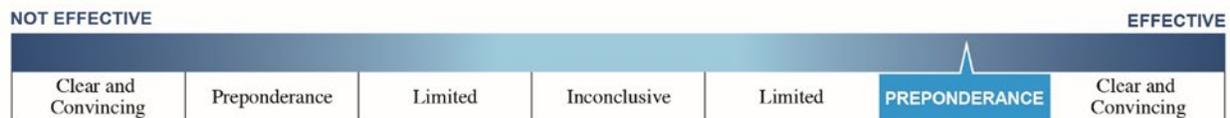
CHBRP did not identify any studies of the impact of eConsults on processes of care.

Health outcomes

CHBRP did not identify any studies of the impact of eConsults on health outcomes. One explanation for this finding may be a lack of consistency in how eConsults are distinguished from other telehealth modalities. One systematic review on eConsults (Liddy et al., 2019) included three RCTs on store-and-forward dermatology consults that CHBRP identified and discussed in the subsection of the Medical Effectiveness section that concerns store-and-forward.

Summary of findings regarding the effectiveness of health services delivered by e-consultation:
 There is preponderance of evidence based on two systematic review and 5 studies that services delivered by eConsults reduce the time that patients and primary care providers wait to obtain specialists' input and can substitute for a substantial proportion of in-person visits to specialists. There is insufficient evidence to determine whether eConsults improve processes of care and health outcomes. CHBRP notes that absence of evidence is not evidence of no effect.

Figure 7. Effectiveness of Health Services Delivered by eConsult on Access to Care and Utilization



Findings for Remote Patient Monitoring

The findings for remote patient monitoring are based on a large AHRQ review of systematic reviews (Totten et al., 2016: 58 systematic reviews) specifically addressing remote patient monitoring (17 systematic review studies; 202 studies; 48,321 patients). The systematic reviews identified by ARHQ includes both RCTs and observational studies.

Access to care and utilization

The AHRQ review of systematic reviews identified four systematic reviews regarding remote patient monitoring for heart failure. Two of the four systematics reviews (41 RCTs) reported that remote monitoring was associated with fewer heart failure-related hospitalizations and one systematic review reported fewer heart failure related hospital admissions (6 of 9 RCTs reported this outcome). Two systematic reviews of people with chronic obstructive pulmonary disease (COPD) found that use of remote patient monitoring was associated with fewer hospitalization and fewer emergency department visits. One systematic review (18 RCTs; 34 total studies included) found that, while patients with mixed chronic conditions reported significantly more primary care and specialty care physician office visits, they also reported fewer hospitalizations and fewer emergency department visits (Totten et al., 2016).

Process of care

CHBRP found no studies on the effects of remote patient monitoring on processes of care.

Health outcomes

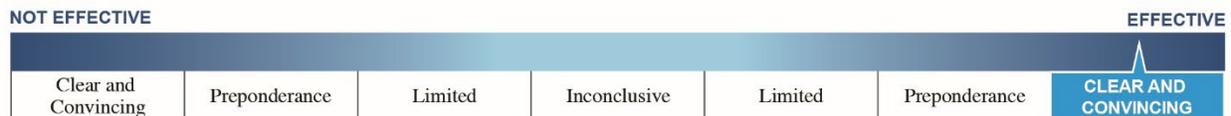
Two systematic reviews included in the AHRQ report found remote patient monitoring was associated with improvements in quality of life (2 RCTs) and no difference in mortality (8 RCTs) for patients with COPD who received remote monitoring. Of four systematic review studies examining remote patient monitoring for heart failure, 3 systematic reviews found that remote monitoring was associated with lower mortality (included 50 RCTs). One systematic review (9 RCTs) examining patients with implanted cardioverter-defibrillators found a reduction in odds of all-cause mortality (3 RCTs) and inappropriate receipt of shock. One systematic review (6 RCTs) found remote patient monitoring significantly improved HgA1c in patients with diabetes.

The AHRQ report found that studies of patients with mixed chronic conditions (49 studies; 33 RCTs) found remote patient monitoring was associated with improvements in clinical outcomes (5 RCTs), symptoms (5 RCTs), and psychosocial outcomes (5 RCTs) (Totten et al., 2016).

Summary of findings regarding the effectiveness of health services delivered by remote patient monitoring: There is clear and convincing evidence based on a large systematic review that services delivered by remote patient monitoring reduce utilization of emergency departments and hospitals and improve health outcomes.

There is insufficient evidence that services delivered by remote patient monitoring improves processes of care.

Figure 8. Effectiveness of Health Services Delivered by Remote Patient Monitoring on Access to Care and Utilization and Health Outcomes



Potential Harms of Telehealth

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) (Heinzelmann et al., 2005; Kassirer, 2000); inappropriate antibiotic prescribing (Ray et al., 2019); 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 and Staggers, 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). These harms can be mitigated if providers and patients use email through a secure web portal.

The American Heart Association finds that the advantages of telehealth outweigh concerns about patient privacy, data accuracy, ease of use, and lack of technical infrastructure in rural communities and provides suggestions for ameliorating these challenges (Schwamm et al., 2017).

Summary of Findings Table

Table 5 summarizes evidence of the effectiveness of telehealth for access and utilization; processes of care; and health outcomes. Findings are reported separately for each telehealth modality because findings differ across these types of uses. Evidence is also reported separately for the three types of outcomes because the strength of evidence of the effectiveness of telehealth modalities varies across the outcomes.

Table 5. Summary of Evidence of Medical Effectiveness of Telehealth

	Access and Utilization	Processes of Care	Health Outcomes
Live video	Preponderance of evidence – effective	Clear and convincing evidence – effective	Clear and convincing evidence – effective
Store and forward	Preponderance of evidence – effective	Inconclusive evidence	Limited evidence – effective
E-mail, synchronous text, and chat conferencing	Inconclusive evidence	Limited evidence – effective	Limited evidence – effective
Telephone	Inconclusive evidence	Limited evidence – effective	Preponderance of evidence – effective
Telestroke	Insufficient evidence	Preponderance of evidence – effective	Preponderance of evidence – effective
Telerehabilitation	Inconclusive evidence	Insufficient evidence	Preponderance of evidence – effective
eConsult	Preponderance of evidence – effective	Insufficient evidence	Insufficient evidence
Remote patient monitoring	Clear and convincing evidence – effective	Insufficient evidence	Clear and convincing evidence – effective

Source: California Health Benefits Review Program, 2019.

BENEFIT COVERAGE, UTILIZATION, AND COST IMPACTS

As discussed in the *Policy Context* section, AB 744 would require DMHC-regulated health plans, including Medi-Cal Managed Care plans, and CDI-regulated policies to reimburse providers for telehealth services at the same rate as equivalent in-person services.

This section reports the potential incremental impacts of AB 744 on estimated baseline benefit coverage, utilization, and overall cost.

CHBRP limits analysis of AB 744 to telehealth services provided by a *physician or billable non-physician provider* to patients that are considered equivalent to in person services, and delivered via videoconferencing, e-mail, or synchronous text/chat, telephone, and store and forward. As described in the *Medical Effectiveness* section, certain services could be delivered through a variety of these modalities. CHBRP analyzed CPT billing claims associated with services traditionally delivered to patients on an in-person basis that could potentially be delivered electronically via the methods named above. CHBRP specifically excluded eConsults and remote patient monitoring from the *Benefit Coverage, Utilization, and Cost Impacts* analysis because of data limitations and challenges in billing for those services by providers due to capacity and technology, which AB 744 does not propose to alter. However, the *Long-Term Impacts* section discusses the new Medicare payment policy and coding practices that went into effect on January 1, 2019 that could alter billing practices and facilitate use of telehealth services in the future.

CHBRP examined the literature to obtain estimates for:

- Adopting, or initiating, use of telehealth by providers and patients;
- The impact of use of these technologies 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 have 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).

Telehealth is considered a component of broader health care utilization that can be helpful in managing disease and health, and several modalities appear to be equivalent to in-person services in terms of access to care and utilization, process of care, and health outcomes. As depicted in the *Medical Effectiveness* section (see Table 5), the literature on the medical effectiveness impacts of telehealth modalities indicates that live videoconferencing, store-and-forward, and telestroke are at least as effective as in-person care for some outcomes. Despite evidence that live videoconferencing was equivalent to in-person services, the evidence does not suggest any impact on hospitalization rates, emergency department visits, outpatient specialty visits, or outpatient primary care visits. Additional published evidence suggests that new use of telehealth services through methods such as videoconferencing, telephone, e-mail, or synchronous text/chat do not replace the need for office visits, but instead act as supplemental services to address patient health needs (Pearl, 2014; Shah et al., 2018).

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 744 bill language); and
- Requirements that telehealth visits have to be equivalent to in-person visits (per bill language and CPT code definitions) mean that providers are likely to dedicate similar levels of resources and capacity to deliver the same type of visit, whether delivered via in-person or telehealth modality.

CHBRP anticipates a shift in the service delivery settings from in-person to telehealth visits post-mandate. That means telehealth services will represent a larger share of overall health services use post-mandate. The core assumptions that CHBRP made in understanding the impact on utilization and costs are:

- If AB 744 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 (1) in-person visits with live videoconference, store-and-forward, telephone, e-mail and synchronous text/chat for encounters, and (2) telehealth visits that were billed without modifiers or location information so that they appeared to be in-person visits when examining claims data; 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.¹⁶ 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 constrained due to each billable provider's capacity (including their staff's ability to deliver and bill for services ordered by the physician) and technology available to the provider and/or patient.
- CHBRP assumes that current billing practice for live video, store and forward, telephone, e-mail, and synchronous text/chat modalities underestimates true utilization of these services because the majority of enrollees subject to AB 744 already have coverage for these settings or services at equivalent payment to equivalent in-person services (see Table 1), and there are barriers to utilization, billing limits, and other factors that result in a lack of information showing up in claims data, (Medicare Payment Advisory Commission (MedPAC), 2018). If AB 744 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 substitute).
- CHBRP assumes that certain telehealth services provided by third-party telehealth vendors for enrollees in partnership with insurance carriers (e.g., Teladoc, etc.) where the enrollee *pays a fee* for a virtual visit are not considered billable under current state law. According to the CHBRP carrier surveys, 10% of commercial insurance enrollees and 17% of Medi-Cal enrollees have access to these third-party services. CHBRP assumes that postmandate, this type of encounter

¹⁶ 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 meet coding rules and be billable.

will remain ineligible 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 new supplementary services will offset these provided services that have not resulted in claims to insurers themselves. CHBRP has no data on current use of these third-party telehealth services and would count "new" services replacing third-party vendor-provided services as supplemental because they would incur new claims that have not been observed in current billing practices.

- In some cases, insurers contract with a telehealth service (i.e., Teladoc, or 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. These services do not satisfy compliance with AB 744, which would require health insurers to provide reimbursement to providers outside of these third-party arrangements for telehealth services.
- CHBRP assumes that additional increases in telehealth services with the introduction of AB 744 would not occur for Kaiser Permanente because of their existing telehealth infrastructure, closed HMO model, and established telehealth processes 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. 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 assumes an increase in the utilization of telehealth services, and, in particular, supplemental telehealth services, it will be reflected in estimated premiums for 2020 and 2021 (see Table 1 and Table 10).
- CHBRP assumes that the likelihood of fraud occurring in telehealth is equivalent to that in reimbursement for in-person services. There is existing evidence that inappropriate billing for in-person services is occurring so that providers can be paid for telehealth services delivered (GAO, 2017). AB 744 should address this issue, but there is no reason to believe that fraud will be more prevalent in telehealth than in in-person care due to improved benefit coverage and the reimbursement parity requirement.

Additional Considerations Used to Develop Estimates of Utilization and Cost

- CHBRP estimates that enrollees would pay a copayment or coinsurance amount equivalent to comparable in-person services (on average, 20% of the per unit cost) for telehealth visits, as permitted under AB 744. CHBRP believes cost-sharing scenarios are more likely than no cost sharing once telehealth becomes widely reimbursable, based upon the carrier's responses related to coverage and cost sharing. AB 744 explicitly allows cost-sharing equivalent or less than cost-sharing for in-person visits.
- CHBRP used data from a recent publication on telehealth use among physicians to estimate the amount of new telehealth services that could be delivered in the first 2-years of implementation (2020-2021) due to AB 744. CHBRP estimated that the adoption of telehealth that would support new use of supplemental and substitute services would be limited based on recent survey data analysis that determined only 15.4% of physicians worked in practices that used telehealth for a wide variety of visits, including store and forward of radiology findings. The same article found that use of telehealth to support communication between physicians and other health care professionals was even lower, at 11.2% (Kane and Gillis, 2018). Based on carrier survey

responses suggesting that telehealth is already a covered benefit and paid at parity with equivalent in-person services, CHBRP estimates that telehealth capacity and delivery would not become widespread and universally available across providers immediately, given the published evidence about its use. Due to this combination of limited existing capacity for telehealth in the provider community and the relatively high level of coverage for telehealth services reported by insurance carriers, CHBRP assumed that the response to telehealth would be dampened in Years 1 and 2 as described below.

- Because existing claims data are an unreliable source of current utilization rates of telehealth services, CHBRP used information from Kaiser Permanente Northern California (KPNC) to estimate utilization because the KPNC experience is the only well-documented examination of utilization of telehealth visits between physicians and patients for the California region. 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) and 2013, (Pearl, 2014). KPNC's experience indicates about 22.8% of all services that have an associated telehealth modality are provided via telehealth. However, we recognize that KPNC's utilization rates are likely to be higher than average because KPNC has been pushing the adoption of telehealth for many years and can do so more seamlessly than other health plans and insurers, given that it is an integrated delivery system and their providers have telehealth capabilities built into their workflows. Therefore, CHBRP applies a dampening factor of 75% (meaning that CHBRP expects 25% of the impact experiences by KPNC). At baseline, the population *with* coverage is estimated to have a 5.7% utilization rate among all visits in Year 1. The population *without* coverage is assumed to have 0% utilization rate at baseline. Postmandate, the population *without* coverage is estimated to experience increased utilization to match the utilization rate of those *with* coverage. For the second year, we also relied on KPNC experience indicating about 26.1% of all services that have an associated telehealth modality are provided via telehealth. After applying the dampening factor, the utilization rate for those with coverage is expected to be 6.54% for Year 2.
- CHBRP estimates that substitute services constitute 29% of all new outpatient telehealth services (i.e., replacing in-person services of comparable severity and time), whereas supplementary outpatient telehealth services would constitute 71% (i.e., additional services that were previously provided but not reimbursed, or not previously provided). 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. It is supported by a recent publication that examined the share of new telehealth services in comparison to in person services delivered in an Accountable Care Organization (Shah et al., 2018). Other published articles that focused on narrower types of service use support the conclusion that supplemental (i.e. new) services will outweigh substitute services when telehealth access is expanded (Ashwood et al., 2017; Bavafa et al., 2018; MedPAC, 2018; Mehrotra et al., 2017).
- CHBRP estimates that certain services, such as radiology, pathology, laboratory, ICU, or stroke care delivered via telehealth will be a direct substitute for the equivalent in-person service and will not result in additional supplemental services as described above. In the case of serious conditions like stroke, care will need to be delivered via telehealth or in-person options during a short time-period, limiting the ability for additional supplemental services to be provided.
- Evidence suggests that most physicians do not have the same level of telehealth technology as a large staff model HMO like Kaiser Permanente in their practices, especially in smaller settings (Kane and Gillis, 2018). The relatively lower rates of outpatient telehealth use in years 1 and 2 in comparison to Kaiser Permanente's experience (Pearl, 2014) are supported by another study

suggesting that telehealth use increased by 6% 1 year after implementation (Bavafa et al., 2018). Exclusions include visits related to anesthesia and surgery, which are predominantly delivered in-person.

- As discussed in the *Policy Context* section, there is evidence from the Government Accountability Office (GAO) suggests that telehealth services are already being delivered and inappropriately billed as in-person visits due to constraints on coverage, originating site locations, lack of knowledge by billing managers, and other barriers to obtaining reimbursement, (GAO, 2017).

Limited Evidence on Telehealth Use and Adoption

Kaiser Permanente's experience in Northern California could overestimate 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 and second year (2020 and 2021) impact of AB 744 will be limited because outside of a closed, integrated, salary-based system, use of telehealth may be lower due to insurers and physicians requiring cost sharing which could dampen demand.
- Kaiser Permanente 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 Kaiser Permanente physicians may encourage telephone and e-mail use at a higher rate than other health insurance carriers. Conversely, health insurance carriers may decide that coverage of all 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.

Based on these limitations, CHBRP made adjustments to apply Kaiser's experience with dampened growth in telehealth use postmandate for the remainder of the commercial insurance market, which is made up of capitated and fee-for-service reimbursement, and could include patient cost sharing unlike the Kaiser model for telehealth.

For further details on the underlying data sources and methods used in this analysis, please see Appendix C.

Baseline and Postmandate Benefit Coverage

Current (baseline) coverage of telehealth was determined by a survey of the largest (by enrollment) providers of health insurance in California. Responses to this survey represent 71% of enrollees with private market health insurance that can be subject to state mandates and 45% of enrollees with Medi-Cal managed care coverage subject to AB 744.

The baseline coverage and payment parity for Commercial and Medi-Cal managed care across all modalities for telehealth services varied by type of service, with 56.1% of enrollees having coverage for primary care and urgent care visits delivered via telehealth and 80.3% of enrollees having coverage for

outpatient mental health and substance use disorder services via telehealth (Table 1). It should be noted that coverage for Medi-Cal managed care enrollees that is fully-compliant with AB 744 varies by type of service and ranges between 0% and 78%. Overall, the vast majority of enrollees have coverage for telehealth paid at parity with equivalent in-person services.

Baseline and Postmandate Utilization

Commercial (large group, small group, and individual market) and CalPERS enrollees, as well as a majority of Medi-Cal beneficiaries are enrolled in DMHC-regulated plans which would be subject to AB 744. Additional commercial enrollees are enrolled in CDI-regulated policies, which would also be subject to AB 744. CHBRP uses analyses by Milliman on commercial claims and Medi-Cal managed care encounters to estimate current utilization of phone, e-mail or synchronous text/chat, live videoconferencing, and store-and-forward.

Baseline telehealth costs and associated utilization for the private insurance market were based on 2016 Milliman commercial claims and enrollment data for the state of California. The Medi-Cal telehealth costs and associated utilization were based upon Medi-Cal managed care encounter data for a subset of counties in the state, collected by Milliman. Commercial enrollees currently use the following amounts of telehealth modalities per 1,000 enrollees: 52.9 office visits for primary care and urgent care, 47.2 office visits for ophthalmology, dermatology, and other specialists, 30.5 office visits for mental health/substance use disorder (MH/SUD), and 12.7 emergency department visits, diagnostic services, and other services (Table 1). Medi-Cal managed care enrollees currently use the following amounts of telehealth modalities per 1,000 enrollees: No office visits for primary care and urgent care, 32.6 office visits for ophthalmology, dermatology, and other specialists, 7.6 office visits for MH/SUD, and 2.4 emergency department visits, diagnostic services, and other services (Table 1).

Enrollees could be receiving treatment through multiple telehealth modalities within a 1-year period of time, and those modalities could shift with new technologies, changes in convenience, or availability of services. AB 744 would require all enrollees to have coverage for telehealth services at parity with equivalent in-person services. CHBRP expects an increase in the use of telehealth services due to those policy changes, though it will be primarily driven by new coverage because most plans that currently cover telehealth services reported already paying for telehealth services at parity with equivalent in-person services at baseline.

CHBRP estimates that telehealth service use will increase due to the added coverage and reimbursement parity required by AB 744. The increases are likely to occur in certain areas that are likely to substitute for certain in-person services (i.e. teleradiology, telestroke, teleICU, and lab/pathology) and/or supplement existing in-person services (i.e. office visits, telepsychiatry).

Postmandate, CHBRP estimates that use of telehealth modalities per 1,000 commercial enrollees will be: 65.1 office visits for primary care and urgent care, 58.0 office visits for ophthalmology, dermatology, and other specialists, 37.5 office visits for MH/SUD, and 15.6 emergency department visits, diagnostic services, and other services. CHBRP estimates that use of telehealth modalities per 1,000 Medi-Cal managed care enrollees will be: 51.6 office visits for primary care and urgent care, 70.8 office visits for ophthalmology, dermatology, and other specialists, 9.8 office visits for MH/SUD, and 41.2 emergency department visits, diagnostic services, and other services (Table 1). The increase in telehealth services postmandate seen in Table 1 is accompanied by a slight decrease in the use of in-person services. Estimated increases are larger in the Medi-Cal managed care enrollee population due to a lack of current coverage across all modalities at parity, along with the lack of cost-sharing requirements in Medi-Cal.

Baseline and Postmandate Per-Unit Cost

Table 1 provides a baseline estimate of per unit cost for each type of telehealth service based upon Milliman analysis of current telehealth claims for commercial enrollees and Medi-Cal managed care enrollees. The actual unit cost of services would change postmandate for some services due to current differences in reimbursement for telehealth and in-person services. AB 744 requires reimbursement parity such that telehealth and equivalent in-person services would have the same per unit cost.

At baseline, Milliman's analysis of commercial claims found that office visits for primary or urgent care delivered via telehealth had a per unit cost of \$57, in comparison to a \$134 in-person unit cost. Postmandate, new and existing telehealth services covered by insurers would need to be reimbursed at the higher reimbursement rate equivalent to in-person visits, so that all telehealth office visit for primary and urgent care would be paid at the \$134 unit cost (137% increase) for commercial insurers that currently covered telehealth services or added benefit coverage as a result of AB 744. Telehealth services not currently paid at parity with equivalent in-person services include office visits for primary and urgent care, ophthalmology, dermatology, other specialists, and outpatient mental health and substance use disorder (MH/SUD). To reach parity, commercial insurers would need to pay rates that are 42% to 137% higher to be equivalent to in-person visits for the same services (see Table 1). Based on Milliman's analysis, telehealth visits for emergency department services, diagnostic services (i.e. radiology, pathology, laboratory, etc.), and other services were already being paid at parity with in-person services. In the case of radiology and lab/pathology, the data available is insufficient to determine whether a claim is for a telehealth service (i.e. store-and-forward) or in-person service due to coding limitations. Milliman estimated zero change in per unit costs in those cases where insufficient data about delivery setting occurred (see Appendix C for more information).

At baseline, Milliman's analysis of Medi-Cal managed care encounters found that office visits for primary or urgent care were not covered according to the carrier survey responses. Postmandate, new telehealth services covered by Medi-Cal managed care plans would need to be reimbursed at a \$37 per visit rate, which is equivalent to in-person visits. Telehealth services not currently paid at parity with equivalent in-person services include office visits for ophthalmology, dermatology, and other specialists, and emergency department services, diagnostics (i.e. radiology, pathology, laboratory, etc.). To reach parity, Medi-Cal managed care plans would need to pay rates that are 15% to 30% higher to be equivalent to in-person visits for the same services (see Table 1). Based on Milliman's analysis, telehealth visits for outpatient MH/SUD were already being paid at parity with in-person services. Milliman estimated zero change in per unit costs in those cases where insufficient data about delivery setting occurred (see Appendix C for more information).

Baseline and Postmandate Expenditures

Table 7 and Table 8 present baseline and postmandate expenditures by market segment for DMHC-regulated plans and CDI-regulated policies. The tables present per member per month (PMPM) premiums, enrollee expenses for both covered and noncovered benefits, and total expenditures (premiums as well as enrollee expenses).

AB 744 would increase total net annual expenditures by \$278,298,000 or 0.17% for enrollees with DMHC-regulated plans and CDI-regulated policies. This increase is primarily driven by increases of \$132,415,000 (0.15%) in spending by private group employers, \$22,526,000 (0.24%) in spending by enrollees with individually purchased Covered California policies and \$42,201,000 (0.15%) in spending by Medi-Cal managed care plans.

This increase in total net annual expenditures is due to a \$228,853,000 change in total premiums (0.16% increase in total health insurance premiums paid by employers, Medi-Cal, and enrollees for newly covered benefits), adjusted by an \$49,446,000 (0.34%) increase in enrollee expenses for covered benefits.

Premiums

Changes in premiums as a result of AB 744 would vary by market segment. Note that such changes are related to the number of enrollees (see Table 1, Table 7, and Table 8), with health insurance that would be subject to AB 744.

CDI-regulated individual market policies would experience the largest increase in premiums (0.26%) due to AB 744 in the commercial insurance market, whereas DMHC-regulated individual market plans would experience the next highest increase (0.22%). The large-group market would experience the smallest premium increases, with estimated increases for DMHC-regulated plans of 0.15% and CDI-regulated policies of 0.11%.

Among publicly funded DMHC-regulated health plans, Medi-Cal managed care plans for the under 65 population would see the largest increase (0.17%), whereas CalPERS HMO plans would experience less of an increase (0.16%), and Medi-Cal managed care plans for the over 65 population would experience the smallest increase (0.07%).

Enrollee Expenses

AB 744-related changes in enrollee expenses for covered benefits (employee share of premiums, deductibles, copays, etc.) and enrollee expenses for noncovered benefits would vary by market segment. Note that such changes are related to the number of enrollees (see Table 1, Table 7, and Table 8) with health insurance that would be subject to AB 744 that are expected to use the relevant telehealth services during the year after enactment.

In the commercial market, CHBRP estimates that the CDI-regulated individual market will experience the highest increase in enrollee expenses (\$0.35 per member per month), while the lowest increase in the commercial market is \$0.22 per member per month for DMHC-regulated small group plans.

In the publicly funded plans, CHBRP estimates that there will be no increase in enrollee expenses due to prohibition on premiums for most Medi-Cal managed care members and the cap on premiums for higher-income Medi-Cal managed care enrollees (i.e. children in higher-income families). However, CalPERS HMO enrollees are estimated to experience a \$0.25 per member per month increase in enrollee expenses.

CHBRP estimates a \$0 impact for noncovered benefits across all DMHC-regulated and CDI-regulated insurance policies and plans.

Out-of-Pocket Spending for Covered and Noncovered Expenses

When possible, CHBRP estimates the marginal impact of the bill on out-of-pocket spending for covered and noncovered expenses, defined as uncovered medical expenses paid by the enrollee as well as out-of-pocket expenses (e.g., deductibles, copayments, and coinsurance) (Table 1). Due to new coverage, CHBRP estimates that total out-of-pocket expenses for enrollees with existing coverage baseline and those newly covered who use telehealth services would increase by \$49,446,000,000 (0.34%) under the new mandate.

It is possible that some enrollees incurred expenses related to services for which coverage was denied or delivered through third-party vendors (i.e. Teladoc or MDLive!), but CHBRP cannot estimate the frequency with which such situations occur and so cannot offer a calculation of impact. CHBRP estimates a \$0 impact for noncovered medical expenses.

CHBRP projects a change in coinsurance amounts paid due to the increases in per unit costs to establish parity between telehealth services and their equivalent in-person services. In the case of telehealth services that are currently paid at a lower rate than equivalent in-person services (i.e. primary care and urgent care office visits, outpatient MH/SUD visits, etc.) the cost sharing amount related to that visit will increase as the reimbursement rate paid by insurers is increased to comply with AB 744. However, the share of the total cost that coinsurance represents will not increase, due to AB 744's limitation on telehealth cost-sharing requirements exceeding in-person cost sharing rates. Due to those changes in coinsurance for telehealth services, CHBRP estimates that all CDI- and DMHC-regulated commercial enrollees in the individual, small group, and large group markets will experience an increase in cost-sharing (Table 6).

Table 6. Cost-Sharing Impact of AB 744

	Large Group	Small Group	Individual	CalPERS HMO
% of people with cost-sharing impact from the mandate	100.0%	100.0%	100.0%	100.0%
Avg annual cost-sharing impact of cost-sharing impacted members (a)	\$2.98	\$2.67	\$2.99	\$3.04

Source: California Health Benefits Review Program, 2019.

Notes: Medi-Cal Managed Care is excluded from the table because AB 744 will not result in additional cost sharing for enrollees.

(a) Not including premium.

Key: CalPERS = California Public Employees' Retirement System; HMO = Health Maintenance Organizations.

Potential Cost Offsets or Savings in the First 12 Months After Enactment

CHBRP does not project any cost offsets or savings in health care that would result because of the enactment of provisions in AB 744. There are specific services, including telestroke and teleICU that are likely to directly replace in-person equivalent services, but due to the reimbursement parity requirement there will not be direct cost savings. Insofar as outcomes improve due to services such as telestroke, there could be benefits to patients that do not result in direct cost savings to health plans. These types of benefits are detailed in the *Public Health Impacts* section.

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.

Other Considerations for Policymakers

In addition to the impacts a bill may have on benefit coverage, utilization, and cost, related considerations for policymakers are discussed below.

Postmandate Changes in the Number of Uninsured Persons¹⁷

Because the change in average premiums does not exceed 1% for any market segment (see Table 1, Table 7, and Table 8), CHBRP would expect no measurable change in the number of uninsured persons due to the enactment of AB 744.

Changes in Public Program Enrollment

CHBRP estimates that the mandate would produce no measurable impact on enrollment in publicly funded insurance programs due to the enactment of AB 744.

How Lack of Benefit Coverage Results in Cost Shifts to Other Payers

It is not anticipated that AB 744 results in cost shifts to other payers, as it focuses on the availability of reimbursement for telehealth services rather than additional new benefits. The office visits and other benefits covered by AB 744 are already covered as in-person services, and AB 744 adds a requirement for reimbursement of those services delivered at telehealth-related sites or via telehealth modalities.

¹⁷ See also CHBRP's [Uninsured: Criteria and Methods for Estimating the Impact of Mandates on the Number of Individuals Who Become Uninsured in Response to Premium Increases \(December 2015\)](http://chbrp.com/analysis_methodology/cost_impact_analysis.php), available at http://chbrp.com/analysis_methodology/cost_impact_analysis.php.

Table 7. Baseline Per Member Per Month Premiums and Total Expenditures by Market Segment, California, 2020

	DMHC-Regulated						CDI-Regulated			Total
	Privately Funded Plans (by Market) (a)			Publicly Funded Plans			Privately Funded Plans (by Market) (a)			
	Large Group	Small Group	Individual	CalPERS HMOs (b)	MCMC (Under 65) (c)	MCMC (65+) (c)	Large Group	Small Group	Individual	
Enrollee counts										
Total enrollees in plans/policies subject to state mandates (d)	10,565,000	3,099,000	2,184,000	523,000	6,796,000	795,000	318,000	108,000	102,000	24,490,000
Total enrollees in plans/policies subject to AB 744	10,565,000	3,099,000	2,184,000	523,000	6,796,000	795,000	318,000	108,000	102,000	24,490,000
Premiums										
Average portion of premium paid by employer	\$555.35	\$341.99	\$0.00	\$493.71	\$268.13	\$694.55	\$710.92	\$462.84	\$0.00	\$118,029,198,000
Average portion of premium paid by employee	\$39.66	\$205.44	\$437.39	\$94.04	\$0.00	\$0.00	\$250.37	\$202.64	\$475.67	\$26,521,718,000
Total premium	\$595.01	\$547.43	\$437.39	\$587.76	\$268.13	\$694.55	\$961.29	\$665.48	\$475.67	\$144,550,916,000
Enrollee expenses										
For covered benefits (deductibles, copays, etc.)	\$46.18	\$121.03	\$115.38	\$48.33	\$0.00	\$0.00	\$162.44	\$186.84	\$168.51	\$14,750,880,000
For noncovered benefits (e)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0
Total expenditures	\$641.19	\$668.46	\$552.77	\$636.08	\$268.13	\$694.55	\$1,123.73	\$852.31	\$644.18	\$159,301,796,000

Source: California Health Benefits Review Program, 2019.

Notes: (a) Includes enrollees with grandfathered and nongrandfathered health insurance acquired outside or through Covered California (the state’s health insurance marketplace).

(b) Approximately 56.17% of CalPERS enrollees in DMHC-regulated plans are state retirees, state employees, or their dependents.

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

(d) Enrollees in plans and policies regulated by DMHC or CDI aged 0 to 64 years as well as enrollees 65 years or older in employer-sponsored health insurance. This group includes commercial enrollees (including those associated with Covered California or CalPERS) and Medi-Cal beneficiaries enrolled in DMHC-regulated plans.¹⁸

(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; COHS = County Organized Health Systems; DMHC = Department of Managed Health Care; MCMC = Medi-Cal Managed Care.

¹⁸ For more detail, see *Estimates of Sources of Health Insurance in California*, available at http://chbrp.com/analysis_methodology/cost_impact_analysis.php.

Table 8. Postmandate Per Member Per Month Premiums and Total Expenditures by Market Segment, California, 2020

	DMHC-Regulated						CDI-Regulated			Total
	Privately Funded Plans (by Market) (a)			Publicly Funded Plans			Privately Funded Plans (by Market) (a)			
	Large Group	Small Group	Individual	CalPERS HMOs (b)	MCMC (Under 65) (c)	MCMC (65+) (c)	Large Group	Small Group	Individual	
Enrollee counts										
Total enrollees in plans/policies subject to state mandates (d)	10,565,000	3,099,000	2,184,000	523,000	6,796,000	795,000	318,000	108,000	102,000	24,490,000
Total enrollees in plans/policies subject to AB 744	10,565,000	3,099,000	2,184,000	523,000	6,796,000	795,000	318,000	108,000	102,000	24,490,000
Premiums										
Average portion of premium paid by employer	\$0.8487	\$0.5616	\$0.0000	\$0.7774	\$0.4633	\$0.4633	\$0.7784	\$0.7399	\$0.0000	\$179,496,000
Average portion of premium paid by employee	\$0.0606	\$0.3374	\$0.9622	\$0.1481	\$0.0000	\$0.0000	\$0.2741	\$0.3239	\$1.2370	\$49,357,000
Total premium	\$0.9093	\$0.8990	\$0.9622	\$0.9255	\$0.4633	\$0.4633	\$1.0526	\$1.0638	\$1.2370	\$228,853,000
Enrollee expenses										
For covered benefits (deductibles, copays, etc.)	\$0.2469	\$0.2200	\$0.2440	\$0.2537	\$0.0000	\$0.0000	\$0.3077	\$0.2859	\$0.3511	\$49,446,000
For noncovered benefits (e)	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0
Total expenditures	\$1.1562	\$1.1190	\$1.2062	\$1.1792	\$0.4633	\$0.4633	\$1.3603	\$1.3497	\$1.5881	\$278,299,000
Percent change										
Premiums	0.1528%	0.1642%	0.2200%	0.1575%	0.1728%	0.0667%	0.1095%	0.1599%	0.2601%	0.1583%
Total expenditures	0.1803%	0.1674%	0.2182%	0.1854%	0.1728%	0.0667%	0.1210%	0.1584%	0.2465%	0.1747%

Source: California Health Benefits Review Program, 2019.

- Notes: (a) Includes enrollees with grandfathered and nongrandfathered health insurance acquired outside or through Covered California (the state's health insurance marketplace).
- (b) Approximately 56.17% of CalPERS enrollees in DMHC-regulated plans are state retirees, state employees, or their dependents.
- (c) Medi-Cal Managed Care Plan expenditures for members over 65 include those who are also Medicare beneficiaries. This population does not include enrollees in COHS.
- (d) Enrollees in plans and policies regulated by DMHC or CDI aged 0 to 64 years as well as enrollees 65 years or older in employer-sponsored health insurance. This group includes commercial enrollees (including those associated with Covered California or CalPERS) and Medi-Cal beneficiaries enrolled in DMHC-regulated plans.¹⁹
- (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; COHS = County Organized Health Systems; DMHC = Department of Managed Health Care; MCMC = Medi-Cal Managed Care.

¹⁹ For more detail, see *Estimates of Sources of Health Insurance in California*, available at http://chbrp.com/analysis_methodology/cost_impact_analysis.php.

PUBLIC HEALTH IMPACTS

As discussed in the *Policy Context* section, AB 744 would require state-regulated health plans and policies to cover and reimburse providers for telehealth services at parity with equivalent in-person services, beginning in January 2020. It also prohibits limitations on settings in which telehealth takes place and prohibits insurers from exclusively limiting telehealth coverage to third-party telehealth vendors. CHBRP estimates that approximately 24.5 million (63%) Californians will have health insurance in 2020 that would be subject to this state health insurance benefit mandate law.

This section estimates the short-term²⁰ public health impact of AB 744 on access to care, health outcomes, and social determinants of health (including disparities by geography and access to technology). 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

CHBRP focuses this analysis on six modalities: live videoconferencing; store and forward; e-mail/text/chat; telephone; eConsults; and remote patient monitoring. CHBRP presents the findings for telestroke and telerehabilitation services separately because the literature only reports composite findings of multiple modalities used in each specialty). As presented in the *Medical Effectiveness* section, AB 744 applies to telehealth services across many 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:

- Clear and convincing evidence that **live videoconferencing** was at least as effective as in-person care for mental health services and dermatology;
- Varying evidence across multiple conditions that **store and forward** is at least as effective as in-person care in terms of access to care (preponderance), process of care (inconclusive), and health outcomes (limited);
- Limited evidence that **text/chat or e-mail** is as effective as in-person care (with the exception of a preponderance of evidence of effectiveness for glycemic control in patients with diabetes who communicated via e-mail with their provider);
- Varying evidence that care delivered via **telephone** is at least as effective as in-person care in terms of access to care (inconclusive), process of care (limited), and health outcomes (preponderance);
- Preponderance of evidence that **telestroke** and **telerehabilitation** care results in health outcomes at least as effective as in-person care;
- Preponderance of evidence that **eConsults** reduce wait time for specialist care, but insufficient evidence of equivalent or better health outcomes; and
- Clear and convincing evidence that **remote patient monitoring** provides similar or improved health outcomes and reductions in ED visits and hospitalizations.
- As presented in Table 1, CHBRP estimates that a majority of enrollees with insurance subject to AB 744 already have coverage for telehealth at parity with in-person visits. Of the 20% to 49% of

²⁰ CHBRP defines short-term impacts as changes occurring within 12 months of bill implementation.

enrollees receiving new coverage for various services reimbursed at parity under AB 744, CHBRP estimates a *marginal increase* in services ranging from 3.0/1,000 for emergency department visits, diagnostic services and other services to 12.1/1,000 primary care/urgent care visits by commercial enrollees; and 2.2/1,000 for outpatient MH/SUD visits to 51.6/1,000 for primary care/urgent care visits by Medi-Cal managed care enrollees. About 29% of the marginal increase in telehealth utilization is attributable to substitution and 71% is attributable to supplemental visits (visits previously provided, but not reimbursed or not previously provided). In the first year postmandate, CHBRP estimates that telehealth visits would represent 5.7% of all visits for those newly covered enrollees; this would match the utilization rate of those enrollees already covered at baseline.

Access to Care

As discussed in the *Medical Effectiveness* section, live video, store and forward, eConsult, and remote patient monitoring modalities reduce delays in care (appointments, diagnoses, and surgery) for certain conditions.

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).

Patient interest in telehealth is growing and for those patients who use telehealth to communicate with their providers, satisfaction with the quality of telehealth visits is high (see the *Background* section). Patients note convenience factors, such as reductions in travel time, time away from work, and its associated costs as beneficial.

CHBRP estimates that, postmandate, patient *access to care* could improve through provider use of live video, store and forward, eConsults, and remote patient monitoring; however, there is limited or insufficient evidence of other modalities (e-mail, chat, texting, telephone) improving access to care. Therefore, the public health impact of AB 744 is unknown, although CHBRP anticipates that at least some patients would be able to obtain more timely specialty or primary care. Those patients would also experience reduced travel time and associated costs.

Health Outcomes

As previously mentioned, the scope of health conditions potentially affected by AB 744 is vast and evidence of effectiveness is limited to a handful of conditions, such as diabetes, mental health, neurology, and dermatology. Across all conditions reviewed, the strongest evidence of telehealth producing health outcomes equivalent to in-person visits was related to mental health, dermatology, stroke, and diabetes.

Although the number of telehealth encounters would increase, the public health impact of AB 744 is unknown. CHBRP is unable to assess changes in public health outcomes due to vast differences in study quality and findings of effectiveness across health conditions and telehealth modalities. For areas where stronger evidence exists, such as *live videoconferencing, telephone, and remote patient monitoring, and* for certain specialty areas (e.g., mental health, dermatologic or diabetes care) enrollees could see equivalent or improved health outcomes as compared with in-person care.

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. In the case of AB 744, key determinants that may be affected by the mandate include transportation, rural living, and socioeconomic characteristics (age, race/ethnicity, income, language).

Disparities in Use of Telehealth

Impact on patient travel and rural health disparities

Patients must travel to obtain in-person health care services, 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, differences in health status and health care access exist between urban and rural communities in California. Travel costs include both 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 health problems occurring after usual office hours may find the convenience of e-mail, phone, and live videoconferencing to be beneficial. Such convenience can help patients avoid traffic delays, public transportation barriers, and related transportation costs (such as transportation fares, tolls, parking).

Reviews of the telehealth literature show evidence of benefits that telehealth services provide to medically-underserved rural communities such as improved access to ambulatory and specialty care. Additionally, research indicates reductions in costs related to rural provider or patient travel, unnecessary office visits, emergency department visits or hospitalizations; indirect benefits such as consults initiated by rural providers may reduce future telehealth consultation needs as they learn from specialists (Marcin et al., 2016;).

For patients with vehicular challenges (and their caregivers), traveling from home in a rural location to an urban-based health facility for treatment can be a potential barrier. A study 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). A more recent study by Cota et al. (2017) measured the effects, over 5 years, of an email teleorthopedic program in a Quebec province that helped primary care physicians manage acute orthopedic injuries for rural communities. They reported that 731 (71%) of patients, who would have traveled to a metropolitan area for consultation, were treated locally and avoided \$5,500/patient (Canadian dollars) in rural patient transportation costs (e.g., airfare for initial and follow-up visits).

CHBRP estimates that, postmandate, travel costs and travel time would likely decrease for some urban and rural enrollees using newly covered telehealth services. As a result, some enrollees with transportation challenges would have equivalent or better outcomes because they would no longer delay or avoid in-person visits because of telephonic or electronic communications with physicians; however, CHBRP is unable to quantify the exact impact due to the breadth of telehealth services and conditions covered by AB 744.

Impact on disparities in technology use across demographic groups

There is limited evidence about disparities in use of technologies covered by AB 744 and outcomes related to them. Earlier research notes that 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). Whites were also more likely to use online services than other racial/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) (Table 3).

Disparities in access to the internet and/or health status exist by age, income, race/ethnicity and rural areas (see the *Background* section), and to the extent that health care access for the rural population is improved through telehealth, AB 744 may help reduce disparities. However, the disparities gap could be expanded because telehealth communication tools are disproportionately unavailable to and accessed by those who are use only smart-phones (with limited data plans) or in areas lacking broadband service.

It is unknown whether AB 744 would reduce disparities in access to care or health outcomes by ameliorating the effects of certain social determinants of health. As noted, transportation and geographic barriers to care could be reduced significantly for some by avoiding long drive times or difficult public transportation. However, AB 744 also could exacerbate disparities in access to care for those enrollees who have no broadband or smart phone (only) connectivity.

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); however, no health outcomes were reported. 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 744 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, and the breadth of telehealth modalities and health conditions covered by AB 744.

LONG-TERM IMPACTS

In this section, CHBRP estimates the long-term impact²¹ of AB 744, which CHBRP defines as impacts occurring beyond the first 12 months after implementation. These estimates are qualitative and based on the existing evidence available in the literature. CHBRP does not provide quantitative estimates of long-term impacts because of unknown improvements in clinical care, changes in prices, implementation of other complementary or conflicting policies, and other unexpected factors.

Long-Term Utilization and Cost Impacts

Utilization Impacts

In Year 2 of implementation, AB 744 is expected to result in additional use of telehealth services (a 21% increase from the 5.7% share of telehealth out of all outpatient visits) such that telehealth represents 6.54% of all visits. In addition, it is possible that as technology is integrated into physician practices and patients experience improved access to broadband, smart phones, and videoconferencing technology, the adoption by patients could also increase. Based on the experience at Kaiser Permanente Northern California (KPNC) (Pearl, 2014), telehealth services represented over half of all outpatient office visit equivalent services five years after the implementation of the online patient portal. In Kaiser Permanente's experience from 2016 on, there is likely to be increased use of telehealth to conduct both substitute and supplementary health care visits. However, in the commercial insurance market outside of Kaiser, which uses networks that are not closed, integrated and staff-based, the adoption would be based upon patient preferences (because coinsurance would be identical to in-person visits), 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), and patients' access to broadband. Based on the Pearl (2014) study, CHBRP anticipates a commensurate increase due to access to telehealth created by AB 744. Once offered to enrollees, telehealth services would experience increases of more than 21% year-over-year according to the rate of growth reported by Pearl (2014). However, due to capacity constraints in medical groups, physician offices, and other facilities, CHBRP does not expect AB 744 to result in the widespread adoption of telehealth that occurred in KPNC due to the closed, integrated nature and alignment of incentives around telehealth that exists in the KPNC model.

Although there has been a growth in third-party services (e.g., Teladoc, MDLive, etc.) providing telephonic physician consultation for between \$0 and \$60 that are not affected by AB 744, it is possible that these third-party services could continue to operate and be paid under AB 744 if they 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 a share or all of the cost out-of-pocket for the virtual visit.

Third-party telehealth services, which are not typically paid for by insurance, are likely to be more expensive to consumers than the cost sharing amount for a comparable telehealth service delivered through a billable provider and covered by an insurance plan or policy. Insurers may have an incentive to facilitate access to telehealth through these third-party vendors to avoid use of telehealth through billable providers with a higher per unit cost for services. However, patients are likely to use their own providers

²¹ See also CHBRP's *Criteria and Guidelines for the Analysis of Long-Term Impacts on Healthcare Costs and Public Health*, available at http://www.chbrp.org/analysis_methodology/cost_impact_analysis.php.

for telehealth if given the option, and cost sharing amounts are likely to be more affordable than the costs of noncovered telehealth services delivered by third-party vendors (i.e., Teladoc, MDLive!).

Cost Impacts

In Year 2, CHBRP estimates that expenditures will result in a 0.1958% from baseline (an additional 0.0211% from Year 1) due to increased adoption of telehealth by both providers and patients. See Table 10 in Appendix C.

If telehealth use expands as stated above, it is likely that increased spending on telehealth will occur. This is partially due to the new (i.e. supplemental services) telehealth services where the majority of growth will occur. Evidence suggests that the vast majority of telehealth services will not be substitutes, and there is no evidence that use of telehealth will reduce emergency department, inpatient hospitalization, primary care, or specialty visits in the long-term.

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 744 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 adoption and integration of telehealth. In addition to increasing provider capacity as addressed in the *Benefit Coverage, Cost and Utilization* section, there are a variety of new technologies developed and adopted since CHBRP's last telehealth report. Examples include a variety of remote patient monitoring modalities; increased penetration and advancement of electronic health records (EHR) and patient portals; increased remote patient monitoring devices, some of which may be integrated with EHR; and increased use of smartphones and tablets and their applications. Additionally, changes to broadband coverage through the success or failure of net neutrality laws will affect telehealth use. Finally, as the population ages, there may be an increased demand for these types of services from consumers, insurers, and providers due to comfort with and reliance on virtual communication. CHBRP projects that this trend, along with changes in CMS reimbursement policy in 2019, and continued adoption of value-based, bundled care reimbursement models will likely increase use of e-mail, videoconferencing, and other telehealth services between patients and providers. However, assessing the impact of telehealth requires further study as large gaps in knowledge about health outcomes and health access disparities remain (Tuckson et al., 2017).

APPENDIX A TEXT OF BILL ANALYZED

On February 19, 2019, the California Assembly Committee on Health requested that CHBRP analyze AB 744.

ASSEMBLY BILL

No. 744

Introduced by Assembly Member Aguiar-Curry

February 19, 2019

An act to amend Section 2290.5 of the Business and Professions Code, to amend Section 1374.13 of, and to add Sections 1341.46 and 1374.14 to, the Health and Safety Code, to amend Section 10123.85 of, and to add Section 10123.855 to, the Insurance Code, and to amend Section 14132.725 of the Welfare and Institutions Code, relating to healthcare coverage.

LEGISLATIVE COUNSEL'S DIGEST

AB 744, as introduced, Aguiar-Curry. Healthcare coverage: telehealth.

Existing law provides for the Medi-Cal program, which is administered by the State Department of Health Care Services, under which qualified low-income individuals receive healthcare services. The Medi-Cal program is, in part, governed and funded by federal Medicaid program provisions. Under existing law, face-to-face contact between a health care provider and a patient is not required under the Medi-Cal program for teleophthalmology, teledermatology, and teledentistry by store and forward. Existing law requires a Medi-Cal patient receiving teleophthalmology, teledermatology, or teledentistry by store and forward to be notified of the right to receive interactive communication with a distant specialist physician, optometrist, or dentist, and authorizes a patient to request that interactive communication.

This bill would delete those interactive communication provisions.

Existing law, the Knox-Keene Health Care Service Plan Act of 1975, provides for the licensure and regulation of health care service plans by the Department of Managed Health Care, and makes a willful violation of the act a crime. Existing law provides for the regulation of health insurers by the Department of Insurance. Existing law prohibits a health care service plan or health insurer

from requiring that in-person contact occur between a healthcare provider and a patient, and from limiting the type of setting where services are provided, before payment is made for covered services provided appropriately through telehealth services.

This bill would require a contract issued, amended, or renewed on or after January 1, 2020, between a health care service plan and a healthcare provider for the provision of healthcare services to an enrollee or subscriber, or a contract issued, amended, or renewed on or after January 1, 2020, between a health insurer and a healthcare provider for an alternative rate of payment to specify that the health care service plan or health insurer reimburse a healthcare provider for the diagnosis, consultation, or treatment of an enrollee, subscriber, insured, or policyholder delivered through telehealth services on the same basis and to the same extent that the health care service plan or health insurer is responsible for reimbursement for the same service through in-person diagnosis, consultation, or treatment. The bill would authorize a health care service plan or health insurer to offer a contract or policy containing a deductible, copayment, or coinsurance requirement for a healthcare service delivered through telehealth services, subject to specified limitations. The bill would prohibit a health care service plan contract or policy or health insurance issued, amended, or renewed on or after January 1, 2020, from imposing an annual or lifetime dollar maximum for telehealth services, and would prohibit those contracts and policies from imposing a deductible, copayment, or coinsurance, or a plan year, calendar year, lifetime, or other durational benefit limitation or maximum for benefits or services that is not equally imposed on all terms and services covered under the contract.

This bill would authorize the Director of the Department of Managed Health Care or the Insurance Commissioner to assess an administrative penalty by order, after appropriate notice and opportunity for hearing, if the director or commissioner determines that a health care service plan or health insurer has failed to comply with those provisions. The bill would create the Managed Care Penalty Account, within the Managed Care Administrative Fines and Penalties Fund, subject to appropriation by the Legislature, into which administrative penalties for a health care service plan's violations of those provisions would be deposited. The bill would specify that administrative penalties assessed against a health insurer be deposited into the Insurance Fund. Because a willful violation of the bill's requirements relative to health care service plans would be a crime, the bill would impose a state-mandated local program.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

DIGEST KEY

Vote: majority Appropriation: no Fiscal Committee: yes Local Program: yes

BILL TEXT

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)~~

(1) “Distant site” means a site where a ~~health care~~ *healthcare* provider who provides ~~health care~~ *healthcare* services is located while providing these services via a telecommunications system.

~~(3) “Health care~~

(2) “*Healthcare* provider” means either of the following:

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

(B) An associate marriage and family therapist or marriage and family therapist trainee functioning pursuant to Section 4980.43.3.

~~(4)~~

(3) “Originating site” means a site where a patient is located at the time ~~health care~~ *healthcare* services are provided via a telecommunications system or where the ~~asynchronous~~ store and forward service originates.

(4) “*Store and forward*” means the transmission of a patient’s medical information from an originating site to the *healthcare* provider at a distant site.

(5) “Synchronous interaction” means a real-time interaction between a patient and a ~~health care~~ *healthcare* provider located at a distant site.

(6) “Telehealth” means the mode of delivering ~~health care~~ *healthcare* 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.~~ *healthcare*. Telehealth facilitates patient self-management and caregiver support for patients and includes synchronous interactions and asynchronous store and forward transfers.

(b) ~~Prior to~~ *Before* the delivery of ~~health care~~ *healthcare* via telehealth, the ~~health care~~ *healthcare* provider initiating the use of telehealth shall inform the patient about the use of telehealth and obtain verbal or written consent from the patient for the use of telehealth as an acceptable mode of delivering ~~health care~~ *healthcare* services and public health. The consent shall be documented.

(c) ~~Nothing in this section shall~~ *This section does not* preclude a patient from receiving in-person ~~health care~~ *healthcare* delivery services during a specified course of ~~health care~~ *healthcare* and treatment after agreeing to receive services via telehealth.

(d) The failure of a ~~health care~~ *healthcare* 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~~ *a healthcare* provider or authorize the delivery of ~~health care~~ *healthcare* services in a setting, or in a manner, not otherwise authorized by law.

(f) All laws regarding the confidentiality of ~~health care~~ *healthcare* information and a patient's rights to ~~his or her~~ *the patient's* 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 1341.46 is added to the Health and Safety Code, to read:

1341.46 (a) There is hereby created the Managed Care Penalty Account within the Managed Care Administrative Fines and Penalties Fund.

(b) Moneys in the Managed Care Penalty Account shall be subject to appropriation by the Legislature.

(c) Notwithstanding Section 1341.45, fines and administrative penalties collected pursuant to this chapter shall be deposited into the Managed Care Penalty Account.

SEC. 3. 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~~ *healthcare* services from a ~~health care~~ *healthcare* provider without in-person contact with the ~~health care~~ *healthcare* provider.

(c) ~~No~~ *A* health care service plan shall *not* require that in-person contact occur between a ~~health care~~ *healthcare* 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.~~ *groups, and pursuant to Section 1374.14.*

(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~~ *healthcare* provider 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.~~ *groups, and pursuant to Section 1374.14.*

(e) ~~The requirements of this~~ *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~~ *does not* authorize a health care service plan to require the use of telehealth ~~when if~~ the ~~health care~~ *healthcare* provider has determined that it is not appropriate.

SEC. 4. Section 1374.14 is added to the Health and Safety Code, to read:

1374.14 (a) A contract issued, amended, or renewed on or after January 1, 2020, between a health care service plan and a healthcare provider for the provision of healthcare services to an enrollee or subscriber shall specify that the health care service plan shall reimburse the treating or consulting healthcare provider for the diagnosis, consultation, or treatment of an enrollee or subscriber delivered through telehealth services on the same basis and to the same extent that the health care service plan is responsible for reimbursement for the same service through in-person diagnosis, consultation, or treatment.

(b) (1) A health care service plan contract issued, amended, or renewed on or after January 1, 2020, shall specify that the health care service plan shall provide coverage for the cost of healthcare services delivered through telehealth services on the same basis and to the same extent that the health care service plan is responsible for coverage for the same service through in-person diagnosis, consultation, or treatment. Coverage shall not be limited only to services delivered by select third-party corporate telehealth providers.

(2) A health care service plan contract issued, amended, or renewed on or after January 1, 2020, shall not exclude coverage for a healthcare service solely because the service is delivered through telehealth services and not through in-person consultation or contact between a physician and a patient, if the service is appropriately delivered through telehealth services.

(c) A health care service plan may offer a contract containing a deductible, copayment, or coinsurance requirement for a healthcare service delivered through telehealth services, provided that the deductible, copayment, or coinsurance does not exceed the deductible, copayment, or coinsurance applicable if the same services were delivered through in-person diagnosis, consultation, or treatment.

(d) (1) A health care service plan contract issued, amended, or renewed on or after January 1, 2020, shall not impose an annual or lifetime dollar maximum for telehealth services, other than an annual or lifetime dollar maximum that applies in the aggregate to all items and services covered under the contract.

(2) A health care service plan contract issued, amended, or renewed on or after January 1, 2020, shall not impose a deductible, copayment, or coinsurance, or a plan year, calendar year, lifetime, or other durational benefit limitation or maximum for benefits or services that is not equally imposed on all terms and services covered under the contract.

(e) (1) The director shall, after appropriate notice and opportunity for hearing in accordance with the Administrative Procedure Act (Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code), assess an administrative penalty by order if the director determines that a health care service plan has failed to comply with this section.

(2) Notwithstanding Section 1341.45, an administrative penalty collected pursuant to paragraph (1) shall be deposited into the Managed Care Penalty Account.

(f) The definitions in subdivision (a) of Section 2290.5 of the Business and Professions Code apply to this section.

SEC. 5. 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~~ *healthcare* services from a ~~health care~~ *healthcare* provider without in-person contact with the ~~health-care~~ *healthcare* provider.

(c) ~~No~~ *A* health insurer shall *not* require that in-person contact occur between a ~~health care~~ *healthcare* 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.~~ *groups, and pursuant to Section 10123.855.*

(d) ~~No~~ *A* health insurer shall *not* limit the type of setting where services are provided for the patient or by the ~~health—care~~ *healthcare* 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.~~ *groups, and pursuant to Section 10123.855.*

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

SEC. 6. Section 10123.855 is added to the Insurance Code, to read:

10123.855 (a) A contract issued, amended, or renewed on or after January 1, 2020, between a health insurer and a healthcare provider for an alternative rate of payment pursuant to Section 10133 shall specify that the health insurer shall reimburse the treating or consulting healthcare provider for the diagnosis, consultation, or treatment of an insured or policyholder delivered through telehealth services on the same basis and to the same extent that the health insurer is responsible for reimbursement for the same service through in-person diagnosis, consultation, or treatment.

(b) (1) A policy of health insurance issued, amended, or renewed on or after January 1, 2020, that provides benefits through contracts with providers at alternative rates of payment shall specify that the health insurer shall provide coverage for the cost of healthcare services delivered through telehealth services on the same basis and to the same extent that the health insurer is responsible for coverage for the same service through in-person diagnosis, consultation, or treatment.

Coverage shall not be limited only to services delivered by select third-party corporate telehealth providers.

(2) A policy of health insurance issued, amended, or renewed on or after January 1, 2020, that provides benefits through contracts with providers at alternative rates of payment shall not exclude coverage for a healthcare service solely because the service is delivered through telehealth services and not through in-person consultation or contact between a physician and a patient, if the service is appropriately delivered through telehealth services.

(c) A health insurer may offer a policy containing a deductible, copayment, or coinsurance requirement for a healthcare service delivered through telehealth services, provided that the deductible, copayment, or coinsurance does not exceed the deductible, copayment, or coinsurance applicable if the same services were delivered through in-person diagnosis, consultation, or treatment.

(d) (1) A policy of health insurance issued, amended, or renewed on or after January 1, 2020, shall not impose an annual or lifetime dollar maximum for telehealth services, other than an annual or lifetime dollar maximum that applies in the aggregate to all items and services covered under the policy.

(2) A policy of health insurance issued, amended, or renewed on or after January 1, 2020, shall not impose a deductible, copayment, or coinsurance, or a policy year, calendar year, lifetime, or other durational benefit limitation or maximum for benefits or services that is not equally imposed on all terms and services covered under the policy.

(e) (1) The commissioner shall, after appropriate notice and opportunity for hearing in accordance with the Administrative Procedure Act (Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code), assess an administrative penalty by order if the commissioner determines that a health insurer has failed to comply with this section.

(2) An administrative penalty collected pursuant to paragraph (1) shall be deposited into the Insurance Fund.

(f) The definitions in subdivision (a) of Section 2290.5 of the Business and Professions Code apply to this section.

SEC. 7. Section 14132.725 of the Welfare and Institutions Code is amended to read:

14132.725 (a) To the extent that federal financial participation is available, face-to-face contact between a health care provider and a patient is not required under the Medi-Cal program for teleophthalmology, teledermatology, and teledentistry by store and forward. Services appropriately provided through the store and forward process are subject to billing and reimbursement policies developed by the department.

(b) For purposes of this section, “teleophthalmology, teledermatology, and teledentistry by store and forward” means ~~an asynchronous transmission of medical or dental information to be reviewed at a later time~~ by a physician at a distant site who is trained in ophthalmology or dermatology or, for teleophthalmology, by an optometrist who is licensed pursuant to Chapter 7 (commencing with Section 3000) of Division 2 of the Business and Professions Code, or a dentist, where the physician, optometrist, or dentist at the distant site reviews the medical or dental ~~information without the patient being present in real time. A patient receiving teleophthalmology, teledermatology, or teledentistry by store and forward shall be notified of the right to receive interactive communication with the distant specialist physician, optometrist, or dentist and shall receive an interactive communication with the distant specialist physician, optometrist, or dentist, upon request. If requested, communication with the distant specialist physician, optometrist, or dentist may occur either at the time of the consultation, or within 30 days of the patient’s notification of the results of the consultation. If the reviewing optometrist identifies a disease or condition requiring consultation or referral pursuant to Section 3041 of the Business and Professions Code, that consultation or referral shall be with an ophthalmologist or other appropriate physician and surgeon, as required.~~ *information.*

(c) Notwithstanding Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code, the department may implement, interpret, and make specific this section by means of all-county letters, provider bulletins, and similar instructions.

SEC. 8. 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

This appendix describes methods used in the medical effectiveness literature review conducted for this report. A discussion of CHBRP's system for grading evidence, as well as lists of MeSH Terms, publication types, and keywords, follows.

Studies of the effects of telehealth services were identified through searches of (PubMed, the Cochrane Library, Web of Science, EconLit, Business Source Complete, the Cumulative Index of Nursing and Allied Health Literature (CINAHL), and PsycINFO. Websites maintained by the following organizations were also searched: Agency for Healthcare Research and Quality; American Cancer Society; American College of Obstetricians and Gynecologists; Institute for Clinical Systems Improvement; International Network of Agencies for Health Technology Assessment; National Comprehensive Cancer Network, Inc.; National Guideline Clearinghouse; National Institute for Clinical Excellence; National Institutes of Health; National Health Service Centre for Reviews and Dissemination; Oncofertility Consortium; Scottish Intercollegiate Guideline Network; and World Health Organization, the International Network of Agencies for Health Technology Assessment (INAHTA), the National Health Service (NHS) Centre for Reviews and Dissemination, the National Institute for Health and Clinical Excellence (NICE).

The search was limited to abstracts of studies published in English. The medical effectiveness search was limited to studies published from 2016 to present because CHBRP had previously reviewed this literature using the same search terms in 2014, 2015 and 2016 for the SB 289 and AB 2507. The literature on the effectiveness of telehealth treatments included multiple randomized controlled trials. The majority of the papers cited in the report were systematic reviews and meta-analyses.

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.

The literature review returned abstracts for 2719 articles, of which 650 were reviewed for inclusion in this report. A total of 41 studies were included in the medical effectiveness review for AB 2507 (2016) and SB 289. A total of 66 new studies since 2016 were included in the medical effectiveness review for AB 744.

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*.²² To grade the evidence for each outcome measured, the team uses a grading system that has the following categories:

- Research design;
- Statistical significance;
- Direction of effect;
- Size of effect; and
- Generalizability of findings.

²² Available at: http://chbrp.com/analysis_methodology/medical_effectiveness_analysis.php.

The grading system also contains an overall conclusion that encompasses findings in these five domains. The conclusion is a statement that captures the strength and consistency 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;*
- *Limited evidence*
- *Inconclusive 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 are of high quality and consistently find that the treatment is either effective or not effective.

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.

A grade of *limited evidence* indicates that the studies had limited generalizability to the population of interest and/or the studies had a fatal flaw in research design or implementation.

A grade of *inconclusive evidence* indicates that although some studies included in the medical effectiveness review find that a treatment is effective, a similar number of studies of equal quality 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 are not of high quality. It does not indicate that a treatment is not effective.

Search Terms (* indicates truncation of word stem)

The search terms used to locate studies relevant to AB 744 were as follows:

Major Subject Heading terms used to search PubMed:

- Telehealth
- Telemedicine

Keywords used to search PubMed, Cochrane Library, Web of Science, EconLit, and other relevant websites:

- eConsult
- Remote Consultation
- Outcome and Process Assessment (Health Care)
- Patient Outcome Assessment
- Teledermatology
- Telepsychiatry
- Telepathology
- Telerehabilitation
- Telestroke
- Patient Reported Outcome Measures
- Treatment Outcome

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

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 the contracted actuarial firm, Milliman, Inc. (Milliman).

Information on the generally used data sources and estimation methods, as well as caveats and assumptions generally applicable to CHBRP's cost impacts analyses are available at CHBRP's website.

This appendix describes any analysis-specific data sources, estimation methods, caveats, and assumptions used in preparing this cost impact analysis.

Analysis Specific Caveats and Assumptions

This subsection discusses the caveats and assumptions relevant specifically to an analysis of AB 744.

CHBRP projects that AB 744:

- Will increase use of telehealth services, including both substitution and supplemental services as “new to the system” services occur while other telehealth services covered will be related to replacing existing services due to convenience.
- Will increase unit costs as telehealth services are currently reimbursed at a lower amount than the in-person equivalent, and AB 744 mandates reimbursement to be “on the same basis and to the same extent the plans and policies reimburse for the same service through in-person diagnosis, consultation, or treatment”. CHBRP interprets this provision as mandating equal reimbursement for equivalent services delivered either through telehealth or in-person.
- Will have an impact on enrollee out-of-pocket expenses for covered benefits (e.g. deductibles, copayments) to attain “parity” of coverage. We assume that health plans and insurers would charge the same copays or coinsurance for telehealth services compared to the equivalent in-person service.

The following is a description of methodology and assumptions used to develop the estimates of cost impacts:

- CHBRP determined the current coverage percentage of telehealth services based on carrier survey responses. Carriers that currently cover telehealth services are assumed to have no change in their utilization. The projected change in utilization was applied to carriers' population associated with coverage expansion for each service category.
- CHBRP identified service categories for which there is an applicable telehealth modality (e.g. live video visits; store and forward, etc.) and may have telehealth claims. CHBRP then used CPT/HCPCS procedure codes that were available in Milliman's proprietary 2016 Consolidated Health Cost Guidelines Sources Database (CHSD), which contains both commercial claims and Medi-Cal managed care encounters to identify procedures currently delivered via telehealth, and services in the category that are not delivered via telehealth. Methods for identifying relevant codes were vetted by content experts and by relevant carrier responses. The table below lists the relevant codes used for this analysis. Note, in addition to the codes listed below, we also considered any claims that included the modifier GT or GQ to always be telehealth. “GT” signifies

the service was delivered via interactive audio and video telecommunications systems while modifier “GQ” signifies that the service was delivered via an asynchronous (or “store and forward”) telecommunications system. We used this method since these were the modifiers available for providers use in 2016.

Table 9. CPT/HCPCS Codes Used for the AB 744 Analysis, Always Considered to Be Telehealth

CPT/HCPCS Codes That Are Always Telehealth	Description
93733	Telephone analy, pacemaker
98966	Hc pro phone call 5-10 min
98967	Hc pro phone call 11-20 min
98968	Hc pro phone call 21-30 min
99091	Collj & interpj data ea 30 d
99371	Physician phone consultation
99372	Physician phone consultation
99373	Physician phone consultation
99441	Phone e/m phys/qhp 5-10 min
99442	Phone e/m phys/qhp 11-20 min
99443	Phone e/m phys/qhp 21-30 min
99444	Online e/m by phys/qhp
99446	Ntrprof ph1/ntrnet/ehr 5-10
99447	Ntrprof ph1/ntrnet/ehr 11-20
99448	Ntrprof ph1/ntrnet/ehr 21-30
99449	Ntrprof ph1/ntrnet/ehr 31/>
99451	Ntrprof Ph1/Ntrnet/Ehr 5/>
99452	Ntrprof Ph1/Ntrnet/Ehr Rfrl
0188T	Videoconf crit care 74 min
0189T	Videoconf crit care addl 30
D9995	Teledentistry real-time
D9996	Teledentistry dent review
G0406	Inpt/tele follow up 15
G0407	Inpt/tele follow up 25
G0408	Inpt/tele follow up 35
G0425	Inpt/ED teleconsult30
G0426	Inpt/ED teleconsult50
G0427	Inpt/ED teleconsult70
G0459	Telehealth inpt pharm mgmt
G0508	Crit care telehea consult 60
G0509	Crit care telehea consult 50
Q3014	Telehealth facility fee
S0320	RN telephone calls to DMP
S9109	CHF telemonitoring month
S9110	Telemonitoring/home per mnth
T1014	Telehealth transmit, per min

- Current claims data for telehealth services underestimates true utilization of these services for a variety of reasons: (1) Many enrollees subject to AB 744 do not have coverage for these services. However, enrollees without coverage may still use telehealth services by paying telehealth vendors directly for services at the point of care. Non-covered services would not be reflected in claims data. (2) Billing practices among providers may vary depending on the market segment and carriers' coverage policy. (3) In general there is underuse of the GT modifier. According to a GAO (2017) report, "CMS officials told us that there are no payment incentives for a provider to put a telehealth modifier on a non-approved telehealth service, because the provider could receive payment for that service if it did not include the modifier and the service is payable under Medicare's Physician Fee Schedule. That is, the payment to a distant site provider for a service on the approved telehealth list would be the same amount as the payment for the service if it were furnished in person. Adding a telehealth modifier incorrectly also increases the possibility that claim would be examined, CMS officials said, reducing the incentive to incorrectly add the telehealth modifier." (4) Coding and reimbursement rules for telehealth services are evolving. For example, in 2017 the Place of Service code set was revised to allow for a telehealth place of service code (02).
- Because existing claims data are an unreliable source of current utilization rates of telehealth services, CHBRP used information from Kaiser Permanente Northern California (KPNC) to estimate utilization as the KPNC experience is one of the only well-documented examination of utilization of telehealth visits between physicians and patients for the California region (Pearl, 2014). 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. KPNC's experience indicates about 22.8% of all services that have an associated telehealth modality are provided via telehealth. However, we recognize that KPNC's utilization rates are likely to be higher than average since KPNC has been promoting the adoption of telehealth for many years and can do so more seamlessly than other health plans and insurers, given that it is an integrated delivery system and their providers have telehealth capabilities built into their workflows. Therefore, CHBRP applies a dampening factor of 75% such that predicted use of telehealth in Year 1 would be 25% of the KPNC experience in Year 1. The rationale for this adjustment is based on the GAO study, although CHBRP used a reasonable dampening factor based on judgement. At baseline, therefore the population with coverage is estimated to have a 5.7% utilization rate among all visits in Year 1. The population without coverage is assumed to have 0% utilization rate at the baseline, across all modalities and service categories. Postmandate, the population without coverage is estimated to experience increased utilization to match the utilization rate of those with coverage. For the second year, we also relied on KPNC experience indicating about 26.1% of all services that have an associated telehealth modality are provided via telehealth. After applying the dampening factor, the utilization rate for those with coverage is expected to be 6.54% for Year 2.
- CHBRP assumes that substitute services constitute 29% of all new telehealth outpatient visits services (i.e., replacing in-person services of equivalent severity and time), while supplementary telehealth services would constitute 71% (i.e., additional services that were previously provided but not reimbursed, or not previously provided.) The 29% is estimated from Shah et al. (2018) which found that "for every 3.5 virtual visits performed, an in-person visit was averted." CHBRP acknowledges that one limitation of this study is that its population is not necessarily generalizable given that it was focused on an ACO population with neurological conditions.

However, it is one of the most recent studies that examines substitution effects for a covered population.

- As noted above, AB 744 requires plans and insurers to reimburse telehealth services on the same basis and to the same extent as in-person services. It is not likely that plans/insurers reimburse telehealth services at the level of an in-person visit presently. Therefore we calculated a per-unit cost increase for each applicable healthcare service category. The average per-unit increase for professional services associated with telehealth and in-person visit are presented in Table 1. Note, that in some instances we do not estimate a change in per-unit cost. This is because of insufficient data for claims that can be identified as telehealth. If there is no way to identify differential payment for a service category, we assume no change in per-unit cost postmandate.
- A significant portion of radiology and lab/pathology are provided via “store and forward” technology or via new home kits related to a telehealth visit. However, the claims data do not show a material amount of telehealth related claims for these service categories. It is likely that radiologist and pathologists are not coding these services as telehealth and payments and coverage for these services are treated the same regardless as to whether they are provided in-person or via telehealth modalities. It is not likely that such coding practices will change. Thus we estimate no change in utilization for these categories of services. In addition, there is no way to identify differential payment for these service categories, so we assume no change in per-unit cost postmandate.
- We understand that there are certain telehealth services, such as tele-ICU and tele-stroke, that may be included in inpatient or outpatient fees. Inpatient facility services (e.g. remote monitoring in an ICU) are generally bundled in per diem or per case rates payments and we assume that these services would be continued to be bundled and reimbursed per current billing practices. Therefore we assume no change in cost for these services. For related inpatient and outpatient professional services, the claims data do not show a material amount of telehealth related claims for these service categories. While providers may be providing some of these services using interprofessional consultation (e.g. peer to peer consults or e-consults), providers are not coding these services as telehealth. Thus, if there is no way to identify differential payment for a service category, we assume no change in per-unit cost postmandate. CHBRP assumes that these inpatient-focused telehealth services, which are part of services delivered for significant injuries or conditions, will not be supplemental, but will instead substitute for the equivalent in-person service.
- CHBRP excluded service categories with limited telehealth modality application. For example, CHBRP considered telehealth services that may be applicable for preventive services. However, claims data revealed limited to no telehealth use for preventive services. This can likely be explained by the nature of most preventive services which typically requires an in-person service or procedure (for example, immunizations, physical exams, pap tests, colonoscopies, etc.).
- CHBRP used an annual cost trend assumption of 2.0%. This is based on the December 2018 published medical care index, which is a component of the Consumer Price Index.
- In Table 1, CHBRP presents differential impacts for Medi-Cal managed care and commercially insured markets. It is important to note that the average unit cost information for the Medi-Cal markets are based on encounter data. Encounter data are used for reporting health care use and are not directly for payment as claims data are. Data quality issues related to encounter data are

well-documented.²³ ²⁴ Therefore, comparisons of average unit costs should be made within rather than across market segments since data sources are not comparable.

Determining Public Demand for the Proposed Mandate

This subsection discusses public demand for the benefits AB 744 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 cost-sharing arrangements for telehealth, by its existing definition. 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.

Second Year Impacts on Benefit Coverage, Utilization, and Cost

In order to develop Table 10, CHBRP has considered whether continued implementation during the second year of the benefit coverage requirements of AB 744 would have a substantially different impact on utilization of either the tests, treatments or services for which coverage was directly addressed, the utilization of any indirectly affected utilization, or both. To generate this table, CHBRP reviewed the literature and consulted content experts about the possibility of varied second year impacts and applied what was learned to a projection of a second year of implementation.

As displayed in Table 10, the second year's impacts of AB 744 would be similar to the impacts in the first year (see Table 1). The increases in total expenditures and premiums are due to increased adoption and use of telehealth over time, as well as an annual trend increase as described above.

²³ IHA (June 2018) Challenges in Encounter Data Submissions. Available at: https://www.ih.org/sites/default/files/resources/encounter_data_white_paper_final.pdf.

²⁴ GAO (January 2017) Medicaid: Program Oversight Hampered by Data Challenges, Underscoring Need for Continued Improvements.

Table 10. AB 744 Impacts on Benefit Coverage, Utilization, and Cost, 2021

	Baseline	Postmandate	Increase/ Decrease	Percentage Change
Benefit coverage				
Total enrollees with health insurance subject to state-level benefit mandates (a)	24,490,000	24,490,000	0	0%
Total enrollees with health insurance subject to AB 744	24,490,000	24,490,000	0	0%
Have telehealth coverage for service category:				
... Office visits – primary care and urgent care visits	56.1%	100.0%	44%	78%
... Office visits – ophthalmology	70.4%	100.0%	30%	42%
... Office visits – dermatology	70.4%	100.0%	30%	42%
... Office visits – other specialists	70.4%	100.0%	30%	42%
... Emergency department visits	55.7%	100.0%	44%	80%
... Cardiovascular	61.3%	100.0%	39%	63%
... Radiology	50.9%	100.0%	49%	96%
... Lab/pathology	50.9%	100.0%	49%	96%
... Outpatient mental health and SUD	80.3%	100.0%	20%	25%
Utilization and unit cost				
Commercial and CalPERS HMOs				
Average utilization per 1,000 for telehealth services for service category				
Telehealth services				
... Office visits – primary care and urgent care visits	61.1	75.2	14.0	23%
... Office visits – ophthalmology, dermatology, and other specialists	54.5	67.0	12.5	23%
... Outpatient mental health and SUD	35.2	43.3	8.1	23%
... Emergency department visits, diagnostic services and other services	14.6	18.1	3.4	23%
In-person services				
... Office visits – primary care and urgent care visits	1,078.9	1,074.8	-4.1	0%
... Office visits – ophthalmology, dermatology, and other specialists	962.2	958.5	-3.6	0%
... Outpatient mental health and SUD	621.1	618.7	-2.4	0%
... Emergency department visits, diagnostic services and other services	4,007.0	4,006.0	-1.0	0%
Average cost per telehealth service for service category				
Telehealth services				
... Office visits – primary care and urgent care visits	\$58	\$137	\$79	137%

... Office visits – ophthalmology, dermatology, and other specialists	\$67	\$140	\$73	109%
... Outpatient mental health and SUD	\$107	\$151	\$44	42%
... Emergency department visits, diagnostic services and other services	\$190	\$191	\$0	0%
In-person services				
... Office visits – primary care and urgent care visits	\$137	\$137	\$0	0%
... Office visits – ophthalmology, dermatology, and other specialists	\$140	\$140	\$0	0%
... Outpatient mental health and SUD	\$151	\$151	\$0	0%
... Emergency department visits, diagnostic services and other services	\$60	\$60	\$0	0%
Medi-Cal Managed Care Plans				
Average utilization per 1,000 for telehealth services for service category				
Telehealth services				
... Office visits – primary care and urgent care visits	0.0	59.6	59.6	N/A
... Office visits – ophthalmology, dermatology, and other specialists	37.7	81.8	44.1	117%
... Outpatient mental health and SUD	8.9	11.4	2.5	28%
... Emergency department visits, diagnostic services and other services	2.8	47.6	44.9	1619%
In-person services				
... Office visits – primary care and urgent care visits	869.5	852.1	-17.4	-2%
... Office visits – ophthalmology, dermatology, and other specialists	1,182.9	1,170.0	-12.9	-1%
... Outpatient mental health and SUD	163.1	162.4	-0.7	0%
... Emergency department visits, diagnostic services and other services	5,551.5	5,538.4	-13.1	0%
Average cost per telehealth service for service category				
Telehealth services				
... Office visits – primary care and urgent care visits	\$37	\$37	\$0	0%
... Office visits – ophthalmology, dermatology, and other specialists	\$42	\$49	\$7	15%
... Outpatient mental health and SUD	\$89	\$89	\$0	0%
... Emergency department visits, diagnostic services and other services	\$54	\$70	\$16	30%
In-person services				
... Office visits – primary care and urgent care visits	\$37	\$37	\$0	0%
... Office visits – ophthalmology, dermatology, and other specialists	\$49	\$49	\$0	0%

... Outpatient mental health and SUD	\$89	\$89	\$0	0%
... Emergency department visits, diagnostic services and other services	\$29	\$29	\$0	0%
Expenditures				
Premiums by payer				
Private employers for group insurance	\$86,438,375,000	\$86,570,790,000	\$132,415,000	0.1532%
CalPERS HMO employer expenditures (c) (b)	\$3,098,551,000	\$3,103,430,000	\$4,879,000	0.1575%
Medi-Cal Managed Care Plan expenditures	\$28,492,273,000	\$28,534,474,000	\$42,201,000	0.1481%
Enrollees with individually purchased insurance	\$12,045,324,000	\$12,072,055,000	\$26,731,000	0.2219%
Enrollees with group insurance, CalPERS HMOs, Covered California, and Medi-Cal Managed Care (c)	\$2,486,222,000	\$2,490,427,000	\$4,205,000	0.1691%
Enrollee expenses				
For covered benefits (deductibles, copayments, etc.)	\$14,750,880,000	\$14,800,326,000	\$49,446,000	0.3352%
For noncovered benefits (d)	\$0	\$0	\$0	0.00%
Total expenditures	\$159,301,797,000	\$159,301,797,000	\$159,580,095,000	0.1747%

Source: California Health Benefits Review Program, 2019.

Notes: (a) Enrollees in plans and policies regulated by DMHC or CDI aged 0 to 64 years as well as enrollees 65 years or older in employer-sponsored health insurance. This group includes commercial enrollees (including those associated with Covered California or CalPERS) and Medi-Cal beneficiaries enrolled in DMHC-regulated plans.²⁵

(b) Approximately 56.17% of CalPERS enrollees in DMHC-regulated plans are state retirees, state employees, or their dependents.

(c) Enrollee premium expenditures include contributions by employees to employer-sponsored health insurance, health insurance purchased through Covered California, and contributions to Medi-Cal Managed Care.

(d) Includes only expenses 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 = California Public Employees' Retirement System; CDI = California Department of Insurance; DMHC = Department of Managed Health Care; HMO = Health Maintenance Organizations; SUD = substance use disorder.

²⁵ For more detail, see *Estimates of Sources of Health Insurance in California*, available at http://chbrp.com/analysis_methodology/cost_impact_analysis.php.

REFERENCES

- Akobeng N, Vail A, Brown N, Widiatmoko D, Fagbemi A, Thomas AG. Telephone consultation as a substitute for routine out-patient face-to-face consultation for children with inflammatory bowel disease: randomised controlled trial and economic evaluation. *EBioMedicine*. 2015;2:1251-1256.
- Al Kasab S, Adams RJ, Debenham E, Jones DJ, Holmstedt CA. Medical University of South Carolina Telestroke: a telemedicine facilitated network for stroke treatment in South Carolina--a progress report. *Telemedicine Journal and E-Health*. 2017;23:674-677.
- American Hospital Association (AHA). Fact Sheet: Telehealth. February 2019. Available at: <https://www.aha.org/system/files/2019-02/fact-sheet-telehealth-2-4-19.pdf>. Accessed March 10, 2019.
- Ashwood JS, Mehrotra A, Cowling D, et al. Direct-to-consumer telehealth may increase access to care but does not decrease spending. *Health Affairs (Millwood)*. 2017;36:485-491.
- Baldassare M, Bonner D, Petek S, Shrestha J. California's Digital Divide. Public Policy Institute of California. June 2013. Available at: www.ppic.org/main/publication_show.asp?i=263. Accessed March 11, 2019.
- Baratloo A, Rahimpour L, Abushouk AI, Safari S, Lee CW, Abdalvand A. Effects of telestroke on thrombolysis times and outcomes: a meta-analysis. *Prehospital Emergency Care*. 2018;22:472-484.
- Bavafa H, Hitt LM, Terwiesch C. The impact of e-visits on visit frequencies and patient health: evidence from primary care. Last revised October 30, 2018. SSRN. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2363705. Accessed March 28, 2019.
- Boyle A. VA Announces New Partnerships to Expand Telehealth Services. 2019. U.S. Medicine. Available at: <http://www.usmedicine.com/agencies/department-of-veterans-affairs/va-announces-new-partnerships-to-expand-telehealth-services/>. Accessed March 16, 2019.
- Brearly TW, Shura RD, Martindale SL, Lazowski RA, Luxton DD, Shenal BV, et al. Neuropsychological test administration by videoconference: a systematic review and meta-analysis. *Neuropsychology Review*. 2017;27:174-186.
- Braveman P. Health disparities and health equity: concepts and measurement. *Annual Review of Public Health*. 2006;27:167-194.
- Bredfeldt CE, Compton-Phillips AL, Snyder MH. Effects of between visit physician-patient communication on Diabetes Recognition Program scores. *International Journal for Quality in Health Care*. 2011;23:664-673.
- Bunn F, Bryne G, Kendall S. Telephone consultation and triage: effects on health care use and patient satisfaction. *Cochrane Database of Systematic Reviews*. 2004;18(4):CD004180.
- Burke BL, Hall RW. Telemedicine: pediatric applications. *Pediatrics*. 2015;136:e293-e308.

California Emerging Technology Fund (CETF). Broadband Internet Connectivity and the “Digital Divide” in California – 2017. June 27, 2017. Available at: http://www.cetfund.org/files/002_CETF_2017_002_IGS_Poll_CA_Digital_Divide.pdf. Accessed March 11, 2019.

California Health Benefits Review Program (CHBRP). *Analysis of Senate Bill 2507: Health Care Coverage: Telehealth*. Report to California State Legislature. Oakland, CA: CHBRP; 2016. Available at: <http://analyses.chbrp.com/document/view.php?id=1187>.

California Health Care Foundation (CHCF). Snapshot: California’s Rural Health Clinics: Obstacles and Opportunities. 2012. Available at: <http://www.chcf.org/publications/2012/03/ca-rural-clinics-obstacles>. Accessed March 27, 2016.

California Health Care Foundation (CHCF). Sustainable Models of Telehealth in the Safety Net. May 23, 2018. Available at: <https://www.chcf.org/project/sustainable-models-telehealth-safety-net/>. Accessed March 25, 2019.

California State Office of Rural Health (CalSORH). Rural Health Report, 2012. [PowerPoint presentation] November 13, 2012. Sacramento, CA: Department of Health Care Services Primary and Rural Health Division, State of California; 2013. Available at: www.dhcs.ca.gov/services/rural/Documents/CSHRAPresentationNov132012.pdf. Accessed April 9, 2014.

Center for Connected Health Policy (CCHP). State Telehealth Laws and Medicaid Program Policies: A Comprehensive Scan of the 50 States and District of Columbia. Sacramento, CA: CCHP, 2015. Available at: <http://cchpca.org/sites/default/files/resources/State%20Laws%20and%20Reimbursement%20Policies%20Report%20Feb%20%202015.pdf>. Last accessed March 3, 2016.

Center for Connected Health Policy (CCHP). State Telehealth Laws and Reimbursement Policies: A Comprehensive Scan of the 50 States and the District of Columbia. Sacramento, CA: CCHP; 2018. Available at: https://www.telehealthpolicy.us/sites/default/files/2018-10/CCHP_50_State_Report_Fall_2018.pdf. Accessed March 15, 2019.

Centers for Disease Control and Prevention (CDC). NCHHSTP Social Determinants of Health. Frequently Asked Questions. Last reviewed March 10, 2014. Available at: <http://www.cdc.gov/nchhstp/socialdeterminants/faq.html>. Accessed August 27, 2015.

Centers for Medicare & Medicaid Services (CMS). Medicare Program: Revisions to Payment Policies Under the Physician Fee Schedule and Other Revisions to Part B for CY 2019. 83 FR 59452. Final Rule published on November 23, 2018. Available at: <https://www.federalregister.gov/documents/2018/11/23/2018-24170/medicare-program-revisions-to-payment-policies-under-the-physician-fee-schedule-and-other-revisions>. Accessed March 13, 2019.

Centers for Medicare & Medicaid Services (CMS). Telehealth Services: Medicare Learning Network. ICN 901705. January 2019. Available at: <https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/TelehealthSrvcsfctsh.pdf>. Accessed March 13, 2019.

- Coffman JM, Fix M, Ko M. California Physician Supply and Distribution: Headed for a Drought? California Health Care Foundation. June 2018. Available at: <https://www.chcf.org/wp-content/uploads/2018/06/CAPhysicianSupply2018.pdf>. Accessed April 3, 2019.
- [Cota A](#), [Tarchala M](#), [Parent-Harvey C](#), [Engel V](#), [Berry G](#), [Reindl R](#), [Harvey EJ](#). Review of 5.5 Years' Experience Using E-mail-Based Telemedicine to Deliver Orthopedic Care to Remote Communities. *Telemed J E Health*. 2017;23(1):37-40.
- Dahl LB, Hasvold P, Arild E, Hasvold T. Heart murmurs recorded by a sensor based electronic stethoscope and e-mailed for remote assessment. *Archives of Disease in Childhood*. 2002;87:297-301.
- Day S, Zweig M. Beyond wellness for the healthy: digital health consumer adoption 2018. RockHealth. Available at: <https://rockhealth.com/reports/beyond-wellness-for-the-healthy-digital-health-consumer-adoption-2018/>. Accessed: March 19, 2019.
- Dudas RA, Crocetti M. Pediatric caregiver attitudes toward e-mail communication: survey in an urban primary care setting. *Journal of Medical Internet Research*. 2013;15:e228.
- Fann JR, Bombardier CH, Vannoy S, et al. Telephone and in-person cognitive behavioral therapy for major depression after traumatic brain injury: a randomized controlled trial. *Journal of Neurotrauma*. 2015;32:45-57.
- Ferguson S, Kotesh J, Patricoski C, et al. Impact of Store-and Forward Telehealth in Alaska: A Seven Year Retrospective. Anchorage, AK: Alaska Native Tribal Health Consortium (ANTHC); 2008-9.
- Ferrer-Roca O, Garcia-Nogales A, Pelaez C. The impact of telemedicine on quality of life in rural areas: the extremadura model of specialized care delivery. *Telemedicine Journal and e-Health*. 2010;16:233-243.
- Finnane A, Dallest K, Janda M, Soyer HP. Teledermatology for the diagnosis and management of skin cancer: a systematic review. *JAMA Dermatology* 2017;153:319-327.
- Flores-Mateo G, Violan-Fors C, Carrillo-Santistevé P, Peiro S, Argimon JM. Effectiveness of organizational interventions to reduce emergency department utilization: a systematic review. *PLoS One*. 2012;7:e35903.
- Fortney JM, Kimbrell TA, Hudson TJ, et al. Telemedicine-based collaborative care for posttraumatic stress disorder: a randomized clinical trial. *JAMA Psychiatry*. 2015;72:58-67.
- Garcia-Lizana F, Munoz-Mayorga I. What about telepsychiatry? A systematic review. *Primary Care Companion to the Journal of Clinical Psychiatry*. 2010;12(2):PCC.09m0083.
- Gibbons MC. eHealth Solutions for Healthcare Disparities. New York, NY: Springer; 2008.
- Government Accountability Office (GAO). Telehealth and Remote Patient Monitoring Use in Medicare and Selected Federal Programs. GAO-17-365. April 2017. Available at: <https://www.gao.gov/assets/690/684115.pdf>. Accessed April 9, 2019.
- Hall JL, McGraw D. For telehealth to success, privacy and security risk must be identified and addressed. *Health Affairs (Millwood)*. 2014;33:216-221.

- Harris LT, Haneuse SJ, Martin DP, Ralston JD. Diabetes quality of care and outpatient utilization associated with electronic patient-provider messaging: a cross-sectional analysis. *Diabetes Care*. 2009;32:1182-1187.
- Harris LT, Koepsell TD, Haneuse SH, Martin DP, Ralston JD. Glycemic control associated with secure patient-provider messaging within a shared electronic medical record: a longitudinal analysis. *Diabetes Care*. 2013;36:2726-2733.
- Harrison R, Clayton W, Wallace P. Virtual outreach: a telemedicine pilot study using a cluster-randomized controlled design. *Journal of Telemedicine and Telecare*. 1999;5:126-130.
- Health Resources & Services Administration (HRSA). Rural Health Insurance Market Challenges: Policy Brief and Recommendations. August 2018. Available at: <https://www.hrsa.gov/sites/default/files/hrsa/advisory-committees/rural/publications/2018-Rural-Health-Insurance-Market-Challenges.pdf>. Accessed March 23, 2019.
- Hedges L. Should You Offer Telemedicine Services? Patients Weigh In. Software Advice. 2019. Available at: <https://www.softwareadvice.com/resources/should-you-offer-telemedicine-services/>. Accessed March 10, 2019.
- Heinzelmann PJ, Williams CM, Lugn NE, Kvedar JC. Clinical outcomes associated with telemedicine/telehealth. *Telemedicine Journal and e-Health*. 2005;11:329-347.
- Jauch EC, Saver JL, Adams HP Jr., et al. Guidelines for the early management of patients with acute ischemic stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*. 2013;44:870-947.
- Jewett L, Mirian A, Connolly B, Silver FL, Sahlas DJ. Use of geospatial modeling to evaluate the impact of telestroke on access to stroke thrombolysis in Ontario. *Journal of Stroke and Cerebrovascular Disease*. 2017;26:1400-1406.
- Kairy D, Lehoux P, Vincent C, Visintin M. A systematic review of clinical outcomes, clinical process, healthcare utilization and costs associated with telerehabilitation. *Disability and Rehabilitation*. 2009;31:427-447.
- Kane CK, Gillis K. The use of telemedicine by physicians: still the exception rather than the rule. *Health Affairs (Millwood)*. 2018;37:1923-1930.
- Kassirer JP. Patients, physicians, and the Internet. *Health Affairs (Millwood)*. 2000;19:115-123.
- Kaufman T, Geraghty EM, Dullet N, King J, Kisse J, Marcin JP. Geospatial Information System Analysis of Healthcare Need and Telemedicine Delivery in California. *Telemed J E Health*. 2017;23(5):430-434.
- Kawaguchi A, Sharafeldin N, Sundaram A, et al. Tele-ophthalmology for age-related macular degeneration and diabetic retinopathy screening: a systematic review and meta-analysis. *Telemedicine Journal and E-Health*. 2018;24:301-308.
- Kepplinger J, Barlinn K, Deckert S, Scheibe M, Bodechtel U, Schmitt J. Safety and efficacy of thrombolysis in telestroke: a systematic review and meta-analysis. *EvidenceUpdates*. 2016;87:1344-1351.

- Kohlert S, Murphy P, Tse D, et al. Improving access to otolaryngology-head and neck surgery expert advice through eConsultations. *Laryngoscope*. 2018;128:350-355.
- Kollars D. Connections and Advantages of the Digital World Elude Rural California. California Economic Summit. October 4, 2018. Available at: <http://caeconomy.org/reporting/entry/connections-and-advantages-of-the-digital-world-elude-rural-california>. Accessed March 19, 2019.
- Kotb AC, Hsieh S, Wells G. Comparative effectiveness of different forms of telemedicine for individuals with heart failure (HF): a systematic review and network meta-analysis. *PLoS ONE*. 2015;10:e0118681.
- Lai L, Liddy C, Keely E, et al. The impact of electronic consultation on a Canadian tertiary care pediatric specialty referral system: a prospective single-center observational study. *PLoS ONE*. 2018;13:e0190247.
- Lau M, Campbell H, Tang T, Thompson DJ, Elliott T. Impact of patient use of an online patient portal on diabetes outcomes. *Canadian Journal of Diabetes*. 2014;38(1):17-21.
- Leimig R, Gower G, Thompson DA, Winsett RP. Infection, rejection, and hospitalizations in transplant recipients using telehealth. *Progress in Transplantation*. 2008;18:97-102.
- Lewis D, Eysenbach G, Kuafka R, et al., eds. *Consumer Health Informatics: Informing Consumers and Improving Health Care*. New York, NY: Springer; 2005.
- Liddy C, Moroz I, Afkham A, Keely E. Sustainability of a primary care-driven eConsult service. *Annals of Family Medicine*. 2018;16:120-126.
- Liddy C, Moroz I, Mihan A, Nawar N, Keely E. A systematic review of asynchronous, provider-to-provider, electronic consultation services to improve access to specialty care available worldwide. *Telemedicine Journal and e-Health*. 2019;25:184-198.
- Liss DT, Reid RJ, Grembowski D, Rutter CM, Ross TR, Fishman PA. Changes in office visit use associated with electronic messaging and telephone encounters among patients with diabetes in the PCMH. *Annals of Family Medicine*. 2014;12:338-343.
- Lopez V. Merger of T-Mobile, Sprint Could Bring High-Speed Service to Valley's Rural Reaches. *The Fresno Bee*. February 21, 2019. Available at: <https://www.fresnobee.com/opinion/op-ed/article226610984.html>. Accessed March 13, 2019.
- Maieritsch KP, Smith TL, Hessinger JD, Ahearn EP, Eickhoff JC, Zhao Q. Randomized controlled equivalence trial comparing videoconference and in person delivery of cognitive processing therapy for PTSD. *Journal of Telemedicine and Telecare*. 2016;22:238-343.
- Marcin JP, Shaikh U, Steinhorn RH. Addressing health disparities in rural communities using telehealth. *Pediatric Research*. 2016;79:169-176.
- Medicare Payment Advisory Commission (MedPAC). Chapter 16: Mandated report: telehealth services and the Medicare program. In: *Report to the Congress: Medicare Payment Policy*. March 2018. Available at: http://www.medpac.gov/docs/default-source/reports/mar18_medpac_ch16_sec.pdf. Accessed March 11, 2019.

- Mehrotra A, Huskamp HA, Souza J, et al. Rapid growth in mental health telemedicine use among rural Medicare beneficiaries, wide variation across states. *Health Affairs (Millwood)*. 2017;36:909–917.
- Menachemi N, Prickett CT, Brooks RG. The use of physician-patient email: a follow-up examination of adoption and best-practice adherence 2005-2008. *Journal of Medical Internet Research*. 2011;25:13(1):e23.
- Mitchell SJ, Godoy L, Shabazz K, et al. Internet and mobile technology use among urban African American parents: survey study of a clinical population. *Journal of Medical Internet Research*. 2014;16(1):e9.
- Modai I, Jabarin M, Kurs R, Barak P, Hanan I, Kitain L. Cost effectiveness, safety, and satisfaction with video telepsychiatry versus face-to-face care in ambulatory settings. *Telemedicine Journal and e-Health*. 2006;12:515-520.
- Moffet H, Tousignant M, Nadeau S, et al. Patient Satisfaction with In-Home Telerehabilitation After Total Knee Arthroplasty: Results from a Randomized Controlled Trial. *Telemed J E Health*. 2017;23(2):80-87
- Morland LA, Greene CJ, Rosen CS, et al. Telemedicine for anger management therapy in a rural population of combat veterans with posttraumatic stress disorder: a randomized noninferiority trial. *Journal of Clinical Psychiatry*. 2010;71:855-863.
- Morland LA, Mackintosh MA, Greene CJ, et al. Cognitive processing therapy for posttraumatic stress disorder delivered to rural veterans via telemental health: a randomized noninferiority clinical trial. *Journal of Clinical Psychiatry*. 2014;75:470-476.
- Müller KI, Alstadhaug KB, Bekkelund SI. Headache patients' satisfaction with telemedicine: a 12-month follow-up randomized non-inferiority trial. *European Journal of Neurology*. 2017;24:807-815.
- Myers A, Zhou C, McCarty CA, Katon W. Effectiveness of a telehealth service delivery model for treating attention-deficit/hyperactivity disorder: a community-based randomized controlled trial. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2015;54:263-274.
- Naka F, Lu J, Porto A, et al. Impact of dermatology eConsults on access to care and skin cancer screening in underserved populations: a model for teledermatology services in community health centers. *Journal of the American Academy of Dermatology*. 2018;78:293-302.
- Nami N, Massone C, Rubegni P, Cevenini G, Fimiani M, Hofmann-Wellenhof R. Concordance and time estimation of store-and-forward mobile teledermatology compared to classical face-to-face consultation. *Acta Dermato-Venereologica*. 2015;95:35-39.
- National Consortium of Telehealth Resource Centers (NCTRC). What Is Telehealth? Context for Framing Your Perspective. August 2018. Available at: <https://www.telehealthresourcecenter.org/factsheets/>. Accessed March 10, 2019.
- Nelson R, Staggers N, eds. *Health Informatics: An Interprofessional Approach*. St. Louis, MO: Elsevier; 2014.

- Nesbitt TS. The evolution of telehealth: where have we been and where are we going? In: Lustig TA, ed. *The Role of Telehealth in and Evolving HealthCare Environment*. Washington, DC: The National Academies Press; 2012. Available at: <http://www.nap.edu/read/13466/chapter/4>. Accessed March 2019.
- North F, Crane SJ, Chaudhry R, et al. Impact of patient portal secure messages and electronic visits on adult primary care office visits. *Telemedicine Journal and e-Health*. 2014;20:192-198.
- Office of Disease Prevention and Health Promotion. Healthy People 2020: Social Determinants of Health. Available at: <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health>. Accessed February 16, 2016.
- O'Reilly R, Bishop J, Maddox K, Hutchison L, Fisman M, Takhar J. Is telepsychiatry equivalent to face-to-face psychiatry? Results from a randomized controlled equivalence trial. *Psychiatric Services*. 2007;58:836-843.
- Palen TE, Ross C, Powers J, Xu S. Association of online patient access to clinicians and medical records with use of clinical services. *JAMA*. 2012;308:2012-2019.
- Park J, Erickson C, Han X, Iyer P. Are state telehealth policies associated with the use of telehealth services among underserved populations? *Health Affairs*. 2018;12: 2060-2068.
- Pearl R. Kaiser Permanente Northern California: current experiences with Internet, mobile, and video technologies. *Health Affairs (Millwood)*. 2014;33:251-257.
- Player M, O'Bryan E, Sederstrom E, Pinckney J, Diaz V. Electronic visits for common acute conditions: evaluation of a recently established program. *Health Affairs (Millwood)*. 2018 37;12:2024-2030.
- Polinski JM, Barker T, Gagliano N, Sussman A, Brennan TA, Shrank WH. [Patients' Satisfaction with and Preference for Telehealth Visits](#). *J Gen Intern Med*. 2016;31(3):269-75.
- Proctor BJ, Moghaddam N, Vogt W, das Nair R. Telephone psychotherapy in multiple sclerosis: a systematic review and meta-analysis. *Rehabilitation Psychology*. 2018;63(1):16-28.
- Ralston JD, Hirsch IB, Hoath J, Mullen M, Cheadle A, Goldberg HI. Web-based collaborative care for type 2 diabetes: a pilot randomized trial. *Diabetes Care*. 2009;32:234-239.
- Ray KN, Shi Z, Gidengil CA, Poon SJ, Uscher-Pines L, Mehrotra A. Antibiotic Prescribing During Pediatric Direct-to-Consumer Telemedicine Visits. *Pediatrics*. 2019.
- Reed ME, Parikh R, Huang J, et al. Real-time patient–provider video telemedicine integrated with clinical care. *New England Journal of Medicine*. 2018;379:1478-1479.
- Richardson BR, Truter P, Blumke R, Russell TG. Physiotherapy assessment and diagnosis of musculoskeletal disorders of the knee via telerehabilitation. *Journal of Telemedicine and Telecare*. 2017;23:88-95.
- Rostom K, Smith CD, Liddy C, et al. Improving access to rheumatologists: use and benefits of an electronic consultation service. *Journal of Rheumatology*. 2018;45:137-140.
- Saari JM, Summanen P, Kivela T, Saari KM. Sensitivity and specificity of digital retinal images in grading diabetic retinopathy. *Acta Ophthalmologica Scandinavica*. 2004;82:126-130.

- Schwamm LH, Chumbler N, Brown E, et al. Recommendations for the implementation of telehealth in cardiovascular and stroke care: a policy statement from the American Heart Association. *Circulation*. 2017;135(7):e24-e44.
- Seghers KH, Chio MTW, Chia E, Ng SK, Tang MBY. A prospective study on the use of teledermatology in psychiatric patients with chronic skin diseases. *Australasian Journal of Dermatology*. 2015;56:170-174.
- Shah MN, Wasserman EB, Gillespie SM, et al. High-intensity telemedicine decreases emergency department use for ambulatory care sensitive conditions by older adult senior living community residents. *Journal of the American Medical Directors Association*. 2015;16:1077-1081.
- Shah SJ, Schwamm LH, Cohen AB, et al. Virtual visits partially replaced in-person visits in an ACO-based medical specialty practice. *Health Affairs (Millwood)*. 2018;37:2045-2051.
- Shukla H, Nair SR, Thakker D. Role of telerehabilitation in patients following total knee arthroplasty: evidence from a systematic literature review and meta-analysis. *Journal of Telemedicine and Telecare*. 2017;23:339-346.
- Simpson SG, Reid CL. Therapeutic alliance in videoconferencing psychotherapy: a review. *Australian Journal of Rural Health*. 2014;22:280-299.
- Soegaard Ballester JM, Scott MF, Owei L, Neylan C, Hanson CW, Morris JB. Patient preference for time-saving telehealth postoperative visits after routine surgery in an urban setting. *Surgery*. 2018 Apr;163(4):672-679.
- Taylor-Gjevre R, Nair B, Bath B, et al. Addressing rural and remote access disparities for patients with inflammatory arthritis through video-conferencing and innovative inter-professional care models. *Musculoskeletal Care*. 2018;16(1):90-95.
- Tchero H, Teguo MT, Lannuzel A, Rusch E. Telerehabilitation for stroke survivors: systematic review and meta-analysis. *Journal of Medical Internet Research*. 2018;20:10.
- Totten AM, Womack DM, Eden KB, et al. *Telehealth: Mapping the Evidence for Patient Outcomes From Systematic Reviews*. Technical Brief No. 26. AHRQ Publication No.16-EHC034-EF. Rockville, MD: Agency for Healthcare Research and Quality; 2016.
- Tsai LL, McNamara RJ, Moddel C, Alison JA, McKenzie DK, McKeough ZJ. Home-based telerehabilitation via real-time videoconferencing improves endurance exercise capacity in patients with COPD: the randomized controlled TeleR Study. *Respirology*. 2017;22:699-707.
- Tuckson RV, Edmunds M, Hodgkins ML. Telehealth. *N Engl J Med*. 2017;19;377(16):1585-1592.
- Uscher-Pines L, Mehrotra A. Analysis of Teladoc use seems to indicate expanded access to care for patients without prior connection to a provider. *Health Affairs (Millwood)*. 2014;33:258-264.
- Vimalananda VG, Gupte G, Seraj SM, et al. Electronic consultations (e-consults) to improve access to specialty care: a systematic review and narrative synthesis. *Journal of Telemedicine and Telecare*. 2015;21:323-330.

- Wallace P, Barber J, Clayton W, et al. Virtual outreach: a randomised controlled trial and economic evaluation of joint teleconferenced medical consultations. *Health Technology Assessment*. 2004;8(50):1-106.
- Warshaw EM, Hillman YJ, Greer NL, et al. Teledermatology for diagnosis and management of skin conditions: a systematic review. *Journal of the American Academy of Dermatology*. 2011;64:759-772.
- Weinhold I, Gurtner S. Understanding shortages of sufficient health care in rural areas. *Health Policy*. 2014;118: 201-214.
- Whited JD, Warshaw EM, Edison KE, et al. Effect of store-and-forward teledermatology on quality of life: a randomized controlled trial. *JAMA Dermatology*. 2013a;149:584-591.
- Whited JD, Warshaw EM, Kapur K, et al. Clinical course outcomes for store-and-forward teledermatology versus conventional consultation: a randomized trial. *Journal of Telemedicine and Telecare*. 2013b;19:197-204.
- Wicklund E. Are Providers, Payers Putting Enough Into Telehealth Education? mHealth Intelligence. December 27, 2017. Available at: <https://mhealthintelligence.com/news/are-providers-payers-putting-enough-into-telehealth-education>. Accessed March 11, 2019.
- Wicklund E. CMS to Reimburse Providers for Remote Patient Monitoring Services. mHealth Intelligence. November 2, 2018. Available at: <https://mhealthintelligence.com/news/cms-to-reimburse-providers-for-remote-patient-monitoring-services>. Accessed March 23, 2019.
- Wootton R, Bahaadinbeigy K, Hailey D. Estimating travel reduction associated with the use of telemedicine by patients and healthcare professionals: proposal for quantitative synthesis in a systematic review. *BMC Health Services Research*. 2011;11:185.
- Zappe J. Telemedicine Moves Into Mainstream as More Employers Offer It. October 2012. Available at: <http://www.tnt.com/2012/10/02/telemedicine-moves-into-mainstream-as-more-employers-offer-it/>. Last accessed March 12, 2015
- Zhou YY, Garrido T, Chin HL, Wiesenthal AM, Liang LL. Patient access to an electronic health record with secure messaging: impact on primary care utilization. *American Journal of Managed Care*. 2007;13:418-424.
- Zhou YY, Kanter MH, Wang JJ, Garrido T. Improving quality at Kaiser Permanente through e-mail between physicians and patients. *Health Affairs (Millwood)*. 2010;29:1370-1375.

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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 researchers and analysts who are **Task Force 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, **Milliman**, 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.

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*Karen Shore is an Independent Contractor with whom CHBRP works to support legislative analyses and other special projects on a contractual basis.

CHBRP is an independent program administered and housed by the University of California, Berkeley, in the Office of the Vice Chancellor for Research.

ACKNOWLEDGMENTS

CHBRP gratefully acknowledges the efforts of the team contributing to this analysis:

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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.

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Please direct any questions concerning this document to: California Health Benefits Review Program; MC 3116; Berkeley, CA 94720-3116, info@chbrp.org, or www.chbrp.org