TECHNICAL BRIEF

AB 1682

Scalp Cooling

CHBRP

About the Technical Brief

This document provides details on the analytical foundation for CHBRP's analysis of AB 1682. While the main report synthesizes key findings for immediate policy consideration, this document is designed to support a deeper understanding of the background of the topic of the legislation and CHBRP's methodology and research in conducting its analysis. It contains the data sources, methods, assumptions, and other bill-specific considerations necessary for legislative staff, fiscal analysts, and other stakeholders to fully understand the scope and impact of the proposed measure.

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Lists of Tables and Figures

Legislative Text Analyzed

CHBRP analyzed AB 1682 Scalp Cooling, as introduced on February 2, 2026, per the request of the California Assembly Committee on Health. The text analyzed is copied below.

CALIFORNIA LEGISLATURE— 2025–2026 REGULAR SESSION

ASSEMBLY BILL **No. 1682**

Introduced by Assembly Member Hart

February 2, 2026

An act to add Section 1367.651 to the Health and Safety Code, to add Section 10123.811 to the Insurance Code, and to add Section 14132.65 to the Welfare and Institutions Code, relating to health care coverage.

LEGISLATIVE COUNSEL'S DIGEST

AB 1682, as introduced, Hart. Health care coverage: scalp cooling.

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 requires coverage by health care service plans and health insurers for various screening and treatment services with respect to cancer.

This bill would require a health care service plan contract or health insurance policy, except as specified, that is issued, amended, delivered, or renewed on or after January 1, 2027, to provide coverage for scalp cooling, as defined, as prescribed by a health care provider in connection with chemotherapy for persons with cancer. Because a violation of these provisions with respect to a health care service plan would be a crime, this bill would impose a state-mandated local program.

Existing law also provides for the Medi-Cal program, which is administered by the State Department of Health Care Services, under which qualified low-income individuals receive health care services pursuant to a schedule of benefits, including various cancer screenings and benefits relating to cancer treatment.

Subject to the extent that federal financial participation is available and not otherwise jeopardized, and any necessary federal approvals have been obtained, this bill would expand the Medi-Cal schedule of benefits to include scalp cooling, as prescribed by a health care provider in connection with chemotherapy for persons with cancer.

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.

Vote: majority. Appropriation: no. Fiscal committee: yes. State-mandated local program: yes.

The people of the State of California do enact as follows:

SECTION 1. Section 1367.651 is added to the Health and Safety Code, to read:

1367.651. (a) A health care service plan contract issued, amended, or renewed on and after January 1, 2027, shall provide coverage for scalp cooling, as prescribed by a health care provider in connection with chemotherapy for persons with cancer.

(b) Coverage required by this section may be subject to copayments, coinsurance, or deductibles, provided that the copayments, coinsurance, or deductibles applicable to scalp cooling are no less favorable to an enrollee than the copayments, coinsurance, or deductibles that apply to coverage for oncology supportive care services under the same contract.

(c) For purposes of this section, "scalp cooling'' is defined as the use of a medical device or system cleared by the federal Food and Drug Administration (FDA) applied to the scalp before, during, or after the administration of chemotherapy to reduce the incidence or severity of chemotherapy-induced alopecia (hair loss). "Scalp cooling" does not include non-FDA-cleared cold caps or any non-FDA-cleared scalp cooling products, regardless of whether those products are described as "cold cap therapy" or similar terminology.

(d) This section shall not apply to specialized health care service plans.

SEC. 2. Section 10123.811 is added to the Insurance Code, to read:

10123.811. (a) A health insurance policy issued, amended, or renewed on and after January 1, 2027, shall provide coverage for scalp cooling, as prescribed by a health care provider in connection with chemotherapy for persons with cancer.

(b) Coverage required by this section may be subject to copayments, coinsurance, or deductibles, provided that the copayments, coinsurance, or deductibles applicable to scalp cooling are no less favorable to an insured than the copayments, coinsurance, or deductibles that apply to coverage for oncology supportive care services under the same policy.

(c) For purposes of this section, "scalp cooling'' is defined as the use of a medical device or system cleared by the federal Food and Drug Administration (FDA) applied to the scalp before, during, or after the administration of chemotherapy to reduce the incidence or severity of chemotherapy induced alopecia (hair loss). "Scalp cooling" does not include non–FDA-cleared cold caps or any non–FDA-cleared scalp cooling products, regardless of whether such products are described as "cold cap therapy" or similar terminology.

(d) This section shall not apply to a specialized health insurance policy.

SEC. 3. Section 14132.65 is added to the Welfare and Institutions Code, to read:

14132.65. (a) Scalp cooling, as prescribed by a health care provider in connection with chemotherapy for persons with cancer, is a covered benefit under the Medi-Cal program.

(b) Coverage required by this section may be subject to copayments or deductibles, provided that the copayments or deductibles applicable to scalp cooling are no less favorable to a beneficiary than the copayments or deductibles that apply to oncology supportive care services that are covered benefits under the Medi-Cal program.

(c) For purposes of this section, "scalp cooling'' is defined as the use of a medical device or system cleared by the federal Food and Drug Administration (FDA) applied to the scalp before, during, or after the administration of chemotherapy to

reduce the incidence or severity of chemotherapy induced alopecia (hair loss). “Scalp cooling” does not include non–FDA-cleared cold caps or any non–FDA-cleared scalp cooling products, regardless of whether such products are described as “cold cap therapy” or similar terminology.

(d) This section shall be implemented in a manner consistent with federal law and only to the extent federal financial participation is available and not otherwise jeopardized.

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

Policy Framework

This brief provides additional material on the state and federal policy and regulatory landscape to support the findings and recommendations presented in CHBRP's *Analysis of Assembly Bill 1682 Scalp Cooling*.[1] While this information is essential to the completeness of the analysis, it has been placed in this separate brief to maintain the flow of the main report. Readers are encouraged to consult this material for deeper insights into technical details that informed the analysis and conclusions of the main report.

California Policy Landscape

California Independent Medical Review Determinations

CHBRP reviewed the state's Independent Medical Review (IMR) determinations and found one determination related to scalp cooling. The decision involved a female patient with breast cancer undergoing taxane-based chemotherapy who requested reimbursement for scalp cooling therapy. Scalp cooling appeared to be a covered benefit under the individual's health insurance policy. The reviewer noted that chemotherapy-induced alopecia impacts the quality of life and mental well-being. The decision overturned the health plan's denial under the reasoning that the services were medically necessary to treat the patient's medical condition.[2]

Previous California Legislation

There has not been previous legislation in California on scalp cooling. However, there has been recent legislation related to chemotherapy-induced alopecia. The Assembly Committee on Health introduced AB 2668 Cranial Prostheses in February 2024,[3] which would have required state-regulated health plans and policies to provide coverage for cranial prostheses — also known as medical wigs — for enrollees experiencing permanent or temporary hair loss due to a medical condition or treatment, including chemotherapy-induced alopecia. The bill did not advance out of committee.

Federal Policy Landscape

Affordable Care Act and Essential Health Benefits

States may require state-regulated health insurance to offer benefits that exceed EHBs.[4,5,6,7] Should California do so, the state could be required to defray the cost of additionally mandated benefits for enrollees in health plans or policies purchased through Covered California, the state's health insurance marketplace. However, state benefit mandates specifying provider types, cost sharing, or other details of existing benefit coverage would not meet the definition of state

[1] Available on www.chbrp.org in Completed Analyses.
[2] In this IMR determination, the patient was determined by the Department of Managed Health Care (DMHC) to have coverage for scalp cooling, and so the only remaining determination was of medical necessity, as discussed in email communication between CHBRP and the California Department of Insurance (CDI) on 02/25/2026.
[3] California Assembly Bill 2668 (2023–2024 Reg. Sess.). (2024). *Coverage for cranial prostheses*. California Legislature.
[4] ACA Section 1311(d)(3).
[5] State benefit mandates enacted on or before December 31, 2011, may be included in a state's EHBs, according to the U.S. Department of Health and Human Services (HHS). Patient Protection and Affordable Care Act; Standards Related to Essential Health Benefits, Actuarial Value, and Accreditation. Final Rule. Federal Register, Vol. 78, No. 37. February 25, 2013.
[6] However, as laid out in the Final Rule on EHBs U.S. Department of Health and Human Services (HHS) released in February 2013, state benefit mandates enacted on or before December 31, 2011, would be included in the state's EHBs, and there would be no requirement that the state defray the costs of those state-mandated benefits. For state benefit mandates enacted after December 31, 2011, that are identified as exceeding EHBs, the state would be required to defray the cost.
[7] In February 2026, HHS released a proposed rule that would alter what benefits would be determined to exceed EHBs. The conclusions in this analysis of AB 1682 are subject to change based on the final language of the regulations. U.S. Department of Health and Human Services (HHS). Patient Protection and Affordable Care Act, HHS Notice of Benefit and Payment Parameters for 2027; and Basic Health Program. Proposed Rule. Federal Register, Vol. 91, No. 28. February 11, 2026.

benefit mandates that could exceed EHBs.[8,9] It should be noted that federal guidance establishes the "State" as the entity that would identify when a state benefit mandate exceed EHBs;[10] thus, DMHC and CDI would determine whether the benefit would require defrayal of costs.

It is unclear whether scalp cooling under AB 1682 would exceed EHBs. CHBRP's survey to carriers found that many carriers already cover scalp cooling (see *Cost Impact Analysis* section for more information). If scalp cooling is considered part of existing coverage, or if similar coverage determinations are made for scalp cooling as other benefit coverage mandates (see section above on Independent Medical Review Determinations), then AB 1682 would not exceed EHBs.[11] If scalp cooling is considered a new and additional benefit for coverage, then AB 1682 may exceed EHBs.[12] In this case, it is estimated that California would pay $1,442,000 in defrayal costs in 2027.

U.S. Food and Drug Administration Clearance

The FDA categorizes medical devices into three different classes based on risk, with Class 1 devices having the lowest risk and Class 3 having the highest. Approval of devices to go to market depends on classification. Class 1 and 2 devices generally need to be classified as "FDA-cleared" prior to going to market. Class 3 devices must obtain classification as "FDA-approved" prior to marketing a new device. The automated scalp cooling devices subject to AB 1682 are characterized as Class 2, and therefore fall into the FDA clearance pathway.

American Medical Association (AMA) billing guidelines

The American Medical Association updated its billing codes for scalp cooling with three new Category 1 billing codes effective January 1, 2026. Category 1 codes are permanent codes, reflecting accepted procedures or services. These codes replace two previous temporary Category 3 codes that were used for scalp cooling, initial fittings and measurement, and use of the automated devices. Category 3 codes reflect new and developing technology, procedures and technology (AMA 2026).

[8] Essential Health Benefits. Final Rule. A state's health insurance marketplace would be responsible for determining when a state benefit mandate exceeds EHBs, and qualified health plan issuers would be responsible for calculating the cost that must be defrayed. Patient Protection and Affordable Care Act; Standards Related to Essential Health Benefits, Actuarial Value, and Accreditation. Final Rule. Federal Register, Vol. 78, No. 37. February 25, 2013.
[9] As of 2024, Maine, Massachusetts, Minnesota, Montana, Utah, and Virginia mandate benefits that exceed EHBs (GAO, 2024). For more information about defrayal, refer to CHBRP's issue brief *Essential Health Benefits: Exceeding EHBs and the Defrayal Requirement*.
[10] Essential Health Benefits Final Rule. Federal Register, Vol. 87. No. 27. February 25, 2013.
[11] CHBRP correspondence with the California Department of Insurance (CDI) on 02/25/2026 suggest that if similar coverage determinations are made for AB 1682 as with other similar categorical services, then scalp cooling would not exceed EHBs.
[12] CHBRP correspondence with the California Department of Managed Health Care suggests that AB 1682 may exceed EHBs.

Background on Chemotherapy-Induced Alopecia and Scalp Cooling

AB 1682 would require health care service plans, health insurance policies, and the Medi-Cal program to cover scalp cooling — a medical device–based intervention applied to the scalp before, during, and after chemotherapy to reduce hair loss — for patients with cancer undergoing chemotherapy. This section describes chemotherapy-induced alopecia, the patient experience of scalp cooling, and disparities in access to this intervention.

Chemotherapy-Induced Alopecia

Cancer is treated in different ways depending on the type and stage of disease. Some patients have surgery or radiation, while others receive chemotherapy — drugs delivered directly into the bloodstream that work by targeting rapidly dividing cells. Because hair follicle cells also divide rapidly, they are often damaged in the process, causing chemotherapy-induced alopecia (i.e., hair loss). Not all chemotherapy drugs cause hair loss; the risk depends on which drugs are used, at what dose, and how they are combined.

- The chemotherapeutic drugs most commonly associated with chemotherapy-induced alopecia include taxanes (paclitaxel, docetaxel), anthracyclines (doxorubicin, epirubicin), and alkylating agents (cyclophosphamide) (Chopra et al., 2019; Dunnill et al., 2018). When two or more of these drugs are used together — which is common — the likelihood and severity of hair loss increases (Chopra et al., 2019).
- Hair loss may be partial or complete and can affect the scalp, eyebrows, eyelashes, and body hair, depending on the drugs used (Mayo Clinic, n.d.). For most patients, hair begins to regrow within 3 to 6 months after chemotherapy ends (Mayo Clinic, n.d.).
- In some cases, hair loss does not fully resolve. Studies of breast cancer patients treated with taxane-based chemotherapies found that 39% to 42% reported no meaningful regrowth 3 years after treatment (Kang et al., 2018). Evidence suggests that scalp cooling may reduce the risk of persistent hair loss, defined as no significant hair regrowth within 6 months of treatment ending (Kang et al., 2024; Kolla et al., 2022); see the *Medical Effectiveness* section for further discussion.

Impact of Chemotherapy-Induced Alopecia on Patient Quality of Life

- Patients rank hair loss among the most distressing side effects of cancer treatment — in some surveys above nausea, fatigue, and pain (Dunnill et al., 2018; Rugo et al., 2017a; Vardy et al., 2022).
- Hair loss affects more than appearance. It can signal to others that a person is undergoing cancer treatment, removing a patient's control over when and how they disclose their diagnosis (Dunnill et al., 2018).
- Studies link chemotherapy-induced alopecia to reduced self-confidence, social withdrawal, anxiety, and depression (Dunnill et al., 2018; Freites-Martinez et al., 2019).
- Some patients report that anticipated hair loss influenced their decision about whether to proceed with chemotherapy (Dunnill et al., 2018; Freites-Martinez et al., 2019).

Scalp Cooling: What It Is, How It Works, and Availability in California

Scalp cooling reduces hair loss by lowering the temperature of the scalp during chemotherapy. Cooling causes blood vessels in the scalp to constrict, which reduces the amount of chemotherapy drug that reaches hair follicle cells, with the aim of limiting follicle damage and preventing hair loss (ACS, 2026).

Three automated scalp cooling systems have received FDA clearance in the United States: DigniCap, Paxman, and Amma. Each system circulates chilled coolant through a form-fitting silicone cap worn on the scalp, covered by an

insulating outer cap (see Figure 1). FDA-cleared scalp cooling devices are installed at chemotherapy infusion centers and are used during intravenous chemotherapy infusions. These devices are currently available at select infusion centers, concentrated in large urban cancer centers and academic medical institutions (see Figure 2).

AB 1682 would require coverage for FDA-cleared automated systems only. Manual cold caps — stored in freezers or with dry ice and swapped out by hand throughout the infusion — are excluded. Manual caps rely on manual temperature management, which may make precise control more difficult than automated systems.

Figure 1. Example of Inner Silicone Cap and FDA-Cleared Automated Scalp Cooling Device

	Inner Silicone Cap	Scalp Cooling Device
Description	The inner silicone cap is molded to the individual patient. It is designed to regulate the temperature of the scalp by circulating coolant at the specified temperature.	The complete scalp cooling system is comprised of a machine that circulates the coolant at the specified temperature, which is connected to the silicone cap, and an outer insulating cap plus strap. The Paxman scalp cooling system can serve 1-2 patients at a time. The Amma scalp cooling system is portable.
Example image		

Source: California Health Benefits Review Program, 2026; McAshan, 2020; UCSF Health n.d.-a, n.d.-b; Paxman, n.d.; Price, 2019.
Notes: These images are the main components of the Paxman device. Colors, components, and accessories may not be as shown. The DigniCap and Amma devices (not shown) are the two other scalp cooling devices on the market in the United States as of April 2026.

Scalp Cooling Protocol and Patient Experience

Before scalp cooling can begin, patients are fitted for a personal silicone cap — the inner layer of the cooling system — that must fit snugly against the scalp with no air gaps, to ensure even cooling across all areas (ACS, 2026). Patients are responsible for their own cap and must bring it to every chemotherapy session. On the day of treatment, patients arrive with clean, damp, detangled hair (ACS, 2026; UCSF Health, n.d.-a). They bring their own comb, conditioner, headband, and towel (ACS, 2026; Dignitana, 2018). Warm clothing and blankets are also recommended, as the cooling sensation can be significant (ACS, 2026).

Scalp cooling adds time to each chemotherapy visit. The standard protocol requires:

- Half an hour of pre-cooling before the infusion begins: the scalp must reach a low enough temperature before chemotherapy enters the bloodstream, so that blood vessels are already constricted when drug levels rise (Mayo Clinic Health System, 2023; UCSF Health, n.d.-b).
- Two to three hours of cooling during the infusion: chemotherapy is actively circulating and follicles must remain protected throughout (Mayo Clinic Health System, 2023; UCSF Health, n.d.-b).

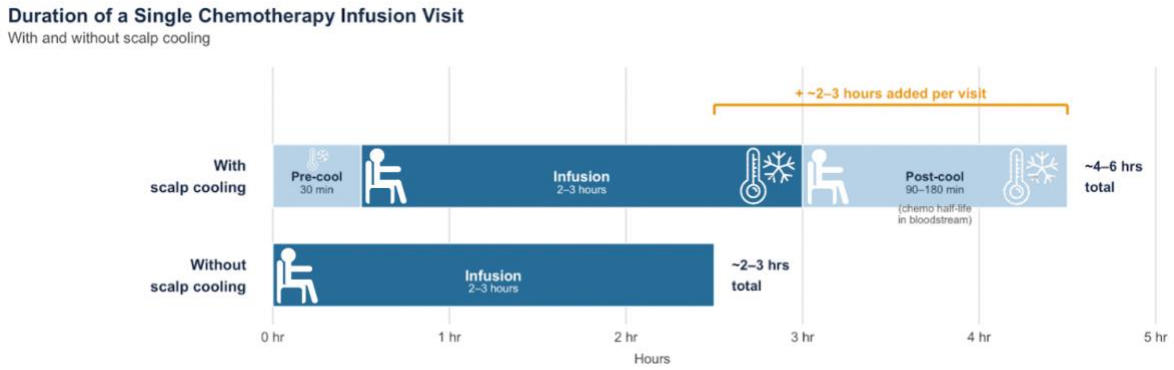
- Two to three hours of post-cooling after the infusion ends: chemotherapy drugs remain in the bloodstream at meaningful levels after the IV is stopped; cooling continues until drug levels fall low enough that follicles are no longer at risk (Mayo Clinic Health System, 2023; UCSF Health, n.d.-b; Uscher, 2026).

A visit that would otherwise take two to three hours may therefore take four to six hours in total (see Figure 2). Most patients complete between four and eight sessions per treatment course — one at each chemotherapy infusion — over a period of approximately 3 to 6 months. This means scalp cooling adds a total of 16 to 48 hours of additional time at the infusion center across a full course of treatment (Cancer Research UK, 2023; The Healthline Editorial Team, 2025; Lan et al., 2023).

Patients must complete the protocol at every session. Missing even one session eliminates the protective benefit for that treatment cycle; scalp cooling works by blocking drug exposure during each individual infusion, not by building up a cumulative protective effect over time.

Common experiences during treatment include cold, pressure, headache, and cap heaviness. About 18% stop scalp cooling before finishing chemotherapy, most commonly due to progressive hair loss, logistical barriers such as scheduling and time requirements, headache, or cold intolerance (Kearney et al., 2025); for a more detailed description of the evidence, see the *Medical Effectiveness* section. A separate 2024 analysis found that patients who received more financial assistance were less likely to discontinue, consistent with cost as a contributor to dropout independent of side effects (Novice et al., 2024).

Figure 2. Duration of a Single Chemotherapy Infusion Visit, With and Without Scalp Cooling



Source: California Health Benefits Review Program, 2026.
Note: Pre-cooling begins 30 minutes before infusion. Post-cooling continues for 90-180 minutes after the infusion ends, while chemotherapy drug levels remain elevated in the bloodstream. Scalp cooling must be completed at every chemotherapy session, missing a session eliminates the protective benefit for that treatment cycle.

Clinical Guidelines on Prescription of Scalp Cooling

Scalp cooling is recognized in clinical guidelines from major oncology organizations as a supportive care option for patients receiving chemotherapy associated with hair loss. The National Comprehensive Cancer Network includes scalp cooling in its guidelines for breast cancer and ovarian cancer, recommending that it be offered to eligible patients (Armstrong et al., 2021; NCCN, 2026). The European Society for Medical Oncology similarly recommends that scalp cooling can be offered to patients after weighing risks and benefits (Lacouture et al., 2021). Both organizations frame scalp cooling as an option to discuss with patients, rather than a required part of cancer treatment.

Cancer Types and Prevalence in California

FDA-cleared scalp cooling is indicated for patients with solid tumor cancers who receive chemotherapy associated with hair loss. Table 1 shows how common these cancers are in California. Breast cancer accounts for the largest share of eligible patients.

Table 1. Age-Adjusted Incidence Rates for Cancers Eligible for Scalp Cooling Coverage, California, 2018-2022

Cancer Type	Incidence in California (per 100,000) (a)
Breast cancer	152.7
Lung cancer	36.3
Uterine/endometrial cancer	28.1
Non-Hodgkin lymphoma (b)	18.1
Ovarian cancer	10.6
Cervical cancer	7.3
Sarcomas (c)	7.1

Source: California Health Benefits Review Program, 2026; CCR, 2025.
Notes: Incidence rates are age-adjusted.
(a) California age-adjusted incidence rates from the California Cancer Registry, 2018-2022 (CCR, 2025).
(b) Non-Hodgkin lymphoma is classified as a solid tumor by FDA for scalp cooling eligibility purposes.
(c) Data derived from nationwide estimates from Gage et al., 2019.

Cancer Types, Chemotherapy Regimens, and Risks of Hair Loss

The numbers in Table 1 reflect everyone diagnosed with each cancer, but the type of chemotherapy a patient receives depends on their cancer type, stage, and tumor biology. For most cancer types, only a subset of patients will be eligible for scalp cooling in practice.

- **Breast cancer:** Receipt of chemotherapy among breast cancer patients depends on the type of tumor, and stage of cancer. Among breast cancer patients who receive chemotherapy, the large majority are treated with taxane- or anthracycline-based regimens, the drug classes most commonly associated with hair loss (Giordano et al., 2012).
- **Ovarian cancer:** Taxane-based chemotherapy — typically paclitaxel combined with carboplatin — is the standard first-line treatment for patients with ovarian cancer who receive chemotherapy, and is associated with hair loss (NCCN, 2026).
- **Uterine/endometrial and cervical cancer:** Chemotherapy is used primarily for advanced or recurrent disease. Most patients diagnosed at early stages are treated with surgery and radiation alone (Knisley et al., 2022).
- **Lung cancer:** Taxane-based chemotherapy is used for some lung cancer patients, but many receive other regimens that do not cause significant hair loss.
- **Non-Hodgkin lymphoma and sarcomas:** Standard regimens for both cancer types include anthracyclines, which are associated with hair loss, but the specific drugs used vary widely depending on the subtype and stage.

Who Uses Scalp Cooling

Most patients who use scalp cooling are women, with some studies finding up to 90% of patients are female (Maher et al., 2019). This reflects both the high incidence of breast cancer — the most common solid tumor cancer eligible for scalp

cooling — and the particular impact that hair loss has on quality of life for women (Rugo et al., 2017a). Men with eligible cancers may also use scalp cooling, though they are a much smaller share of users.

Scalp cooling is also most often used by younger patients. Research shows that patients aged under 45 are significantly more likely to use scalp cooling than older patients, and older patients are less likely to use it even when eligible (Novice et al., 2022; Rose et al., 2023).

Scalp cooling is most commonly used among patients receiving chemotherapy for early-stage cancer (stages 1 through 3). Patients with late-stage or metastatic cancer are less likely to use it, in part because treatment timelines are less predictable and because newer drugs used in advanced disease are less likely to cause hair loss.

The amount of hair loss — and how much scalp cooling can help — depends on which chemotherapy drugs a patient receives. Scalp cooling tends to work better with some drug combinations than others (Carbognin et al., 2022; Lambert et al., 2024). Patients receiving drugs where hair loss is harder to prevent are less likely to use scalp cooling (Rose et al., 2023).

Disparities[13] in Access to and Effectiveness of Scalp Cooling

Disparities are noticeable and preventable or modifiable differences between groups of people. Health insurance benefit mandates or related legislation may impact disparities. Where intersections between health insurance benefit mandates and social determinants or systemic factors exist, CHBRP describes relevant literature.

Income

Without insurance coverage, scalp cooling creates a significant financial barrier for lower-income patients and those with public insurance. A national analysis found that patients who were privately insured or lived in higher-income ZIP codes with average household incomes were more likely to use scalp cooling (Novice et al., 2024). The time required for scalp cooling — two to four additional hours per chemotherapy visit — may also disproportionately burden lower-income patients, including those in hourly employment or without paid leave, and those without access to childcare. A systematic review of nearly 10,000 patients found that logistics, time requirements, and scheduling accounted for 9% of scalp cooling discontinuations (Kearney et al., 2025). AB 1682 could reduce income-based disparities in access by removing the cost barrier for enrollees in state-regulated plans and Medi-Cal beneficiaries. It would not affect social determinants — such as employment flexibility or caregiving responsibilities — that may independently limit access for some patients.

Provider Practice

Physician referral patterns create an additional barrier. A national survey found that while 62% of providers supported scalp cooling for their patients most or all of the time, only 26% reported initiating conversations about it with patients most or all of the time (Novice et al., 2022). Cost concerns were the most common reason cited, reported by 58% of providers (Novice et al., 2022).

Geography

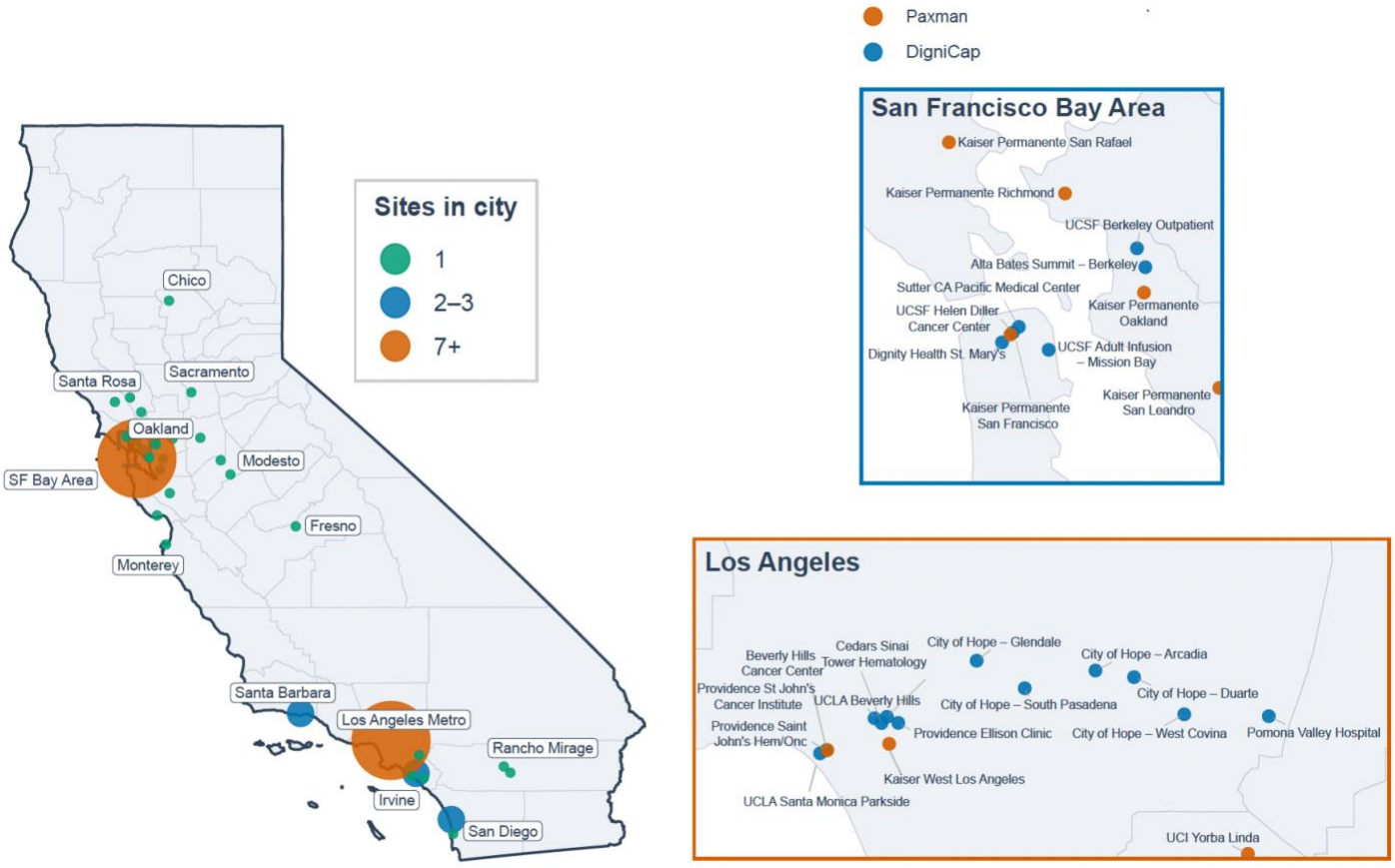
Access to scalp cooling is also shaped by geography. As shown in Figure 3, FDA-cleared scalp cooling facilities are concentrated in the San Francisco Bay Area, Los Angeles, and San Diego. Portions of the Central Valley, Northern California, and rural areas of the state have few or no facilities, which may limit access for patients in those regions regardless of insurance coverage.

[13] Several competing definitions of “health disparities” exist. CHBRP relies on the following definition: Health disparity is defined as the differences, whether unjust or not, in health status or outcomes within a population (Wyatt et al., 2016).

Race or Ethnicity

Racial and ethnic disparities in scalp cooling appear on two dimensions: access and disease burden. On access, national data suggest use of scalp cooling is lower among Black patients and patients with public insurance, groups that overlap with the income-related barriers described above. On disease burden, evidence suggests that the incidence of persistent chemotherapy-induced alopecia varies by race and ethnicity: Asian women have a 42% incidence at 12 months compared to 22% for non-Hispanic White women, 10% for Black women, and 5% for Latino women, with contributing factors including hair structure, genetic variants, and sociocultural context (Kang et al., 2026). Evidence on whether scalp cooling is equally effective across hair types is discussed in the *Medical Effectiveness* section; AB 1682 would reduce the coverage barrier for insured patients but would not address device design limitations that may affect patients with tightly coiled hair.

Figure 3. Locations of FDA-Cleared Scalp Cooling Devices in California



Source: California Health Benefits Review Program, 2026; Paxman/Dignitana facility data: Paxman, n.d.-b; Dignitana, n.d.
Note: Dot size reflects the number of sites within a city. Multiple sites at the same location are counted separately. DigniCap devices are now operated under Paxman following the June 2025 acquisition of Dignitana. List reflects locations reported by Paxman/Dignitana as of early 2026; may not capture all active sites. Data unavailable for the third manufacturer of scalp cooling devices (Cooler Heads).

Societal Impact of Chemotherapy-Induced Alopecia in California

The presence of chemotherapy-induced alopecia in California has direct and indirect economic and societal costs. Please note, the societal impact discussed here is relevant to a broader population than AB 1682 impacts, which would affect the

health insurance of a subset of Californians (see *Overview: AB 1682 and Scalp Cooling* in CHBRP's report *Analysis of Assembly Bill 1682 Scalp Cooling*). See the *Benefit Coverage and Cost* section in CHBRP's report *Analysis of Assembly Bill 1682 Scalp Cooling* for estimates of direct cost impacts for the specific population targeted by AB 1682.

Chemotherapy-induced alopecia carries both direct and indirect costs, though no study has estimated the total burden at the population level in California or nationally. Direct costs include out-of-pocket spending on wigs. Among patients who seek wigs, surveys report median costs around $450, with costs extending to $1,500 or more for higher-quality options (Li et al., 2019; Messenger et al., 2012). These costs are generally not covered by health insurance.

Indirect costs include lost productivity, reduced social participation, and additional use of mental health and supportive care services. Chemotherapy-induced alopecia is consistently linked to anxiety, depression, and social withdrawal — effects that may lead to additional health care utilization. The published literature has not quantified the size of this downstream impact. There is also evidence that fear of hair loss influences some patients' decisions about whether to begin or continue chemotherapy, though the strength of this effect is not well established (Dunill et al., 2019; Freites-Martinez et al., 2019).

No study has estimated the total cost of chemotherapy-induced alopecia in California or nationally, and CHBRP did not model one for this analysis. The individual-level costs described above affect thousands of Californians with chemotherapy-induced alopecia each year, but their combined impact at the population level is unknown.

Medical Effectiveness Review

As discussed in the *Policy Context* section, AB 1682 would require health care service plans, health insurance policies, and the Medi-Cal program to cover the use of FDA-cleared scalp cooling devices (Paxman, DigniCap, Amma) for patients with cancer. All FDA-cleared scalp devices are automated. Further information on the scalp cooling devices can be found in the *Background* section. The medical effectiveness review summarizes findings from evidence on the effectiveness of automated scalp cooling devices in reducing chemotherapy-induced alopecia and improving quality of life measures.

Research Approach and Methods

The search was limited to studies published from 2017 to the present. CHBRP relied on a systematic review published in 2024 for findings from studies on the effectiveness of FDA-cleared scalp cooling devices published prior to 2023.[14] CHBRP also relied on a systematic review published in 2025 for findings from studies on adverse effects of scalp cooling published prior to 2024 (Kearney et al., 2025).[15]

A total of eight studies were included in the medical effectiveness review for this report. The other articles were eliminated because they were of poor quality,[16] did not include a comparison group, or did not report findings from clinical research studies. Because location is not expected to have an impact on the effectiveness of automated scalp-cooling devices, studies conducted outside the United States were included. The Paxman and DigniCap systems are both used internationally. No studies on the Amma system were found.

A more thorough description of the methods used to conduct the medical effectiveness review and the process used to grade the evidence for each outcome measure is presented in CHBRP's Medical Effectiveness Analysis and Research Approach document. The conclusions below are based on the best available evidence from peer-reviewed and grey literature.[17] 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. For persons who are diagnosed with cancer, what is the effectiveness of FDA-cleared scalp cooling devices or systems before, during, or after the administration of chemotherapy on the incidence or severity of chemotherapy-induced alopecia (hair loss) as compared to no treatment?
    a. What are the effects of FDA-cleared scalp cooling devices on quality-of-life measures?
    b. What are the associated harms of FDA-cleared scalp cooling devices?

Methodological Considerations

Several systematic reviews and meta-analyses identified by the literature search included all scalp cooling devices, not just FDA-cleared ones, and did not include analyses differentiated by specific devices. Evidence on FDA-cleared devices was selected whenever possible; however, for a few specific topics (adverse effects, diverse hair types) this was not

[14] Studies of the effects of FDA-cleared scalp cooling devices were identified through searches of PubMed, Embase, and CINAHL. Websites maintained by the following organizations were also searched: Agency for Healthcare Research and Quality, International Network of Agencies for Health Technology Assessment, National Institute for Clinical Excellence, Scottish Intercollegiate Guideline Network, American Society of Clinical Oncology. The search was limited to abstracts of studies published in English.
[15] Studies of the adverse effects of FDA-cleared scalp cooling devices were identified through searches of PubMed, Embase, and CINAHL. Websites maintained by the following organizations were also searched: Agency for Healthcare Research and Quality, International Network of Agencies for Health Technology Assessment, National Institute for Clinical Excellence, Scottish Intercollegiate Guideline Network, American Society of Clinical Oncology. The search was limited to abstracts of studies published in English.
[16] For a detailed explanation of how CHBRP defines high-quality research, see the "Selecting Studies for Inclusion in the Literature Review" section of CHBRP's Medical Effectiveness Analysis and Research Approach document.
[17] Grey literature consists of material that is not published commercially or indexed systematically in bibliographic databases. See CHBRP's website for more information.

possible. Studies conducted with patients with cancers other than breast cancer were limited, which may potentially limit generalizability.

Outcomes Assessed

The main outcome was severity of chemotherapy-induced alopecia. Other outcomes were chemotherapy-related distress, quality of life, and adverse events. Table 2 catalogues how these outcomes were measured across included studies.

Table 2. Outcome Measures in Included Studies

Type	Measure	Evaluated By	Study
Alopecia	Dean scale or modified Dean scale (scale 0-4), Common Terminology Criteria for Adverse Events (CTCAE) (scale 0-2), Researcher measurements of hair thickness and density using a Folliscope 5.0, Severity Alopecia Tool (SALT)	Patient self-reporting, trained medical professionals, or both	Dilawari et al., 2021; Lambert et al., 2024; Kang et al., 2024; Obuseng et al., 2021
Chemotherapy-related distress	Chemotherapy Alopecia Distress Scale (CADS)	Patient self-reporting	Dilawari et al., 2021; Kang et al., 2024
Adverse events	Common Terminology Criteria for Adverse Events (CTCAE)	Trained medical professionals	Kearney et al., 2025
Quality of life	European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30 and Breast Cancer Module, Body Image Scale, Generalized Anxiety Disorder 7-item scale, Measure of Body Apperception Questionnaire, Patient Health Questionnaire-9, a study-specific Visual Analog Scale for well-being, a study-specific questionnaire on distress, and WHO Well-being Index	Patient self-reporting	Marks et al., 2019

Source: California Health Benefits Review Program, 2026.
Note: Only systematic reviews and studies with a comparison group (RCTs, cohort studies, case controls, etc.) are included.

Study Findings

This following section summarizes CHBRP's findings regarding the strength of evidence for the effectiveness of automated scalp cooling devices. Each section is accompanied by a corresponding figure. The title of the figure indicates the test, treatment, or service for which evidence is summarized. The statement in the box above the figure presents CHBRP's conclusion regarding the strength of evidence about the effect of a particular test, treatment, or service based on a specific relevant outcome and the number of studies on which CHBRP's conclusion is based. Definitions of CHBRP's grading scale terms are included in the box below.

The following terms are used to characterize the body of evidence regarding an outcome:

Very strong evidence (formerly called *clear and convincing evidence*) indicates that there are multiple studies of a treatment and the large majority of studies are of high quality and consistently find that the treatment is either effective or not effective. Conclusions are unlikely to be altered by additional evidence.

Strong evidence (formerly called *preponderance of evidence*) indicates that the majority of the studies reviewed are consistent in their findings that treatment is either effective or not effective. Conclusions could be altered with additional strong evidence.

Some evidence (formerly called *limited evidence*) indicates that a small number of studies have limited generalizability to the population of interest and/or the studies have a serious methodological concern in research design or implementation. Conclusions could be altered with additional evidence.

Conflicting evidence (formerly called *inconclusive evidence*) indicates that of the studies of equal quality, the number suggesting the treatment is effective is similar to the number of those suggesting the treatment is not effective.

Not enough research (formerly called *insufficient evidence*) indicates that (1) there are no studies of the treatment **or** (2) the available studies are not of high quality, meaning there is not enough evidence available to know whether or not a treatment is effective. *Not enough research* does not indicate that a treatment is not effective.

Effectiveness of Automated Scalp Cooling Devices

Numerous systematic reviews and meta-analyses have been published on the effectiveness of automated scalp cooling devices in reducing chemotherapy-induced alopecia. While there is consensus on the benefits of scalp cooling, evidence varies due to heterogeneity of studies around different types of cancer and chemotherapy.

Findings for chemotherapy-induced alopecia

A 2024 systematic review and meta-analysis examined the efficacy of scalp cooling in patients with cancer (Lambert et al., 2024). Seven comparative studies including 486 patients were included in a meta-analysis (355 patients using either the Paxman or the DigniCap systems, 151 patients with no treatment). All were focused on breast cancer — the majority stage I or II breast cancer — and most included patients receiving both anthracycline- or taxane-based chemotherapy. Follow-up periods ranged from as short as 6 weeks to as long as 9 months after chemotherapy completion. Analysis found that scalp cooling was associated with significantly higher likelihood of achieving less than 50% hair loss when compared with no treatment (49.3% vs. 0% with <50% hair loss; odds ratio (OR) = 40.30, 95% confidence interval (CI): 10.49 to 154.75, p = 0.00).

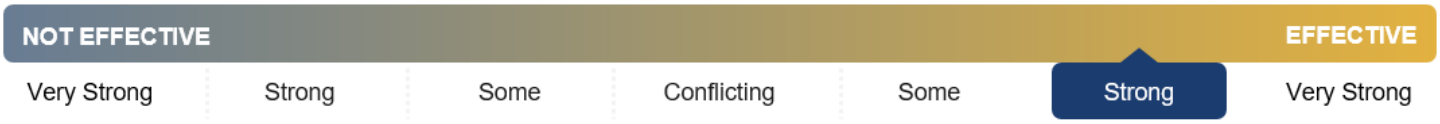
A 2024 randomized controlled trial (RCT) in South Korea examined the efficacy of the Paxman system in reducing alopecia 6 months after chemotherapy (170 patients with breast cancer stages I–III) (Kang et al., 2024). Patients received four or six cycles of anthracycline- and/or taxane-based chemotherapy. Scalp cooling was significantly associated with lower risk of persistent chemotherapy-induced alopecia (relative risk = 0.27, 95% CI: 0.11 to 0.43). In the treatment group, 13.5% had alopecia, while in the control group, 52.0% did. This outcome was not associated with age (over or under 50 years) or chemotherapy type (anthracycline regimen or not).

Findings comparing automated cooling to manual cooling: A 2024 systematic review and meta-analysis examined the efficacy of automated scalp cooling compared to manual scalp cooling (Minta et al., 2024). Thirty-one studies including 2,179 patients were included in the meta-analysis (five RCTs, five nonrandomized controlled trials, and 22 prospective cohort studies). Twenty-six studies included automated devices and five included manual devices. There was no significant difference in hair preservation between automated and manual scalp cooling when comparing patients receiving anthracycline (OR = 1.39, 95% CI: 0.47 to 4.11, p = 0.6) or non-anthracycline regimens (OR = 2.43, 95% CI: 0.71 to 8.37, p = 0.2).

Findings for diverse hair types: A 2021 observational study conducted in the United States with 15 Black patients and using the Paxman system was halted early due to lack of efficacy on alopecia — a majority stopped scalp cooling before chemotherapy completion due to over 50% hair loss (Dilawari et al., 2021). A 2021 RCT was conducted in South Africa including 37 patients with breast cancer and using the Paxman system (17 treatment, 20 control) (Obuseng et al., 2021). In contrast to Dilawari et al. (2021), there was no difference in the severity of alopecia between patients with straight (eight patients) versus curly hair (nine patients).

Summary of findings regarding automated scalp cooling devices on chemotherapy-induced alopecia: There is *strong evidence* that automated scalp cooling is effective compared to no treatment based on one systematic review (seven comparative studies) and two RCTs (207 patients). For cancer patients, automated scalp cooling devices are effective in reducing chemotherapy-induced alopecia.

Figure 4. Level of Evidence of Effectiveness of Automated Scalp Cooling Devices on Chemotherapy-Induced Alopecia

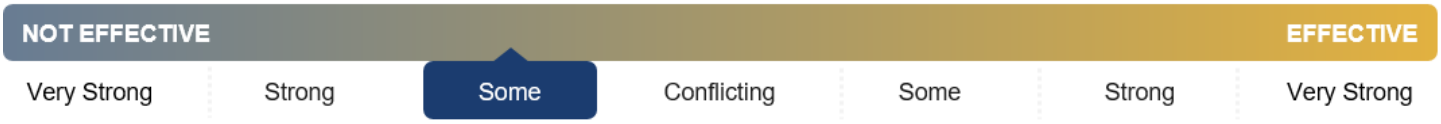


Findings for quality of life

As discussed earlier in the *Background* section, chemotherapy-induced alopecia can be highly distressing to patients and has been linked to reduced self-confidence, social withdrawal, anxiety, and depression. A 2019 systematic review examined the impact of scalp cooling on alopecia-related quality-of-life indicators (Marks et al., 2019). Quality-of-life measures included in the review assessed global health status; physical symptoms; cognitive, emotional, social, and role functioning; sexual functioning and enjoyment; body image; anxiety; depression; and self-worth. Thirteen studies including 1,282 patients were included in the review (four RCTs, eight cohort studies, and one cross-sectional study). Four studies concluded that scalp cooling was associated with significant improvements in quality-of-life measures; eight concluded that there were either nonsignificant or no improvements, and one had a mixed conclusion. None of the four RCTs, which included a total of 411 patients, found that scalp cooling was associated with significant improvements in quality-of-life measures.

Summary of findings regarding automated scalp cooling devices on quality of life: There is *some evidence* that automated scalp cooling does not improve quality of life measures (four RCTs, eight cohort studies, and one cross-sectional study). All four RCTs found no significant improvements, while the nine observational studies found either improvements, mixed conclusions about improvements, nonsignificant improvements, or no improvements.

Figure 5. Level of Evidence of Effectiveness of Automated Scalp Cooling Devices on Quality of Life



Findings on Adverse Effects of Scalp Cooling Devices

A 2025 systematic review examined adverse effects of both automated and manual scalp cooling devices for the reduction of chemotherapy-induced alopecia (Kearney et al., 2025). Sixty-seven studies met the inclusion criteria: 35 studies reported on adverse effects (2,971 patients), 59 studies reported on reasons why patients discontinued scalp cooling (4,704 patients), and 25 studies monitored the development of scalp metastases (1,983 patients). Over 10 studies reported headache (30% pooled prevalence), generalized chills (42% pooled prevalence), and heaviness of the cap or head as adverse effects (35% pooled prevalence). Analysis by device type found similar prevalence of adverse effects when comparing automated and manual devices, though there were overlapping CIs and high heterogeneity within both groups. The pooled discontinuation rate was 18%, and reasons included progressive alopecia (15% pooled prevalence), cold intolerance (4% pooled prevalence), headache (4% pooled prevalence), general discomfort (4% pooled prevalence), and reasons unrelated to scalp cooling.

Scalp metastasis occurs when cancer from another part of body metastasizes, or spreads, to the scalp. Because scalp cooling reduces hair loss in part by reducing the dose of chemotherapy drugs being delivered to scalp, there is concern that scalp cooling may increase the risk of scalp metastases. A 2017 systematic review examined risk of scalp metastases in patients using scalp cooling (Rugo et al., 2017b). The 24 studies included 1,959 patients who received scalp cooling and were evaluated over an estimated mean time frame of 43.1 months, and 1,238 patients who did not receive scalp cooling and evaluated over an estimated mean time frame of 87.4 months. The incidence rate of scalp metastasis in the scalp cooling group versus the no scalp cooling group was 0.61% (95% CI: 0.32 to 1.1%) versus 0.41% (95% CI: 0.13 to 0.94%); there was no statistically significant difference between them (p = 0.43).

Summary of findings regarding automated scalp cooling devices on scalp metastasis: There is *strong evidence* that there is no association between scalp cooling and scalp metastasis based on one systematic reviews (24 studies).

CHBRP found evidence that the Paxman and the DigniCap systems — two FDA-cleared automated scalp cooling devices — are effective in reducing chemotherapy-induced alopecia.

- Meta-analysis of seven comparative studies using the Paxman and DigniCap systems found that the systems significantly reduced alopecia when compared to no treatment, and an additional RCT using Paxman found that reduction of alopecia persisted 6 months after chemotherapy. However, some evidence suggests that scalp cooling devices may be less effective for patients with different hair types, such as Black patients with curly hair.
- CHBRP found some evidence that scalp cooling devices do not improve quality of life measures. All four RCTs found no significant improvements, while the nine observational studies found either improvements, mixed conclusions about improvements, nonsignificant improvements, or no improvements.
- Finally, while patients frequently report minor adverse effects such as headaches or generalized chills, the incidence rates of scalp metastasis in those using scalp cooling versus no scalp cooling are similar, indicating that scalp cooling does not raise the risk of scalp metastasis.

Cost Impact Analysis: Data Sources, Caveats, and Assumptions

Analytical Assumptions

In addition to the assumptions described in the *Analytical Approach and Assumptions* section of CHBRP's Analysis of California Assembly Bill 1682, CHBRP made the following assumptions:

Bill Language Interpretation

- Because AB 1682 specifies "group and individual" plans and policies, the health insurance of Medi-Cal beneficiaries enrolled in Department of Managed Health Care (DMHC)-regulated plans would not be subject to AB 1682's requirements.[18]
- It should be noted that the language of AB 1682 requires coverage of only FDA-cleared scalp cooling for chemotherapy-induced alopecia.

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 Administrative 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.

State Health Care Spending Target

In 2024, in an effort to slow health care spending growth and improve health care affordability for California families, California's Office of Health Care Affordability (OHCA) under the Department of Health Care Access and Information (HCAI) approved a statewide target for maximum annual growth in health care spending for certain health care entities. The targets apply to per capita spending to specific entities, including health plans and insurers, provider organizations with at least 25 physicians, and hospitals (HCAI, 2022). The state is implementing this target with a phased-in approach, with a spending target of 3.5% for 2026, lowered to 3.2% in 2027 and 2028, and will be at 3% for 2029 and beyond (HCAI, 2025). Since health insurance benefit mandates may increase health care spending such as increases to insurance premiums, administrative costs, and out-of-pocket costs, OHCA spending targets may be relevant considerations in benefit mandate policy decisions.

Postmandate Changes in the Number of Uninsured Persons

CHBRP assumes that if premiums increase by more than 1.7% in the small- or large-group market segments or 0.6% in the individual market, some enrollees will lapse their coverage. Because the change in average premiums do not exceed either of these thresholds (see Table 3, Table 7, and Table 8 of CHBRP's report *Analysis of Assembly Bill 1682 Scalp*

[18] Personal communication, Office of Legislative and Governmental Affairs, California Department of Health Care Services, November 2024.

Cooling), CHBRP would expect no measurable change in the number of uninsured persons due to the enactment of AB 1682.

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 1682.

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

At baseline, some enrollees obtain scalp cooling services through financial assistance from manufacturer programs, nonprofits, and other informal sources including community fundraising, religious organizations, or donations from friends and family. CHBRP is unable to quantify the proportion of enrollees currently receiving financial assistance or the dollar value of that assistance due to the lack of available data in the literature. It is possible that the proposed legislation will shift a portion of scalp cooling costs from these external sources to health insurance coverage due to increased benefit coverage and reduced cost sharing.

As a result, the estimated increase in insurer expenditures may overstate the net increase in total spending on scalp cooling across all payers and funding sources.

Cost Impact Analysis: Data Sources, Caveats, and Assumptions

With the assistance of CHBRP's contracted actuarial firm, Milliman, Inc., the cost analysis presented in this report was prepared by the faculty and researchers connected to CHBRP's Task Force with expertise in health economics.[19] 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 on CHBRP's website.[20]

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

Analysis-Specific Data Sources

Current coverage of scalp cooling treatment was determined by a survey of the largest (by enrollment) providers of health insurance in California. Responses to this survey represented 68% of commercial enrollees with health insurance that can be subject to state benefit mandates and 33% of Medi-Cal enrollees with DMHC-regulated health insurance. In addition, CalPERS was queried regarding related benefit coverage.

For this analysis, CHBRP relied on CPT codes to identify services related to AB 1682. CPT copyright 2026 American Medical Association. All rights reserved. Fee schedules, relative value units, conversion factors and/or related components are not assigned by the AMA, are not part of CPT, and the AMA is not recommending their use. The AMA does not directly or indirectly practice medicine or dispense medical services. The AMA assumes no liability for data contained or not contained herein. CPT is a registered trademark of the American Medical Association.

Health cost guidelines

The health cost guidelines (HCGs) are a health care pricing tool used by actuaries in many of the major health plans in the United States. The guidelines provide a flexible but consistent basis for estimating health care costs for a wide variety of commercial health insurance plans. It is likely that these organizations use the HCGs, among other tools, to determine the initial premium impact of any new mandate. Thus, in addition to producing accurate estimates of the costs of a

[19] CHBRP's authorizing statute requires that CHBRP use a certified actuary or "other person with relevant knowledge and expertise" to determine financial impact.
[20] See CHBRP's Cost Impact Analysis landing page; in particular, see *Cost Impact Analyses: Data Sources, Caveats, and Assumptions*.

mandate, we believe the HCG-based values are also good estimates of the premium impact as estimated by the HMOs and insurance companies.

The highlights of the commercial HCGs include:

- Specific major medical, managed care, and prescription drug rating sections and guidance with step-by-step rating instructions.
- Other helpful analysis resources such as inpatient length of stay distribution tables, Medicare Severity-Adjusted Diagnosis Related Group (MS-DRG) models, and supplementary sections addressing EHBs and mandated benefits, experience rating, and individual and small-group rating considerations.
- Presentation of loosely and well-managed nationwide utilization and cost information by Milliman benefit-aligned service categories used throughout the Rating Structures — inpatient hospital services for both loosely and well-managed are also supported by DRG level utilization and cost benchmarks.
- Annual updates address emerging regulatory considerations such as health care reform and mental health parity requirements.
- Annually updated benefit descriptions used in the HCG service categories.
- Annually updated medical trend assumptions and considerations.
- Presentation of two sets of nationwide area factors to facilitate development of area-specific claim costs, including separate utilization and charge level factors by type of benefit, state and Metropolitan Statistical Area for first-dollar coverage, and composite factors by deductible amount.
- Claim Probability Distributions (CPDs) by type of coverage that contain distributions of claim severity patterns for unique combinations of benefits and member types (adult, child, composite member).
- The Prescription Drug Rating Model (RXRM), an automated rating tool that provides a detailed analysis of prescription drug costs and benefits.

Consolidated health cost guidelines sources database

Milliman maintains benchmarking and analytic databases that include health care claims data for nearly 60 million commercial lives and over 3 million lives of Medicaid managed care data. This dataset is routinely used to evaluate program impacts on cost and other outcomes.

Detailed Cost Notes Regarding Analysis-Specific Caveats and Assumptions

The analytic approach and key assumptions are determined by the subject matter and language of the bill being analyzed. As a result, analytic approaches may differ between topically similar analyses, and therefore the approach and findings may not be directly comparable.

Methodology and Assumptions for Baseline Benefit Coverage

- The population subject to the mandated offering includes individuals covered by DMHC-regulated commercial Medi-Cal insurance plans, CDI-regulated policies, and CalPERS plans subject to the requirements of the Knox-Keene Health Care Service Plan Act.
- CHBRP surveyed the carriers to determine the percentage of the population with coverage for scalp cooling treatments.

Methodology and Assumptions for Baseline Utilization

- CHBRP estimated the prevalence of cancer by identifying the percentage of adults ages 18 and older in California who had a claim with a corresponding diagnosis code of cancer in calendar year 2024 from the CHSD. Adults were isolated because the FDA-cleared scalp cooling devices are intended for adult use. Cancer diagnoses were identified

using the list of diagnoses codes that CMS requires for Medicare coverage of FDA-cleared scalp cooling devices (CMS, 2023).

- CHBRP estimated the percentage of enrollees undergoing chemotherapy by identifying the adults with a cancer diagnosis who also had a chemotherapy claim as defined by the Milliman HCGs.
- Scalp cooling treatments were identified in the CHSD by CPT[21] codes 0662T (initial measurement and calibration of device) and 0663T (placement, monitoring, and removal of device). Due to the mixed coverage of the device, CHBRP was unable to use the CHSD to determine a utilization rate. New CPT codes for the scalp cooling treatments in question became effective 1/1/26. The most recent data available for our analysis was from calendar year 2024 so these CPT codes were not used.
- CHBRP assumed 2.0% of the adult population with cancer who are undergoing chemotherapy are utilizing the benefit at baseline. This 2.0% rate is comprised of users with and without coverage. CHBRP assumed the utilization of the scalp cooling device for users without coverage is 1.0%. Using the coverage rates provided by the carrier surveys, CHBRP calculated the utilization rate for enrollees with coverage, which is equal to 3.2% at baseline.
- CHBRP assumed the Medi-Cal population without coverage did not use scalp cooling treatments at baseline.

Methodology and Assumptions for Baseline Cost

- CHBRP calculated the average cost per service for the commercial population using the 2024 CHSD. Based on national data, users of scalp cooling devices used approximately one fitting and five treatments. We used these values to create a case rate per user. The national data was adjusted to reflect the per unit cost of California.
- The commercial rate was adjusted to Medi-Cal rate using Milliman's 2025 Percent of Medicare benchmarks for the state of California and adjusted to Medicaid using the KFF Medicaid to Medicare Fee Index.
- The average costs per medical service were trended from 2024 to 2027 using a 3.75% annual commercial trend and 2.75% Medi-Cal trend. These trends are based on trends from the 2025 HCGs and actuarial judgement.

Methodology and Assumptions for Baseline Cost Sharing

- For the commercial population with coverage, CHBRP assumed the cost sharing based on the paid-to-allowed ratio from the CHSD for each of the two services, adjusted for average plan design by line of business. Enrollee cost share is equal to one minus the line of business paid-to-allowed ratio multiplied by the case rate.
- For the Medi-Cal population with coverage, CHBRP assumed no cost sharing.
- Services provided to enrollees without coverage are assumed to be paid by the enrollee in full.

Methodology and Assumptions for Postmandate Utilization

- CHBRP assumed the utilization rate for enrollees with coverage postmandate is 20% greater than the utilization rate for enrollees with coverage at baseline. This 20% increase accounts for greater awareness of the scalp cooling treatment and providers' increased likelihood to recommend the treatment if it becomes a covered service.

Methodology and Assumptions for Postmandate Cost

- CHBRP assumed the average cost per service would not change as a result of AB 1682.

Methodology and Assumptions for Postmandate Cost Sharing

- CHBRP assumed the average enrollee cost sharing per service would not change as a result of AB 1682 for enrollees with coverage.

[21] CPT copyright 2026 American Medical Association. All rights reserved.

Determining Public Demand for the Proposed Mandate

CHBRP reviews public demand for benefits by comparing 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.

Among publicly funded self-insured health insurance policies, the preferred provider organization (PPO) plans offered by CalPERS have the largest number of enrollees. The CalPERS PPOs currently provide coverage for scalp cooling at higher levels than what is available through non-CalPERS individual and 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 plans and insurers 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 responses indicated that while there may have been minor differences should a self-insured policy choose to cover scalp cooling, there were no substantive differences.

Public Health Calculations

Public Health Impacts

The public health impact analysis includes estimated impacts in the short term (within 12 months of full implementation) and in the long term (beyond the first 12 months following full implementation). This section estimates the short-term impact of AB 1682 on health and quality-of-life outcomes for enrollees who would newly use scalp cooling, potential treatment harms, potential disparities, and financial burden. See *Long-Term Impacts* for discussion of long-term public health effects.

Estimated Public Health Outcomes

As presented in the *Medical Effectiveness* section of this Technical Brief, there is strong evidence that Paxman and DigniCap reduce chemotherapy-induced alopecia compared to no treatment (Kang et al., 2024; Lambert et al., 2024). Evidence on whether scalp cooling improves quality-of-life measures is weak and mostly null — RCTs have not found significant improvements (Marks et al., 2019). Chemotherapy-induced alopecia is nonetheless consistently associated with psychological distress, anxiety, and reduced wellbeing in the broader literature (Dunnill et al., 2018; Rugo et al., 2017a). CHBRP estimates that approximately 680 enrollees would newly use scalp cooling in the first year postmandate.

CHBRP projects no measurable public health impact at the population level; 680 additional users is too small a share of California's population to shift aggregate health outcomes such as premature mortality, disease burden, or mental health service utilization across the state. However, the individual-level benefit for newly covered enrollees is real and may be clinically meaningful. Based on a pooled discontinuation rate of 18% (Kearney et al., 2025) and the rate of meaningful hair preservation observed in comparative studies, approximately 49% of patients who complete the protocol achieve less than 50% hair loss, compared to 0% of untreated patients (Lambert et al., 2024). CHBRP estimates that approximately 333 of the 680 newly covered enrollees would experience substantially less hair loss than they otherwise would have. Whether this translates to measurable improvements in quality of life or reductions in mental health service use is uncertain; the published literature has not established this link.

Potential Harms from AB 1682

When data are available, CHBRP estimates the marginal change in relevant harms associated with interventions affected by the proposed mandate. In the case of AB 1682, potential harms include generalized chills (42% pooled prevalence), cap heaviness (35%), and headache (30%), with a pooled discontinuation rate of 18% (Kearney et al., 2025). Scalp cooling does not appear to worsen cancer outcomes; studies show no statistically significant difference in scalp metastasis rates between patients who used scalp cooling and those who did not, indicating that reducing drug delivery to the scalp during infusion does not meaningfully increase the risk of cancer spreading to that area (Kearney et al., 2025; Rugo et al., 2017b).

Impacts on Disparities

Disparities in access to scalp cooling exist by income, race or ethnicity, and geography; more information can be found in the *Background* section of this Technical Brief on AB 1682. Within the first 12 months postmandate, AB 1682 could reduce income-related disparities by removing the cost barrier for enrollees in state-regulated plans and Medi-Cal beneficiaries, though the magnitude is unknown. AB 1682 would not address geographic gaps in facility availability, the time burden of scalp cooling sessions, or potential device fit limitations for patients with tightly coiled hair. The impact on racial or ethnic disparities in utilization is unknown; evidence on whether scalp cooling is equally effective across hair types is limited and mixed (Dilawari et al., 2021; Obuseng et al., 2021).

Impacts on Disparities and the Social Drivers of Health

Income, employment flexibility, and caregiving responsibilities likely contribute to unequal access to scalp cooling. AB 1682 may reduce income-related disparities by removing the coverage barrier, but would not change barriers related to employment flexibility, caregiving responsibilities, or the time burden of scalp cooling sessions.

Impacts on Premature Death and Economic Loss

Chemotherapy-induced alopecia is a treatment side effect and is not associated with premature death. As described in the *Background* section of this Technical Brief, chemotherapy-induced alopecia is associated with indirect economic costs including lost productivity, reduced social participation, anxiety, and depression, all of which may result in additional health care utilization (Dunnill et al., 2018; Rugo et al., 2017a). To the extent that AB 1682 increases use of scalp cooling and reduces hair loss among newly covered enrollees, it may reduce some of these downstream costs. CHBRP was unable to quantify this impact and projects no measurable effect on premature death or associated economic loss at the population level.

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