

# California Health Benefits Review Program

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## Analysis of California Assembly Bill 2643 Dentistry: General Anesthesia

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A Report to the 2017–2018 California State Legislature

April 16, 2018

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# Key Findings:

## Analysis of California Assembly Bill 2643

### Dentistry: General Anesthesia

Summary to the 2017–2018 California State Legislature, April 16, 2018



#### AT A GLANCE

The version of California Assembly Bill (AB) 2643 analyzed by CHBRP would remove location specificity of where health insurance plans and policies would be required to cover dental general anesthesia (DGA) for specified populations and would add the phrase “including nonsurgical treatment options” to the existing required consent form language for DGA when provided to minors.

1. CHBRP estimates that, in 2019, of the 23.4 million Californians enrolled in state-regulated health insurance, 100% of them will have insurance subject to AB 2643.
2. **Benefit coverage.** Benefit coverage of DGA that takes place in any location would increase from 6% of enrollees premandate to 100% of enrollees postmandate. AB 2643 is not expected to exceed the definition of essential health benefits (EHBs).
3. **Utilization.** A total of 124,000 enrollees currently utilize DGA in any location. In the first year postmandate, utilization of DGA in a dental office will remain the same due to supply constraints, but that the utilization will shift from being covered through out-of-pocket expenditures or Denti-Cal, to being covered through Department of Managed Health Care (DMHC)-regulated plans or California Department of Insurance (CDI)-regulated policies.
4. **Expenditures.** AB 2643 would increase total net annual expenditures by \$42,819,000 (0.0275%) for enrollees with DMHC-regulated plans and CDI-regulated policies. This is due to an \$80,413,000 increase in total health insurance premiums paid by employers and enrollees for newly covered benefits, adjusted by a decrease of \$37,594,000 in enrollee expenses for covered and/or noncovered benefits.
5. **Medical effectiveness.**
  - a. Limited evidence that procedures involving DGA in office-based settings are not any less safe and effective than those provided in hospitals or surgery centers.

#### AT A GLANCE, Cont.

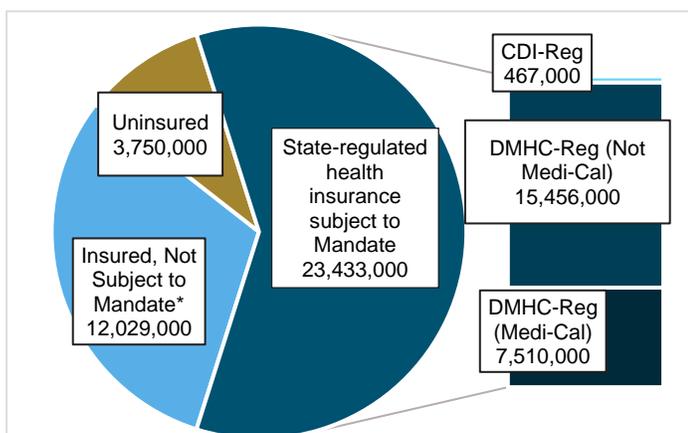
- b. A preponderance of evidence that lack of treatment for conditions such as dental caries can lead to secondary complications that could impact dental and overall health.
  - c. Limited evidence that informed consent forms are not thoroughly read or understood by parents/caregivers of pediatric patients or patients with special needs.
  - d. Insufficient evidence that the addition of new wording to the informed consent form would impact patient choice of treatment or service utilization.
6. **Public health.** There will be no short-term public health impacts from AB 2643. However, there will be a reduction in financial burden on enrollees who would have paid for noncovered DGA out-of-pocket premandate and would obtain DGA as a covered benefit postmandate.
  7. **Long-term impacts.** CHBRP estimates that utilization of DGA will remain similar to the one-year postmandate estimates of 2019, given the provider constraints on supply of DGA. However, the postmandate coverage under AB 2643 may encourage more dental providers to become licensed in DGA and to perform the service in a dental office, which would loosen the supply constraints. Despite a stable reduction in financial burden, there will be no long-term public health impacts.

#### BILL SUMMARY

Health insurance plans and policies are currently required to cover dental general anesthesia (DGA) performed in a hospital or surgical center for enrollees whose health is compromised and for whom general anesthesia is medically necessary (regardless of age), enrollees who are developmentally disabled (regardless of age), or enrollees under age seven. AB 2643 would remove location specificity of where health insurance plans and policies would be required to cover DGA for these populations. AB 2643 would also modify existing code by

adding the phrase “including nonsurgical treatment options” to the existing required consent form language for DGA when provided to minors encouraging patients to explore all other treatment options. Figure 1 notes how many Californians have health insurance that would be subject to AB 2643.

**Figure 1.** Health Insurance in CA and AB 2643



Source: California Health Benefit Review Program, 2018.

Notes: \* Such as enrollees in Medicare, Medi-Cal not regulated by DMHC, and self-insured products.

## CONTEXT

While all health insurance plans and policies regulated by DMHC or CDI would be impacted by AB 2643, only enrollees who meet the specified criteria in current law would be eligible for newly covered DGA services. These three categories of enrollees are not mutually exclusive (i.e. a child under seven years of age could also have a developmental disability), but enrollees only need to meet one criteria to be eligible for DGA as a covered medical benefit. CHBRP estimates approximately 10 million enrollees may meet specified criteria included in AB 2643, however, only a very small portion of this population requires general anesthesia for dental procedures.<sup>1</sup>

CHBRP assumes the number of dentists providing general anesthesia remains constant in the first year post implementation of AB 2643 because the amount of time required to meet the education components is at least one year. CHBRP also assumes that providers of DGA services are at capacity and are not able to increase the number of DGA services performed. Therefore, utilization

<sup>1</sup> Refer to CHBRP’s full report for full citations and references.

of DGA is unable to increase within the first year post implementation of AB 2643.

An estimated 50% of around 500 board-certified pediatric dentists provide DGA and/or sedation in their offices in California. Dentists who deem DGA necessary for a patient may refer that individual for care within a surgical center or hospital if appropriate for the patient’s condition or if they do not offer general anesthesia within their office.

Children under age seven years or adults with special needs may require DGA due to (1) advanced oral conditions requiring extensive surgical intervention that cannot be done with lighter forms of sedation or local anesthetic, (2) when the patient is allergic to local anesthetics, and (3) when the dentist determines that the patient is unable to undergo any dental procedure that requires them to remain still so that the dentist can perform the procedure without injuring the patient, even with lighter forms of sedation.

## IMPACTS

### Benefit Coverage, Utilization, and Cost

CHBRP assumes that the annual utilization of DGA cannot increase given their current capacity, workload and time constraints. CHBRP assumes that there will be no shift from hospital or surgical centers to dental offices in total utilization of DGA, as the current relative prevalence of procedures is already weighted strongly towards the dental office, even in the absence of coverage.

### Benefit Coverage

Currently, 6% of enrollees with health insurance that would be subject to AB 2643 have medical coverage for DGA that takes place in any location. Postmandate, CHBRP estimates that coverage will increase to 100% of enrollees in DMHC-regulated plans or CDI-regulated policies. This would increase the number of enrollees with coverage compliant with AB 2643 from 1.5 million at baseline to the full 23.4 million enrolled in DMHC-regulated plans or CDI-regulated policies, postmandate. However, the number of enrollees eligible for health insurance coverage of DGA is limited to the populations

stated above, and is therefore substantially smaller than 23.4 million enrollees.

## Utilization

CHBRP estimates a total of 124,000 enrollees currently utilize DGA in any location. This population is comprised of 60,000 enrollees in Medi-Cal Managed Care plans and 64,000 enrollees in commercial plans and policies. During the first year postmandate, CHBRP estimates no increase in total utilization for all populations, based on provider supply constraints and that DGA is used in cases of medical necessity.

Currently, 0.37 per 1,000 enrollees in commercial plans or policies, and 1.45 per 1,000 enrollees in DMHC-regulated Medi-Cal Managed Care plans use DGA in a hospital or surgical center setting. CHBRP estimates that this prevalence rate will not change postmandate as AB 2643 does not increase coverage for general anesthesia for dental procedures in these locations.

Currently, there are 3.63 per 1,000 enrollees in commercial plans or policies, and 6.55 per 1,000 enrollees in Medi-Cal Managed Care plans that use DGA in dental offices, with limited health insurance coverage for these locations. While enrollees in commercial plans or policies pay for DGA in a dental office out of pocket, enrollees in Medi-Cal Managed Care plans have coverage for DGA through Denti-Cal. CHBRP estimates that in the first year postmandate, utilization of DGA in a dental office will remain the same due to supply constraints, but that the utilization will shift from being covered through out-of-pocket expenditures or Denti-Cal, to being covered through DMHC-regulated plans or CDI-regulated policies. Therefore, utilization covered through DMHC-regulated plans or CDI-regulated policies will increase postmandate by 3.63 per 1,000 enrollees in commercial plans or policies, and by 6.55 per 1,000 enrollees in Medi-Cal Managed Care Plans.

## Expenditures

AB 2643 would increase total net annual expenditures by \$42,819,000, or 0.0275%, for enrollees with DMHC-regulated plans and CDI-regulated policies. This is due to an \$80,413,000 increase in total health insurance premiums paid by employers and enrollees for newly covered benefits, adjusted by a decrease of \$37,594,000 in enrollee expenses for covered and/or noncovered benefits.

Premium increases in privately funded DMHC-regulated plans range from \$0.1835 per member per month (PMPM) for individual plans to \$0.2159 PMPM for large-group plans. Among CDI-regulated policies, premium increases range from \$0.0122 PMPM for large-group policies to \$0.1873 PMPM for individual policies. After offsetting decreases in enrollee expenses for noncovered benefits, premium increases in privately funded DMHC-regulated plans or CDI-regulated policies range from 0.0002% for CDI-regulated large-group policies to 0.0065% for CDI-regulated individual policies.

## Medi-Cal

Expenditures paid for by Medi-Cal Managed Care plans are expected to increase by \$36,363,000, or 0.12%, in 2019. Although Medi-Cal enrollees do not pay premiums, per member per month “premiums” would increase by \$0.4035. As discussed above, since utilization is not expected to increase in the first year postmandate, costs for DGA are shifting from Denti-Cal to Medi-Cal Managed Care plans.

## CalPERS

Expenditures for CalPERS are expected to increase by \$2,121,000 or 0.04% in 2019. Premiums are projected to increase by \$0.2317 PMPM.

## 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 2643.

## Medical Effectiveness

### DGA

CHBRP found limited evidence that procedures involving DGA in office-based settings are not any less safe and effective than those provided in hospitals or surgery centers.

General anesthesia (as opposed to lesser levels of sedation) is more commonly used in youth and children for routine procedures, such as the treatment of dental caries, than in adults. This is also true for persons of all ages with special needs, such as mental or physical

disabilities, or those requiring DGA due to medical necessity. For these populations, the outcomes related to receiving dental surgery without DGA (safety issues, treatment efficacy) could potentially be affected.

Treatment under other forms of anesthesia that do not render the patient unresponsive to physical stimuli may not adequately control patient movement, or may require patient cooperation and adherence to instructions that is beyond the ability of young children or adults with special needs. CHBRP found inconclusive evidence that receiving dental surgery under conscious sedation versus DGA could affect outcomes.

Although there are numerous alternative treatments available for some routine dental procedures (such as preventative measures or routine cleanings) that may require no or minimal sedation for the general population, the literature review revealed no proven alternative options for the comprehensive treatment of most problems that require DGA (such as tooth infection or decay to the degree requiring extraction), especially for populations such as very young children or children and adults with special needs. CHBRP found insufficient evidence that there are effective alternate treatments for young children or special needs populations for which DGA or any type of sedation is not needed.

It is possible that in cases where coverage for DGA is not available in the dental office for required dental procedures, patients (or parents or caregivers of patients) may forgo care. CHBRP found a preponderance of evidence that lack of treatment for conditions such as dental caries can lead to secondary complications that could impact dental and overall health.

## Informed Consent

Prior to administering DGA or performing other dental procedures on a child, parents or caregivers must be administered an informed consent document, meaning that the provider must explain the procedure, why it is recommended, and the benefits, and risks to parents so that they can decide whether or not to allow the child to be treated. There is limited evidence that informed consent forms are not thoroughly read or understood by parents/caregivers of pediatric patients or patients with special needs.

CHBRP found no studies examining the impact of new language to the informed consent form with regard to patient or caregiver/parent decision making, and therefore

concludes there is insufficient evidence to that the addition of new wording to the informed consent form would impact patient choice of treatment or service utilization.

## Public Health

In the first year postmandate, because no change or shift in utilization is estimated, CHBRP estimates that coverage of DGA in office-based settings for pediatric and special needs populations will have no public health impact. However, there will be a reduction in financial burden on enrollees who would have paid for noncovered DGA out of pocket premandate and would obtain DGA as a covered benefit postmandate.

In the first year postmandate, there will be no public health impact of AB 2643 regarding adding text to the parental informed consent to explore nonsurgical treatment options on decisions about children receiving DGA due to insufficient evidence that changing the language would impact parents' decisions and consequently no estimated change in utilization or coverage.

## Long-Term Impacts

Over the long term, CHBRP estimates that utilization of DGA will remain similar to the one-year postmandate estimates of 2019, given the provider constraints on supply of DGA. However, the postmandate coverage under AB 2643 may encourage more dental providers to become licensed in DGA and to perform the service in a dental office, which would loosen the supply constraints. While overall utilization of DGA would still be constrained by medical necessity, the current waitlists could be shortened, and more instances of DGA could occur within a one-year timeframe.

Despite a stable reduction in financial burden, there will be no long-term public health impacts. However, it stands to reason that given the increase in coverage, especially for privately insured enrollees, in the longer term as out-of-pocket costs are reduced, demand for DGA may increase, and more dental professionals may become DGA-certified and offer DGA at their office-based practices as they will now be able to be reimbursed for the service by insurance, increasing the supply of DGA professionals; the lack thereof is the limiting factor

preventing any forecasted increase or shift in DGA utilization over time.

## **Essential Health Benefits and the Affordable Care Act**

Because AB 2643 amends the locations for which this service is covered, it would not require coverage for a new state benefit mandate and appears not to exceed the definition of essential health benefits in California.

A Report to the California State Legislature

Analysis of California Assembly Bill 2643  
Dentistry: General Anesthesia

April 16, 2018

**California Health Benefits Review Program**  
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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](http://www.chbrp.org).

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**Table 1.** AB 2643 2019 Impacts on Benefit Coverage, Utilization, and Cost

|   | Baseline         | Postmandate      | Increase/<br>Decrease | Percentage<br>Change |
|---|------------------|------------------|-----------------------|----------------------|
| <b>Benefit coverage</b>   |                  |                  |                       |                      |
| Total enrollees with health insurance subject to state-level benefit mandates (a) | 23,433,000       | 23,433,000       | 0                     | 0%                   |
| Total enrollees with health insurance subject to AB 2643                          | 23,433,000       | 23,433,000       | 0                     | 0%                   |
| Percentage of enrollees with health insurance subject to AB 2643                  | 100%             | 100%             | 0%                    | 0%                   |
| Number of enrollees with health insurance fully compliant with AB 2643            | 1,467,000        | 23,433,000       | 21,966,000            | 1497%                |
| Percentage of enrollees with health insurance fully compliant AB 2643             | 6%               | 100%             | 94%                   | 1497%                |
| <b>Utilization and unit cost</b>  |                  |                  |                       |                      |
| Number of dental general anesthesia (DGA) users in any location under AB 2643 (b) |                  |                  |                       |                      |
| Commercial and CalPERS  | 64,000           | 64,000           | 0                     | 0%                   |
| Medi-Cal Managed Care   | 60,000           | 60,000           | 0                     | 0%                   |
| Total DGA users in any location under AB 2643                                     | 124,000          | 124,000          | 0                     | 0%                   |
| Total DGA users per 1,000 enrollees (commercial and CalPERS)                      |                  |                  |                       |                      |
| DGA users with services covered by health insurance                               | 0.3732           | 4.0000           | 3.627                 | 972%                 |
| DGA users with services covered out of pocket                                     | 3.6268           | 0                | -3.627                | -100%                |
| Total DGA users per 1,000 enrollees (Medi-Cal Managed Care)                       |                  |                  |                       |                      |
| DGA users with services covered by Medi-Cal Managed Care Plans                    | 1.4545           | 8.0000           | 6.545                 | 450%                 |
| DGA users with services covered by Denti-Cal                                      | 6.5455           | 0                | -6.545                | -100%                |
| Average cost/user   |                  |                  |                       |                      |
| DGA in a hospital or surgical center  | \$1,339          | \$1,339          | \$0                   | 0.00%                |
| DGA in an office setting or other locations                                       | \$651            | \$651            | \$0                   | 0.00%                |
| Average DGA cost/user   | \$652            | \$652            | \$0                   | 0.00%                |
| <b>Expenditures</b>   |                  |                  |                       |                      |
| <u>Premium expenditures by payer</u>  |                  |                  |                       |                      |
| Private employers for group insurance   | \$69,302,946,000 | \$69,327,383,000 | \$24,437,000          | 0.0353%              |
| CalPERS HMO employer expenditures (c, d)  | \$5,383,103,000  | \$5,385,224,000  | \$2,121,000           | 0.0394%              |
| Medi-Cal Managed Care Plan expenditures (e)                                       | \$29,259,588,000 | \$29,295,951,000 | \$36,363,000          | 0.1243%              |

|   |                          |                          |                     |                |
|---|--------------------------|--------------------------|---------------------|----------------|
| Enrollees for individually purchased insurance  | \$15,358,027,000         | \$15,362,879,000         | \$4,852,000         | 0.0316%        |
| Enrollees with group insurance, CalPERS HMOs, Covered California, and Medi-Cal Managed Care (d) | \$21,267,154,000         | \$21,274,722,000         | \$7,568,000         | 0.0356%        |
| <b>Enrollee expenses</b>  |                          |                          |                     |                |
| Enrollee out-of-pocket expenses for covered benefits (deductibles, copayments, etc.)            | \$14,896,952,000         | \$14,902,024,000         | \$5,072,000         | 0.0340%        |
| Enrollee expenses for noncovered benefits (f)   | \$37,594,000             | \$0                      | -\$37,594,000       | -100.0000%     |
| <b>Total expenditures</b>   | <b>\$155,505,364,000</b> | <b>\$155,548,183,000</b> | <b>\$42,819,000</b> | <b>0.0275%</b> |

Source: California Health Benefits Review Program, 2018.

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

(b) The populations included as users of dental general anesthesia (DGA) are those for whom current law requires coverage of DGA. AB 2643 does not alter these population requirements, and therefore they are the only enrollee populations of users included in the bill analysis. CHBRP recognizes that other populations may also use DGA, including people who are uninsured or those that choose to pay out of pocket for DGA, but as these are not required for coverage under AB 2643, they are not included in the analysis.

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

(d) 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.

(e) Responsibility for dental general anesthesia in an office setting or other locations is assumed to transfer from Denti-Cal to Medi-Cal plans postmandate. Since both Denti-Cal and Medi-Cal plans are sponsored by California Medicaid program, there is no expected net cost change for Medi-Cal population. Table 1 only shows expenditures for Medi-Cal Managed Care plans, and Denti-Cal expenditures are excluded.

(f) Includes only those expenses that are paid directly by enrollees to providers for services related to the mandated benefit that are not currently covered by insurance. In addition, this only includes those expenses that will be newly covered, 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; DGA = dental general anesthesia; DMHC = Department of Managed Health.

## POLICY CONTEXT

The California Assembly Committee on Health has requested that the California Health Benefits Review Program (CHBRP)<sup>2</sup> conduct an evidence-based assessment of the medical, financial, and public health impacts of Assembly Bill (AB) 2643 Dentistry: General Anesthesia.

### Bill-Specific Analysis of AB 2643 Dentistry: General Anesthesia

#### Bill Language

Health insurance plans and policies are currently required to cover dental general anesthesia (DGA) performed in a hospital or surgical center for enrollees whose health is compromised and for whom general anesthesia is medically necessary (regardless of age), enrollees who are developmentally disabled (regardless of age), or enrollees under age seven. AB 2643 would remove location specificity of where health insurance plans and policies would be required to cover DGA for these populations. AB 2643 would also modify existing code by adding the phrase “including nonsurgical treatment options” to the existing required consent form language for DGA when provided to minors encouraging patients to explore all other treatment options.

Specifically, AB 2643 would make the following amendments to existing code:

#### Health and Safety Code (H&SC) Section 1367.71 and Insurance Code (IC) 10119.9

[Health insurance plans and policies] ... shall be deemed to cover general anesthesia and associated facility charges for dental procedures ~~rendered in a hospital or surgery center setting,~~ when the clinical status or underlying medical condition of the patient requires dental procedures that ordinarily would not require general ~~anesthesia to be rendered in a hospital or surgery center setting.~~ *anesthesia*. The health care service plan may require prior authorization of general anesthesia and associated charges required for dental care procedures in the same manner that prior authorization is required for other covered diseases or conditions.

#### Business and Professions Code (BPC) Section 1682

The written informed ~~consent,~~ *consent for general anesthesia*, in the case of a minor, shall include but be limited to, the following information: “The administration and monitoring of general anesthesia may vary depending on the type of procedure, the type of practitioner, the age and health of the patient, and the setting in which anesthesia is provided. Risks may vary with each specific situation. You are encouraged to explore all the options available for your child’s anesthesia for his or her dental *treatment, including nonsurgical treatment options*, and consult with your dentist or pediatrician as needed.”

The full text of AB 2643 can be found in Appendix A.

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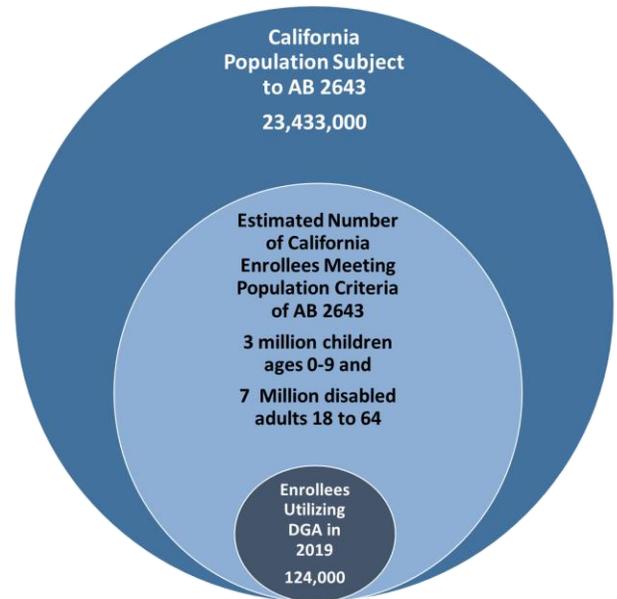
<sup>2</sup> CHBRP’s authorizing statute is available at <http://chbrp.org/faqs.php>.

## Relevant Populations

If enacted, AB 2643 would affect the health insurance of approximately 23.4 million enrollees (60% of all Californians). This represents 100% of the 23.4 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, including Medi-Cal and CalPERS, and exempting specialized health plans and policies.

While all health insurance plans and policies regulated by DMHC or CDI would be impacted by AB 2643, only enrollees who meet the specified criteria in current law would be eligible for newly covered DGA services. These three categories of enrollees are not mutually exclusive (i.e. a child under seven years of age could also have a developmental disability), but enrollees only need to meet one criteria to be eligible for DGA as a covered medical benefit. CHBRP estimates approximately 10 million enrollees may meet specified criteria included in AB 2643.<sup>3</sup> However, only a very small portion of this population requires general anesthesia for dental procedures. More information about utilization estimates is included in the *Benefit Coverage, Utilization, and Cost Impacts* section. The *Background* section also includes more information on the small subset of the insured population who may be affected by AB 2643.

**Figure 1.** California Enrollee Populations Impacted by AB 2643, 2019



Source: California Health Benefits Review Program, 2019.

Notes: The estimated number of California enrollees who meet the population provisions of AB 2643 is provided using the best available information. CHBRP is unaware of a breakdown of an estimate of how many enrollees meet the definition of “developmentally disabled” or “medically necessary” as defined by AB 2643. Utilization estimates are described in more detail in the *Benefit Coverage, Utilization, and Cost Impacts* section.

## Interaction with Existing Requirements

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

<sup>3</sup> Based on 2016 California Health Interview Survey estimates; 12.7% of the total California population are children age 0-9 years, and 29.7% of all California adults age 18-64 have a physical, mental or emotional disability. Data specific to the age group of children under seven years old were not available. Data accessed at <http://ask.chis.ucla.edu/>.

## California Policy Landscape

### *California law and regulations*

BPC Section 1646 defines “general anesthesia” as a controlled state of depressed consciousness or unconsciousness, accompanied by partial or complete loss of protective reflexes, produced by a pharmacologic or nonpharmacologic method, or a combination thereof.

Dentists are required to obtain a permit from the Dental Board of California, which includes a facility inspection and education requirements, before placing dental patients under general anesthesia.<sup>4</sup> A physician or surgeon may administer DGA within a dental office regardless of whether the dentist holds a valid permit, as long as the physician or surgeon holds a permit from the Dental Board of California. California does not require a specified number of personnel present during the administration of general anesthesia (DBCA, 2016).

California law requires dentists seeking to obtain a permit to perform general anesthesia to meet these education requirements: completion of a residency program in general anesthesia of not less than one calendar year that is approved by the board; or a graduate program in oral and maxillofacial surgery which has been approved by the Commission on Dental Accreditation.<sup>5</sup>

### Interaction between Health Insurance and Dental Insurance Coverage in California

Dental insurance is designed to cover preventive dental care, such as routine cleanings, and treating minor or cosmetic conditions, whereas health insurance may cover dental issues that pose a risk to the overall health of the patient, such as jaw deformities, tumors of the jaws and oral cavity, and traumatic injuries and infections (Guay, 2006; Meyerhoefer et al., 2014).<sup>6</sup> Californians are able to obtain dental insurance through their employer, purchase directly from a dental insurer, or purchase through Covered California. As discussed below, all plans sold through Covered California include coverage for pediatric dentistry.

Dental plans are not required to cover general anesthesia services, and therefore dental coverage of general anesthesia varies by dental policy. Most dental insurance plans cover general anesthesia for specific procedures performed in a dental office, such as oral surgery.<sup>7</sup> One health insurer CHBRP surveyed indicated that DGA was covered under the medical benefit when enrollees in the health plan purchased additional dental coverage through the same company. Dental plans may also cover DGA services upon request from the patient or dentist if medically necessary.

For enrollees who have both health insurance and dental insurance, the two insurance plans may currently work in conjunction as follows: a child under age seven who requires general anesthesia for a dental procedure may be referred to a hospital or surgical center for treatment. The health insurance will cover the general anesthesia and associated facility charges, while the dental plan will cover the dental work performed by a dental professional. When general anesthesia services are performed within a dental office and covered by health insurance, the dental professional or patient will be responsible for billing the patient’s health insurance. Some dentists may choose to require patients to pay out of pocket for general anesthesia services, in which case the patient (or caregiver) would be responsible for filing a reimbursement claim with the health insurance company. If an enrollee has health insurance and no

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<sup>4</sup> BPC Article 2.7, Sections 1646.1-1646.9.

<sup>5</sup> CCR 1043.

<sup>6</sup> Personal communication, Content Expert: Dr. Leon Assael, UC San Francisco, April 2, 2018.

<sup>7</sup> Adara Citron personal communication with Delta Dental of California on March 8, 2018.

dental insurance, the health plan will cover dental treatment for serious, non-cosmetic conditions. If an enrollee does not have health or dental coverage for general anesthesia when performed in a dental office, they may be required to pay out of pocket for the full cost of the service.

### *Interaction between Medi-Cal and Denti-Cal<sup>8</sup>*

Enrollees may receive fee-for-service Denti-Cal or are enrolled in a managed care dental plan. According to a Medi-Cal All Plan Letter<sup>9</sup> issued in 2015, Medi-Cal Managed Care plans are required to cover “general anesthesia services provided by a physician in conjunction with dental services for managed care beneficiaries in hospitals, ambulatory medical surgical centers, or dental offices.” Medi-Cal Managed Care Health plans must cover medically necessary services administered in connection with dental services that are not provided by dentists or dental anesthesiologists. Providers are required to obtain prior authorization before performing DGA. Dental services provided by dental personnel are “carved-out” of Medi-Cal Managed Care plans and are reimbursed by Denti-Cal.

### *Similar requirements in other states*

CHBRP is aware of 30 other states that have laws mandating health insurance coverage of general anesthesia for dental procedures (BCBSA, 2016). As of 2012, six states (CO, MN, MS, NV, NJ, and SD) had laws stating DGA was covered in locations other than a hospital, such as a dental office or rural clinic (Silverman J, 2012). Two additional states mandate health insurance coverage of general anesthesia for dental procedures (Kansas and Texas), but do not specify location where services are performed.

## **Federal Policy Landscape**

### *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 2643 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).<sup>10</sup>

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*

State health insurance marketplaces, such as Covered California, are responsible for certifying and selling qualified health plans (QHPs) in the small-group and individual markets. QHPs are required to

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<sup>8</sup> Medi-Cal Managed Care plans must cover and ensure that dental screenings for all enrollees are included as part of the initial assessment, and for enrollees under age 21, a dental screening must be performed as part of every periodic assessment (DHCS, 2018). Plans must ensure enrollees are referred to appropriate Medi-Cal dental providers when appropriate. Medi-Cal enrollees under age 21 receive dental benefits through Denti-Cal. Adult Medi-Cal enrollees may be eligible for Denti-Cal, although covered dental services vary by type of Medi-Cal (full scope Medi-Cal vs. limited scope Medi-Cal) and enrollee characteristics (e.g. pregnancy, resident of a facility) (DHCS, 2017).

<sup>9</sup> Department of Health Care Services. All Plan Letter 15-012. Available at:

[www.dhcs.ca.gov/formsandpubs/Documents/MMCDAPLsandPolicyLetters/APL2015/APL15-012.pdf](http://www.dhcs.ca.gov/formsandpubs/Documents/MMCDAPLsandPolicyLetters/APL2015/APL15-012.pdf).

<sup>10</sup> The ACA requires nongrandfathered small-group and individual market health insurance — including but not limited to QHPs sold in Covered California — to cover 10 specified categories of EHBs. Resources on EHBs and other ACA impacts are available on the CHBRP website: [www.chbrp.org/other\\_publications/index.php](http://www.chbrp.org/other_publications/index.php).

meet a minimum standard of benefits as defined by the ACA as essential health benefits (EHBs). In California, EHBs are related to the benefit coverage available in the Kaiser Foundation Health Plan Small Group Health Maintenance Organization (HMO) 30 plan, the state's benchmark plan for federal EHBs.<sup>11,12</sup>

Pediatric services, including dental and vision, is one of the ten EHB categories. Dental insurance for children is included in the price of health plans purchased through the exchange.<sup>13</sup> While some health insurance companies offer companion dental plans, other health insurers, such as Kaiser Permanente, contract with external dental insurers to provide the required dental coverage. Benefits covered by the dental benefit will be paid for by the dental insurer or dental arm of a health insurer.

States may require QHPs to offer benefits that exceed EHBs.<sup>14</sup> However, a state that chooses to do so must make payments to defray the cost of those additionally mandated benefits, either by paying the purchaser directly or by paying the QHP.<sup>15,16</sup> State rules related to provider types, cost-sharing, or reimbursement methods would *not meet* the definition of state benefit mandates that could exceed EHBs.<sup>17</sup>

AB 2643 would require health insurance plans and policies to cover general anesthesia for dental procedures for certain populations, regardless of location. Because AB 2643 amends the locations for which this service is covered, it would not require coverage for a new state benefit mandate and appears not to exceed the definition of EHBs in California.

## Analytic Approach and Key Assumptions

CHBRP assumes dentists providing general anesthesia services in an office or clinic setting have met the necessary requirements and obtained a permit issued by the Dental Board of California.

CHBRP assumes the number of dentists providing general anesthesia remains constant in the first year post implementation of AB 2643 because the amount of time required to meet the education components is at least one year. CHBRP also assumes that providers of DGA services are at capacity and are not able to increase the number of DGA services performed. Therefore, utilization of DGA is unable to increase within the first year post implementation of AB 2643.

CHBRP assumes health plans and policies are able to use medical management techniques, such as utilization review or prior authorization, because current statute states plans and policies may require

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<sup>11</sup> The U.S. Department of Health and Human Services (HHS) has allowed each state to define its own EHBs for 2014 and 2015 by selecting one of a set of specified benchmark plan options. CCIIO, Essential Health Benefits Bulletin. Available at: [http://cciio.cms.gov/resources/files/Files2/12162011/essential\\_health\\_benefits\\_bulletin.pdf](http://cciio.cms.gov/resources/files/Files2/12162011/essential_health_benefits_bulletin.pdf).

<sup>12</sup> H&SC Section 1367.005; IC Section 10112.27.

<sup>13</sup> [www.coveredca.com/individuals-and-families/getting-covered/coverage-basics/essential-health-benefits/](http://www.coveredca.com/individuals-and-families/getting-covered/coverage-basics/essential-health-benefits/).

<sup>14</sup> ACA Section 1311(d)(3).

<sup>15</sup> State benefit mandates enacted on or before December 31, 2011, may be included in a state's EHBs, according to the U.S. Department of Health and Human Services (HHS). Patient Protection and Affordable Care Act: Standards Related to Essential Health Benefits, Actuarial Value, and Accreditation. Final Rule. Federal Register, Vol. 78, No. 37. February 25, 2013. Available at: [www.gpo.gov/vfdsys/pkg/FR-2013-02-25/pdf/2013-04084.pdf](http://www.gpo.gov/vfdsys/pkg/FR-2013-02-25/pdf/2013-04084.pdf).

<sup>16</sup> However, as laid out in the Final Rule on EHBs HHS released in February 2013, state benefit mandates enacted on or before December 31, 2011, would be included in the 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.

<sup>17</sup> Essential Health Benefits. Final Rule. A state's health insurance marketplace would be responsible for determining when a state benefit mandate exceeds EHBs, and QHP issuers would be responsible for calculating the cost that must be defrayed.

prior authorization for general anesthesia and associated charges required for dental care procedures in a similar manner as required for other covered services.

CHBRP assumes enrollees who have received general anesthesia for dental procedures within MarketScan claims data meet the criteria included in AB 2643 and existing law: are under age seven, have a developmental disability, or for whom general anesthesia for dental procedures is medically necessary. CHBRP assumes these categories are not mutually exclusive, but an enrollee must only meet one of the specified criteria to be eligible to receive DGA as a covered health insurance benefit. More information about enrollees who are developmentally disabled or for whom general anesthesia may be medically necessary is included in the *Background* section.

CHBRP refers to general anesthesia for dental procedures as dental general anesthesia (DGA). The mechanisms by which the general anesthesia are provided are the same as when general anesthesia is performed for medical procedures.

## **BACKGROUND ON DENTAL GENERAL ANESTHESIA IN PEDIATRIC AND SPECIAL NEEDS POPULATIONS**

AB 2643 would require specific language about exploring nonsurgical options in the informed consent for parents of children who are undergoing dental general anesthesia (DGA), and mandate health insurance coverage of DGA outside of hospitals and surgical centers (i.e., dental offices) among children under seven years of age, persons with developmental disabilities, or persons for whom general anesthesia is deemed medically necessary for dental treatment.

Given the parameters of AB 2643, this section is limited to describing DGA, dental conditions, and treatments for children under seven years of age, persons with developmental disabilities, or other persons for whom general anesthesia is deemed medically necessary for dental treatment.

### **Indications for the Use of Dental General Anesthesia in Treating Children and Adults with Special Needs**

General anesthesia involves the administration of sedative drugs to render a patient completely unconscious and unresponsive to stimuli, including pain, in order to perform certain medical procedures; patients must be monitored for breathing and heart activity, as these functions may be inhibited (AAPD, 2016a; 2016c). Lower levels of sedation and pain control (analgesia) include anxiolysis, which involves the administration of medication to calm the patient, conscious sedation which uses medication to render a state of “depressed consciousness,” in which the patient can respond to commands from the medical staff, but feels no pain and generally has very limited memories of the procedure, local anesthetic to numb the immediate area being treated, and orally administered pain medication to manage post-procedural discomfort (ASA, 2014a).

There are three main reasons why children age zero to six or adults with special needs may require DGA: (1) advanced oral conditions requiring extensive surgical intervention that cannot be done with lighter forms of sedation or local anesthetic, (2) when the patient is allergic to local anesthetics and (3) when the dentist determines that the patient is unable to undergo any dental procedure that requires them to remain still so that the dentist can perform the procedure without injuring the patient, even with lighter forms of sedation (AAPD, 2016b; 2016c); (Mortazavi et al., 2017). In the latter case, DGA is used as a form of behavioral management to ensure the safety of the patient and may be used for even routine types of dental care and treatment (e.g., cleanings) depending on the level of impairment and based on the dentists’ best judgement of the patient’s needs (Dougherty, 2009). Increasing levels of sedation are used as a type of behavioral management in dentistry; alternative behavioral management techniques that may be utilized with or without sedation include protective stabilization with physical restraints or by parents holding children, positive reinforcement, or distraction (AAPD, 2016b; de Castro et al., 2013).

The *Medical Effectiveness* section of this analysis provides more detailed descriptions of the dental conditions and alternate treatments mentioned in the following sections.

### **DGA Use for Young Children**

The most common reason that DGA is used with young children is to treat advanced early childhood caries, which require the removal of decayed portions of the tooth and restoration/rehabilitation or extraction of the decayed tooth (e.g., fillings) (Sheller et al., 2003). Young children (e.g., those aged zero to six) and children with behavioral or developmental issues, such as autism, attention hyperactivity deficit disorder (ADHD), or oppositional defiant disorder (ODD), or who are otherwise unable to cooperate with

invasive dental procedures due to anxiety or phobias<sup>18</sup> may be in special need of behavior management techniques for dental care, including but not limited to general anesthesia (Aminabadi et al., 2016). Nonsurgical treatments for caries include atraumatic restorative treatment and sealants, which can restore decayed teeth and prevent future caries, and silver diamine fluoride treatment, a relatively new option which can be used to quickly stop further decay and strengthen tooth enamel (AAPD, 2017b; Ahovuo-Saloranta et al., 2016).<sup>19</sup>

## DGA for Adult Patients with Special Needs

Adult patients with special needs (i.e., developmental disabilities or medical necessity) who are unable to consistently undertake preventive care measures may present with more severe or advanced dental conditions, complicating treatment and necessitating more invasive procedures (Anders and Davis, 2010). The most common dental conditions that may require treatment under DGA in special needs adult populations include impacted teeth (e.g., wisdom tooth extractions), especially for teens and younger adults ages 15 to 40, and the treatment of advanced tooth decay/caries, most often in elderly adults age 65 and older (Jamieson and Roberts-Thomson, 2008). Other less common dental issues that may require the use of DGA for surgical procedures include abnormal tooth eruption or positioning, tooth fractures, and abscesses at the root of the teeth (i.e. periapical abscess) (Jamieson and Roberts-Thomson, 2008).

**Developmental disabilities:** Developmental disabilities include conditions that are diagnosed in childhood or adolescence and impact physical functioning, cognition, learning, communication, and behavior. Persons with ADHD, autism, cerebral palsy, hearing impairment, and other intellectual or learning disabilities or delays may require DGA as behavioral management to restrict movement and reduce patient distress during dental care for a variety of procedures, not just surgical procedures (Chia-Ling Tsai et al., 2006; Delfiner et al., 2017; Dougherty, 2009; Escanilla-Casal et al., 2014).

**Medical necessity:** Medical conditions that may require the use of DGA for behavioral management and patient safety include neurological diseases that impact movement and ability to communicate, such as epilepsy, muscular dystrophy, Parkinson's disease, Alzheimer's, and Tourette's Syndrome (Chia-Ling Tsai et al., 2006; Hansen et al., 2015; Kilmartin et al., 2014; So et al., 2017). Some patients with psychiatric disorders, such as anxiety or schizophrenia, or disorders that impact cognitive function, such as dementia, may require DGA for behavioral management, especially if these conditions are untreated, uncontrolled, or severe (Torales et al., 2017). Having a diagnosed anxiety disorder was correlated with receiving sedation or DGA in a study of dentally-fearful patients (Coolidge et al., 2012). Operating dentists must ensure that any medications the patient is taking for his or her condition do not have a risk of interaction with drugs used in the course of dental treatment (Friedlander and Liberman, 1991).

## Parental Informed Consent for Children Undergoing General Anesthesia for Dental Procedures

Prior to administering DGA or performing other dental procedures on a child, parents or caregivers must undergo an informed consent process including signing an informed consent document, meaning the provider must explain the procedure, why it is recommended, benefits, and risks to parents so they can decide whether or not to allow the child to be treated (2015). AB 2643 would add specific language to DGA informed consent forms regarding the availability of nonsurgical treatments that would require no sedation or lower levels of sedation. However, California law already requires similar language, and practice guidelines already instruct providers to inform parents/caregivers of any alternative treatments (2015). Dentists who are qualified to administer DGA are trained in the importance of informed consent

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<sup>18</sup> Personal communication, Content Expert Dr. Leon Assael, UC San Francisco, April 2, 2018.

<sup>19</sup> Personal communication, Content Expert Dr. Leon Assael, UC San Francisco, April 2, 2018.

due to the risk involved, and careful consideration of how to approach and modify treatment for children or special needs populations to ensure safety and acceptability.<sup>20</sup>

### **General Anesthesia in Hospital or Surgical Center vs. Outpatient Dental Settings**

There are multiple types of dental care professionals who can provide DGA at their practice either themselves or in collaboration with an anesthesiologist; a survey of U.S. dental anesthesia providers found that 50% identified their practice as oral and maxillofacial surgery,<sup>21</sup> 20% as general dentistry, 10% as dental anesthesiology, 8% as periodontology, 5% as pediatric dentistry, and 4% as endodontics (Boynes et al., 2010). An estimated 50% of around 500 board-certified pediatric dentists provide DGA and/or sedation in their offices in California.<sup>22</sup> Dentists who deem DGA necessary for a patient may refer that individual for care within a surgical center or hospital if appropriate for the patient's condition (e.g., American Society of Anesthesiologist [ASA] Physical Status Classifications)<sup>23</sup> or if they do not offer general anesthesia within their office (AAPD, 2017a; ASA, 2014b).<sup>24</sup>

There are several differences between DGA administered in a hospital or surgical center compared to in a dental office. Scheduling a procedure with DGA in a hospital or surgical center is more time intensive, may require greater coordination across providers and facilities, and can result in a significant delay in treatment compared to office-based anesthesia.<sup>25</sup> The duration of office-based procedures with DGA and subsequent recovery time is generally shorter, costs are lower, and patients may be more comfortable and satisfied with the office-based experience for themselves or their children (AAPD, 2012; 2016c; Tarver et al., 2012). However, differences in cost and duration of the procedure and recovery may be due to more complex or risky cases (e.g., ASA Physical Status Classifications III and IV) being referred to hospitals or surgical centers (Saxen et al., 2017).

### **Safety and Complications of Dental General Anesthesia**

The overall mortality rate for DGA was calculated at 3 per 1,000,000 in 2012 (0.0003%), which is half of what it was in 1955, and is most commonly due to respiratory failure (i.e., hypoxia) (Mortazavi et al., 2017). When deaths occur, they are most commonly seen in patients with other underlying health problems. Among children, over 50% of pediatric dental anesthesia deaths were observed among those two to five years of age (Mortazavi et al., 2017). In a U.S. study of data from 1988 to 2005, the rate of cardiac arrest during general anesthesia during non-cardiac surgeries (i.e., not specific to dentistry) among children age 0 to 18 was estimated at 2.8 per 10,000 (0.028%) and subsequent mortality due to cardiac arrest (i.e., resuscitation efforts failed) was 1.6 per 10,000 (0.016%) (Flick et al., 2007).

In addition to death, both pre- and post-discharge complications are possible. A study examining characteristics and complications of over 23 million procedures using general anesthesia administered in both office and surgical center/hospital settings across multiple medical fields between 2010 and 2014 found that specific to dental procedures, post-general anesthesia nausea or vomiting was found to have

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<sup>20</sup> Personal communication, Content Expert Dr. Leon Assael, UC San Francisco, March 28, 2018.

<sup>21</sup> Some oral and maxillofacial surgeons operate within a dental office that is licensed as a surgical center. These locations will resemble a dental office more than they would a surgical center. Personal communication, Technical Assistance Expert Dr. Ray Stewart on March 19, 2018.

<sup>22</sup> Personal communication, Technical Assistance Expert Dr. Raymond Stewart, UC San Francisco, March 27, 2018.

<sup>23</sup> ASA Physical Status Classifications: "ASA I- A normal, healthy patient; ASA II- A patient with mild systemic disease; ASA III- A patient with severe systemic disease; ASA IV- A patient with severe systemic disease that is a constant threat to life; ASA V- A moribund patient who is not expected to survive without the operation; ASA VI- A declared brain-dead patient whose organs are being removed for donor purposes."

<sup>24</sup> Personal communication, Content Expert Dr. Leon Assael, UC San Francisco, February 28, 2018.

<sup>25</sup> Personal communication, Content Expert Dr. Leon Assael, UC San Francisco, February 28, 2018.

occurred in 0.9% of surgical center/hospital cases and 3.9% of office-based cases, and inadequate pain control in 0.9% of surgical center/hospital cases and 0% of office-based cases (Jani et al., 2016). A review of over 7,000 pediatric DGA cases conducted in hospital or surgical center settings found the most common pre-discharge complication has been reported to be vocal cord spasms (i.e., laryngospasms; 0.5% of cases), while the most commonly reported post-discharge complication is nausea (5% of cases) (Spera et al., 2017).

## **Incidence of DGA, Prevalence of Dental Conditions That May Require DGA, and Access to Dental Care among Pediatric and Special Needs Populations in California**

As described in the Policy Context section, AB 2643 would only be relevant to a small, specific segment of the insured population in California; a subset of children age zero to six who have severe dental issues and/or require DGA for behavioral management, and a subset of individuals age seven and older with disabilities and medical conditions that necessitate the use of DGA. CHBRP found limited data on the annual incidence of DGA in pediatric populations in California, and no data on the incidence for adults with special needs. There were no peer-reviewed studies published in the U.S. or California on this subject. Pediatric incidence estimates were derived from confidential DHCS Denti-Cal Fee-For-Service (FFS) utilization data, provided to CHBRP by the California Dental Association. Among the 5.7 million Medi-Cal enrollees age 0 to 20 in 2015, 43,000 (0.8%) received DGA through Denti-Cal FFS.<sup>26</sup> Of those, 32.0% were age 0 to 5, 25.9% were age 6 to 17, and 42.1% were age 18 to 20.<sup>27</sup> A technical assistance expert who consulted pediatric anesthesiology colleagues to arrive at a reasonable estimate for privately insured individuals indicated that there are approximately 42,000 to 60,000 DGA cases annually, based on 100 to 125 providers of DGA in California performing 35 to 50 procedures per month.<sup>28</sup> Of these, approximately 15,000 to 20,000 cases are for children, and the remainder are for adults, the majority of whom have special needs.<sup>29</sup> See the *Benefit Coverage, Utilization, and Cost Impacts* section for estimated utilization rates.

These rates are similar to an informal annual incidence rate estimate of 1% derived by the Dental Board of California (DBCAs) subcommittee on pediatric DGA for pediatric Denti-Cal enrollees age 0 to 17 (i.e., 25,000 cases per year out of 2.5 million enrollees).

Data on the prevalence of poor oral health, common conditions that may be treated in these populations, and access to dental care was more readily available for these populations in California and the U.S., and is presented below.<sup>30</sup>

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<sup>26</sup> Aggregated report of confidential Denti-Cal FFS utilization data obtained from DHCS, provided to CHBRP by the California Dental Association, March 14, 2018.

<sup>27</sup> Aggregated report of confidential 2015 Denti-Cal FFS utilization data obtained from DHCS, provided to CHBRP by the California Dental Association, March 14, 2018.

<sup>28</sup> Personal communication, Technical Assistance Expert Dr. Raymond Stewart, UC San Francisco, March 27, 2018.

<sup>29</sup> Dr. Stewart estimated privately insured pediatric DGA cases by estimating that 50% of the 500 board certified pediatric dentists in California use DGA in their practice, conducting DGA procedures five to six times per month. Dr. Stewart also indicated that the majority of adult patients who use DGA will be special needs populations.

<sup>30</sup> Several studies from the United Kingdom and Australia on DGA utilization were found to have similar rates to those estimated here for California (George et al., 2011; Jamieson and Roberts-Thomson, 2006, 2008; Prabhu et al., 2010; Rogers, 2016); however, CHBRP determined that the differences in health care systems between the United States and these countries made a direct comparison inadvisable.

## Children’s Oral Health and Access to Dental Care

As described in the previous section, relatively few children in California receive DGA each year, reflecting how only a small proportion of children require DGA due to severe caries or for behavioral management. The most recently available data from 2004 to 2005 suggests that California children have considerably worse oral health compared to the rest of the nation but may be receiving treatment at comparable rates. In California, 54% of children age 3 to 5 years and 71% of children age 6 to 9 years had experienced caries at some point in their lives; at the national level, these rates were 33% and 54%, respectively (Gadgil et al., 2017). However, in terms of untreated caries, California had rates similar to the national average; 23% of children age three to five and 28% of children age 6 to 9 years. More recent U.S. data from 2011 to 2012 found that the overall prevalence of caries among children age two to eight was 37%, and the prevalence of untreated caries was 14% (Dye et al., 2015). Almost half of all children age 0 to 17 in California are covered by Medi-Cal (48%) and subsequently have access to Denti-Cal benefits;<sup>31</sup> it stands to reason that those with private insurance who do not have dental coverage may be at a greater disadvantage in accessing dental care.

## Special Needs Populations’ Oral Health and Access to Dental Care

Nearly half (46.2%) of insured California adults with a disability are covered by Medi-Cal, compared to 24.8% of insured adults without a disability.<sup>32</sup> CHIS data from 2016 suggests that Californians with disabilities have worse oral health and difficulty accessing care than those without disabilities. Respondents were asked to rate the condition of their teeth as excellent, very good, good, fair or poor; nearly twice as many respondents with disabilities (41%) rated their dental condition as fair or poor compared to those without disabilities (21%). Furthermore, a greater proportion of Californians with disabilities indicated that their last visit to the dentist was for a specific problem rather than a routine cleaning (42%) compared to those without disabilities (26.1%), and a greater proportion of disabled Californians had not been to the dentist in at least one year (36% vs. 27% of those without disabilities).<sup>33</sup> Persons with special needs and severe dental health issues in California may have difficulty finding a dentist who is willing or equipped to treat them; need for DGA in these populations may be as high as 20% to 25%.<sup>34</sup>

## Disparities<sup>35</sup> and Social Determinants of Health<sup>36</sup> in Dental Conditions Treated With DGA and Access to Care in Children and Special Needs Populations

Per statute, CHBRP includes discussion of disparities and social determinants of health (SDoH) as it relates to dental conditions that are sometimes treated with DGA in children and special needs

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<sup>31</sup> 2016 California Health Interview Survey; AskCHIS query tool available at <http://ask.chis.ucla.edu/>.

<sup>32</sup> 2016 California Health Interview Survey; AskCHIS query tool available at <http://ask.chis.ucla.edu/>.

<sup>33</sup> 2016 California Health Interview Survey; AskCHIS query tool available at <http://ask.chis.ucla.edu/>.

<sup>34</sup> Personal communication, Technical Assistance Expert Dr. Raymond Stewart, UC San Francisco, March 27, 2018.

<sup>35</sup> 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).

<sup>36</sup> 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 and CDC [CDC, 2013]). See CHBRP’s SDoH white paper for further information:

populations. Disparities are differences between groups that are modifiable. CHBRP found literature identifying disparities in these dental conditions by age and race/ethnicity in California.

## **Disparities**

### *Race or Ethnicity*

The prevalence of having any caries and untreated caries is higher both in the U.S. and California for children from racial/ethnic minority populations, particularly among Latino, African American, and Native American children (Dye et al., 2015; Gadgil et al., 2017). Across the United States., disability status compounds racial-ethnic disparities in oral health and access to needed care; Native American and multiracial persons with disabilities had the greatest likelihood (2.6 to 3.8 times more likely) of delays or inability to access needed dental care compared to non-disabled white individuals in adjusted analyses of Medical Expenditure Panel Survey data from 2010 to 2014 (Horner-Johnson et al., 2015).

### *Age*

In addition to younger children being more likely to require DGA as presented previously, older adults may also be at particular risk for dental conditions that require DGA for treatment, or for conditions that make DGA more necessary to treat dental conditions, such as Alzheimer's (So et al., 2017). The risk of caries and periodontal disease and the frequency with which these conditions increase with age among older adults, especially those who are not institutionalized and have difficulty with transportation or other barriers to care (Griffin et al., 2012). CHIS data on California adults in 2016 shows that 39% of adults over 65 rate the condition of their teeth as fair or poor or have no natural teeth compared to 22% of adults age 18 to 64.<sup>37</sup>

## **Social Determinants of Health**

Social determinants of health (SDoH) include factors outside of the traditional medical care system that influence health status and health outcomes (e.g., income, education, geography, etc.). CHBRP found literature on how socioeconomic status, health literacy, and geographic setting may impact disparities in serious dental conditions and access to dental care in children and adults with special needs.

### *Socioeconomic status*

Generally, socioeconomic status has an impact on access to needed dental care that may be greater than other types of healthcare. Despite the priority placed on oral health care, utilization of dental care is highly sensitive to cost as a barrier for children and adults both before and after ACA healthcare reforms; those who are not covered for dental procedures, even if urgently needed, are less likely to receive them (Meyerhoefer et al., 2014; Naavaal et al., 2017; Vujicic et al., 2016).

More specifically, several studies found that socioeconomic status is an important determinant of disparities in oral health, access to dental care, and utilization of dental care especially for children in racial/ethnic minority households (Fisher-Owens et al., 2013; Guarnizo-Herreno and Wehby, 2012; Moffet et al., 2010; Telleen et al., 2012; Yang et al., 2016). Cost of dental care or lack of insurance was cited as a significant barrier to access for Latino and African American families compared to white families (Aguirre-Zero et al., 2016; Fisher-Owens et al., 2013; Guarnizo-Herreno and Wehby, 2012; Telleen et al.,

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[www.chbrp.org/analysis\\_methodology/docs/Incorporating Relevant Social Determinants of Health in CHBRP Analyses Final to WEBSITE 033016.pdf](http://www.chbrp.org/analysis_methodology/docs/Incorporating_Relevant_Social_Determinants_of_Health_in_CHBRP_Analyses_Final_to_WEBSITE_033016.pdf).

<sup>37</sup> 2016 California Health Interview Survey; AskCHIS query tool available at <http://ask.chis.ucla.edu/>.

2012). Although insurance rates among Latino and African American children are higher, studies report that utilization of dental care and dental need is lower; low socioeconomic status may lead to coverage by public health insurance, but perceived or actual out-of-pocket costs after coverage may still prevent access to care or access to adequate care, given more serious oral health needs among low-income children (Meyerhoefer et al., 2014; Shariff and Edelstein, 2016). Socioeconomic status also plays a role in disparities in access to dental care due to disability status, as persons with disabilities may be likely to have lower incomes due to difficulty working, and if not employed, may be underinsured or uninsured as a result (Horner-Johnson et al., 2015; Mahmoudi and Meade, 2015).

### *Geographic Setting*

Current coverage of DGA only in hospital or surgical center settings may limit access for those living in rural areas or in areas with few of these facilities. There are 17 areas in California identified as dental Health Professional Shortage Areas (HPSAs) based on distance, high utilization/need, or lack of providers and with ratios of patients to dental care providers of less than 4,000:1. Parts of counties in Northern (Del Norte, Humboldt, Trinity, Siskiyou, Shasta, Tehama, Mendocino, Lassen, Modoc, Yuba), Central (El Dorado, Mono, Madera, Fresno, Tuolumne, Kings, Merced, Monterey) and Southern (San Luis Obispo, Kern, Ventura, San Diego, and Los Angeles) California are dental HPSAs (Gadgil et al., 2017). Certain populations such as children and older adults living in rural settings or areas with fewer dental providers may be less likely to receive preventive dental care and have higher rates of dental caries (Arcury et al., 2012; Fos and Hutchison, 2010; Mitchell et al., 2013). A study set in Iowa found that the negative impact of distance on access to dental care was found to be exacerbated for Hispanic children living in rural Iowa compared to other racial/ethnic groups, but in urban areas minority children were more likely to receive care, despite other research to the contrary; the author hypothesized that this may be due to enrollment in Medicaid as a high proportion of minority youth were from low-income families (McKernan et al., 2015). Some U.S. studies on rural-urban oral health disparities suggest that distance and transportation are less of a problem for rural residents, as this is part of living in a rural area; rather, poverty, low educational attainment, and lack of health insurance are more likely contributors to poor oral health outcomes and access to care in rural areas (Ahn et al., 2011; McKernan et al., 2015; Mitchell et al., 2013). However, there are only 100 to 125 dental personnel currently performing DGA in dental office settings in California;<sup>38</sup> those living in rural or urban HPSAs areas may still face barriers to accessing DGA due to an overall low number of providers.

## **Societal Impact of Dental Conditions Treated Using General Anesthesia in California**

The presence of dental conditions treated using general anesthesia among the relatively small subset of children and special needs populations in California and the U.S. may create a societal impact. In dollar terms, the societal impact can be indirect (lost wages, etc.) as well as direct (medical care, etc.). However, CHBRP could not find specific estimates of the direct or indirect costs or savings associated with treating or failing to treat serious dental diseases in these specific populations.

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<sup>38</sup> Personal communication, Technical Assistance Expert Dr. Raymond Stewart, UC San Francisco, March 27, 2018.

## MEDICAL EFFECTIVENESS

As discussed in the *Policy Context* section, AB 2643 would require specific language about exploring nonsurgical options in the informed consent for parents of children who are undergoing dental procedures using dental general anesthesia (DGA), and mandate health insurance coverage of DGA for dental procedures outside of hospitals and surgical centers (i.e., dental offices) among children under seven years of age, persons with developmental disabilities, or persons for whom DGA is deemed medically necessary for dental treatment.

The medical effectiveness review summarizes findings from evidence<sup>39</sup> from 2008 to present regarding the informed consent process as well as alternatives to DGA, outcomes for non-treatment and the impact of setting on safety.

### Research Approach and Methods

Relevant articles were identified through searches of PubMed, the Cochrane Library, Web of Science, EconLit, and Business Source Complete, 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 search was limited to abstracts of studies published in English from 2008 to present.

Of the 332 articles found in the literature review, 40 were reviewed for potential inclusion in this report on AB 2643, and a total of 32 studies were included in the medical effectiveness review for this report. The other articles were eliminated because they did not focus on informed consent, DGA or nonsurgical dental treatment options, were of poor quality, or did not report findings from clinical research studies. 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 Appendix B: Literature Review Methods.

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

Given the scope of the bill, the following questions relevant to medical effectiveness are addressed in the paragraphs below:

1. Do dental procedures requiring DGA provided in a dental office have different rates of effectiveness in terms of the safety of the anesthesia and the results of the procedure as compared to dental procedures with DGA conducted in a hospital or surgery center?

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<sup>39</sup> Much of the discussion that follows is focused on reviews of available literature. However, as noted in the medical effectiveness approach document (see p.8 in the document posted [here](#)), in the absence of “fully-applicable to the analysis” peer-reviewed literature on well-designed randomized controlled trials (RCTs), CHBRP’s hierarchy of evidence allows for the inclusion of other evidence.

2. What is the potential impact on outcomes related to receiving dental surgery using other anesthetic options, such as lower levels of sedation, for these populations? (safety issues, treatment efficacy)
3. Are there effective alternate treatments for young children or special needs populations for which DGA or any type of sedation is not needed?
4. What are the consequences of not treating dental problems that are severe enough to require DGA or another form of sedation?
5. Do parents or caregivers of pediatric patients or patients with special needs read and comprehend informed consent documentation?
6. Will a written informed consent statement that includes the phrase “including nonsurgical options” impact the treatment choice parents/caregivers make as compared to the existing wording that does not include wording specific to nonsurgical options?

## Methodological Considerations

Of the peer-reviewed studies CHBRP identified on informed consent and comparisons of DGA with lesser levels of sedation, none were randomized controlled trials (RCTs), which are considered the “gold standard” of research. Most were nonrandomized studies with comparison groups, or retrospective studies that examined medical records. Some studies used data sources, such as media reports, that may introduce bias to the results.

## Outcomes Assessed

### General Anesthesia and Dental Procedures

Outcome variables assessed include outcomes for nonsurgical alternative procedures (e.g., recurrence, symptom reduction, insufficient pain control, injury due to patient movement during surgery), health implications of forgoing dental care (e.g., infection, pain, tooth loss, disfigurement), and the effect of setting on dental procedure safety and efficacy while under DGA (e.g., mortality, complications, recurrence, symptom reduction).

### Informed Consent Forms and Language

Outcome variables are reading consent forms (i.e., do patients read them), comprehension of consent form text, and how informed consent impacts decision making.

## Study Findings

The following sections address each of the individual research questions listed above. The narrative for each research question is accompanied by a 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 on a specific relevant outcome and the number of studies on which CHBRP’s conclusion is based. 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.

## General Anesthesia and Dental Procedures

**Do dental procedures requiring DGA provided in a dental office have different rates of effectiveness in terms of the safety of the anesthesia and the results of the procedure as compared to dental procedures with DGA conducted in a hospital or surgery center?**

A 2017 study conducted by Saxen and colleagues (Saxen et al., 2017) compared outcomes from the National Anesthesia Clinical Outcomes Registry and the Society for Ambulatory Anesthesia Clinical Outcomes Registry for dental/oral surgery procedures for office-based dentist anesthesiologists versus operating room-based physician anesthesiologists. They found that office-based procedures using DGA were most commonly seen for children under the age of 6 and involved comprehensive dental rehabilitation, and office-based procedures requiring DGA tended to be shorter in duration than similar care in the hospital or surgery center setting. They concluded office based DGA to be an efficient mode of anesthesia for dentistry as compared to that provide in hospital settings for similar procedures. Another study examining data from the National Anesthesia Clinical Outcomes Registry found that for DGA there was significantly more post-operative nausea/vomiting for office-based DGA versus ambulatory surgery centers (Jani et al., 2016).

CHBRP found limited evidence based on one systematic review and one retrospective study that procedures involving DGA in office-based settings are not any less safe and effective than those provided in hospitals or surgery centers.

**Figure 2.** Effectiveness of General Anesthesia in Non-Hospital/Surgery Center Settings



**What is the potential impact on outcomes related to receiving dental surgery using lower levels of sedation or local anesthetic, for these populations, including safety issues and treatment efficacy?**

Anesthesia is a continuum of options ranging from different levels of conscious sedation (mild/minimal sedation, moderate sedation, deep sedation), to general anesthesia (Bennett et al., 2015). The distinguishing characteristic of general anesthesia as compared to the other levels is the unarousability of the patient, even when exposed to painful physical stimuli. All other levels of sedation leave the patient with some capacity for response. As detailed in the *Background* section, general anesthesia (as opposed to lesser levels of sedation) is more commonly used in youth and children for routine procedures, such as the treatment of dental caries, than in adults. This is also true for persons of all ages with special needs such as mental or physical disabilities or those requiring DGA due to medical necessity. For these populations, the outcomes related to receiving dental surgery without DGA (safety issues, treatment efficacy) could potentially be affected. For example, for young children and adults with special needs, DGA is utilized as a form of behavioral management (Lim and Borromeo, 2017). Treatment under other

forms of anesthesia that do not render the patient unresponsive to physical stimuli may not adequately control patient movement, or may require patient cooperation and adherence to instructions that is beyond the ability of young children or adults with special needs.

However, CHBRP found a lack of studies comparing the safety and effectiveness of DGA with other forms of sedation for dental treatment in pediatric or special needs populations. A systematic review of the literature encompassing all qualifying studies comparing sedation with DGA for dental treatment in patients under 18 years of age between 1945 and 2015 found no studies were of sufficient relevance or quality to be included in their report (Ashley et al., 2015). Although this lack of specific comparison studies between DGA and other forms of sedation limit direct comparisons, there are studies reporting on the (non-comparative) effectiveness of these other levels of sedation for dental treatments in pediatric and special needs populations. In a retrospective review of 222 pediatric patients receiving propofol-based deep sedation, researcher found few safety issues and general effectiveness for deep sedation for pediatric dental treatments (Ahmed et al., 2016). There is some evidence that, as a behavioral control method, non-DGA methods are not always effective. In a retrospective study examining the records of 120 children who underwent dental treatment under conscious sedation, it was reported that behavior deteriorated during sedation in 36 cases (30%) (Blumer et al., 2017). However, other studies report contradictory results regarding the effectiveness of deep sedation for behavioral management during dental treatment. In one retrospective study, researchers reported 83% of pediatric patients exhibited behavior ranging from good to excellent when receiving dental treatment under deep sedation (Manley et al., 2008).

For special needs patients, one study found conscious sedation procedures to be safe and effective for dental care. Collado et al., conducted a randomized clinical trial evaluating the effectiveness and safety of conscious sedation using intravenous midazolam for dental care in 98 adults and children with intellectual disability as compared with 44 adults and children with dental anxiety. Outcomes for each group varied by dental procedure, with patients with intellectual disabilities more often emotionally disturbed during cannulation procedures (a technique in which a cannula is placed inside a vein to provide venous access) than those with dental anxiety. Overall, the authors concluded that conscious sedation was safe and effective in patients with intellectual disability when administered by dentists, and additionally reported that behavior improved with subsequent visits using the same method of anesthesia (Collado et al., 2013).

CHBRP found inconclusive evidence from two systematic reviews, three retrospective studies, and one prospective study that receiving dental surgery under conscious sedation versus DGA could affect outcomes.

**Figure 3.** Outcomes for Dental Treatments without General Anesthesia



**Are there are effective alternate treatments for young children or special needs populations for which DGA or any type of sedation is not needed?**

There are numerous alternative treatments available for some routine dental procedures, such as preventative measures or routine cleanings, that may require no or minimal sedation for the general population. For example, preventative/decay arresting treatments not requiring DGA for the comprehensive treatment of caries in young children include sealants and silver diamine fluoride (Ahovuo-Saloranta et al., 2017).<sup>40</sup> However, for the comprehensive treatment of most problems that require DGA, such as tooth infection or decay to the degree requiring extraction, the literature review revealed no proven alternative options, especially for populations such as very young children or children and adults with special needs. The provision of adequate dental care for these populations can involve unique behaviorally related challenges such as volatile mood, high anxiety levels, and low cooperation (Pine et al., 1998). In these circumstances, DGA may be required for any procedure, no matter how minor. Although there are well established techniques for the behavioral management and support before and during dental care for special needs populations (Glassman and Miller, 2009), for many special needs patients, such as those with epilepsy or severe autism, even the simplest of procedures, such as periodontal care or cleaning, can require DGA (Mallineni and Yiu, 2016), and CHBRP found no evidence supporting any alternative procedures for those that would generally require DGA.

CHBRP found insufficient evidence that there are effective alternate treatments for young children or special needs populations for which DGA or any type of sedation is not needed.

**Figure 4. Outcomes for Patients Who Forgo Treatment Due to Lack of Coverage for General Anesthesia**

| NOT EFFECTIVE        |               | INSUFFICIENT EVIDENCE |              |         |               | EFFECTIVE            |  |
|----------------------|---------------|-----------------------|--------------|---------|---------------|----------------------|--|
| Clear and Convincing | Preponderance | Limited               | Inconclusive | Limited | Preponderance | Clear and Convincing |  |

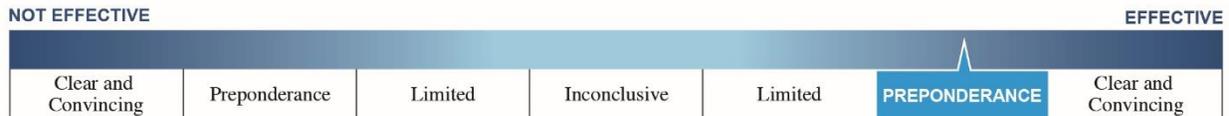
**What are the consequences of not treating dental problems that are severe enough to require DGA or another form of sedation?**

It is possible that in cases where coverage for DGA is not available in the dental office for required dental procedures, patients (or parents or caregivers of patients) may forgo care. There is an abundance of evidence linking lack of dental treatment for a variety of conditions to poor outcomes. Although the full consequences for untreated dental caries is not fully understood (Kassebaum et al., 2015), there is some evidence that the lack of proper treatment can lead to secondary complications, such as pain and infection, that could impact overall health (Selwitz et al., 2007), and problems eating, drinking, speaking, and learning (DHHS, 2000;Griffin et al., 2016). Negative outcomes associated with lack of dental treatment in children and adolescents are not limited to health. Children with unmet dental needs also have higher levels of school absenteeism due to illness or injury as compared to other children (Agaku et al., 2015), and unmet dental needs have also been associated with decreased academic performance (Seirawan et al., 2012).

<sup>40</sup> An evidence-based guideline issued by the American Academy of Pediatric Dentistry recommending the use of silver diamine in pediatric and special needs populations, but admits the guideline is based on low quality evidence and calls for further research to compare the outcomes with other treatment options (Crystal et al., 2017).

CHBRP found a preponderance of evidence based on one systematic review, two informational reviews, two retrospective studies, and one prospective study that lack of treatment for conditions such as dental caries can lead to secondary complications that could impact dental and overall health.

**Figure 5.** Outcomes for Not Treating Dental Problems That Are Severe Enough to Require DGA or another Form of Sedation



### Informed Consent Alternative Language

As mentioned in the *Background* section, prior to administering DGA or performing other dental procedures on a child, parents or caregivers must be administered an informed consent document, meaning that the provider must explain the procedure, why it is recommended and the benefits and risks to parents so that they can decide whether or not to allow the child to be treated (AAPD, 2015). AB 2643 would add specific language to what is already required on DGA informed consent forms to include the phrase “including nonsurgical treatment options” in reference to the standard suggestion to explore other options. The potential impact of the addition of such a statement with regard to medical effectiveness is addressed in the following two research questions.

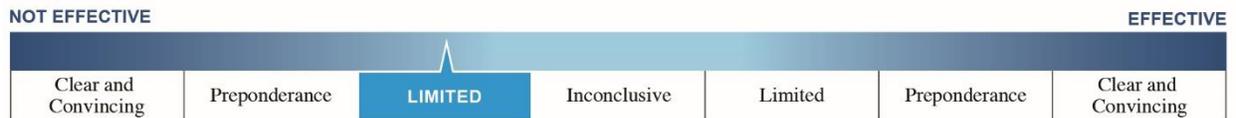
#### **Do parents or caregivers of pediatric patients or patients with special needs read and comprehend informed consent documentation?**

There have been relatively few recent studies in the United States examining whether patients, or parents/caregivers of patients, read and comprehend informed consent forms (in both dentistry and general medicine). CHBRP found no studies specifically examining whether parents/caregivers of pediatric patients or patients with special needs read and/or understood informed consent forms for dental procedures. This applies to general (non-dental) procedures as well. An effort to systematically review the literature regarding parent understanding of the informed consent process for children undergoing surgery concluded that quality studies in the area are scarce, and unfocused with regard to content areas. They additionally reported that studies of comprehension of the information in the consent included in the review generally found that parents overall recall and understanding of the content was poor across the included studies, and parents seemed to have better understanding of the disease or condition than the risks of the procedure (Chotai et al., 2017). As there is no reason to believe that parents or caregivers would comprehend informed consent content any differently than other patients, evidence from the general population is relevant as well, and there is also some evidence that patients in general (not specific to parents or caregivers) often do not thoroughly read informed consent forms. In a 2017 article summarizing the current state of informed consent in dentistry, Reid states that, “patients typically do not read the informed consent before signing them, and if read this does not necessarily translate to understanding” (Reid, 2017). He based his conclusions from a review of multiple studies and review examining the effectiveness of the consent process. One such publication, a systematic review of studies examining the informed consent process for both surgery and clinical research, found that patients demonstrated adequate understanding of the surgery in 6 of 21 studies (29%) and the associated risks in 5 of 14 studies (35%) (Falagas et al., 2009). In another study examining consent in hospitals before surgery, researchers found that the quality of information acquisition through the informed consent process was inadequate, with 48% of patients not reading the form before signing, and

among those who did read the form, 61% demonstrated at least some lack of understanding of what they read (Joolae et al., 2017).

There is limited evidence from three systematic reviews and one retrospective study that informed consent forms are not thoroughly read or understood by parents/caregivers of pediatric patients or patients with special needs.

**Figure 6.** Reading and Comprehension of Consent Forms



**Will a written informed consent statement that includes the phrase “including nonsurgical options” impact the choice of treatment parents/caregivers make as compared to the existing wording that does not include wording specific to nonsurgical options?**

CHBRP found no studies examining the impact of new language to the informed consent form with regard to patient or caregiver/parent decision making, and therefore concludes there is insufficient evidence to that the addition of new wording to the informed consent form would impact patient choice of treatment or service utilization.

**Figure 7.** Impact of Additional Wording to Informed Consent on Utilization



## **BENEFIT COVERAGE, UTILIZATION, AND COST IMPACTS**

As discussed in the *Policy Context* section, AB 2643 would require DMHC-regulated health plans and CDI-regulated policies to cover dental general anesthesia (DGA) that take place outside of a hospital or surgery center setting, for the three populations established under current law: (1) children up to age seven, (2) people of any age with developmental disabilities, and (3) people of any age with a medical condition that makes general anesthesia medically necessary. AB 2643 does not alter these population requirements, and therefore they are the only enrollee populations of users included in the bill analysis. CHBRP recognizes that other populations may also use DGA, including people who are uninsured or those that choose to pay out-of-pocket for DGA, but as these are not required for coverage under AB 2643, they are not included in the analysis.

This section reports the potential incremental impacts of AB 2643 on estimated baseline benefit coverage, utilization, and overall cost. Based on input from technical assistance experts, CHBRP modeled different current utilization rates of DGA for enrollees with privately-funded DMHC-regulated plans or CDI-regulated policies, compared to enrollees in publicly-funded DMHC-regulated Medi-Cal managed care plans. The remainder of this section will refer only to “dental general anesthesia (DGA)” but it should be kept in mind that unless noted, this refers to the three populations included in both current law and AB 2643. The consent form provision in AB 2643 was not included in the Cost and Coverage Model, due to the limited evidence that consent forms do not affect enrollee decisions (see the *Medical Effectiveness* section). CHBRP assumes there is no change in coverage or utilization based on that provision of AB 2643.

To estimate current and postmandate utilization of DGA, CHBRP consulted data from Denti-Cal, the research literature, and technical assistance expert Dr. Ray Stewart, DMD, MS, health sciences professor of pediatric dentistry at University of California, San Francisco.<sup>41</sup> Dr. Stewart, in particular, provided information about the overall workforce that currently exists in California. He estimated that a maximum of 250 board certified pediatric dentists and 125 certified anesthesiologists are performing DGA, and that the annual utilization of DGA cannot increase given their current capacity, workload and time constraints. Under the current Medi-Cal program reimbursement for DGA through Denti-Cal, there currently exists a waitlist for DGA procedures performed in hospitals and surgical centers that exceeds one year.<sup>42</sup> CHBRP has also heard that there are wait times for DGA performed in dental offices and clinics. CHBRP assumed, therefore, that current utilization of DGA cannot increase during the first year postmandate (the time period covered in the CHBRP Cost and Coverage Model). CHBRP assumes that there will be no shift from hospital or surgical centers to dental offices in total utilization of DGA, as the current relative prevalence of procedures is already weighted strongly towards the dental office, even in the absence of coverage.

For a discussion of potential impacts after the first year postmandate, see the *Long-Term Impacts* section.

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

### **Baseline and Postmandate Benefit Coverage**

Currently, 6% of enrollees with health insurance that would be subject to AB 2643 have medical coverage for DGA that takes place in any location, according to CHBRP’s survey of the major insurance carriers in

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<sup>41</sup> E-mail communication between CHBRP and Dr. Stewart between March 23, 2018 and March 27, 2018.

<sup>42</sup> Adara Citron communication with Dr. Steve Lee on March 14, 2018.

California (see Table 1). The most common limitation on current coverage followed current law, which states that coverage is required for DGA that takes place only in hospitals or surgical centers.

Current coverage of DGA was determined by a survey of the largest (by enrollment) providers of health insurance in California. Responses to the survey for AB 2643 represent 57% of enrollees with DMHC-regulated policies or CDI-regulated plans.

Postmandate, CHBRP estimates that coverage will increase to 100% of enrollees in DMHC-regulated plans or CDI-regulated policies (Table 1). This would increase the number of enrollees with coverage compliant with AB 2643 from 1.467 million at baseline to the full 23.433 million enrolled in DMHC-plans or CDI-policies, postmandate. However, as noted in the *Policy Context* section, the number of enrollees eligible for health insurance coverage of DGA is limited to the populations stated above, and is therefore substantially smaller than 23.433 million enrollees.

## Baseline and Postmandate Utilization

CHBRP estimates the utilization of general anesthesia for dental procedures using the MarketScan medical claims data from 2016 to determine the baseline proportion of hospital/surgical center use compared to dental office use. Consultation with technical assistance expert Dr. Ray Stewart informed CHBRP's estimates of usage of general anesthesia for dental procedures among enrollees who pay out-of-pocket, and therefore do not appear in the claims data (e-mail communication). See the *Policy Context* section for a full description of the interaction of DMHC-regulated plans and CDI-regulated policies with dental insurance coverage. As the prevalence estimates included two different rates for enrollees in privately-funded DMHC-regulated plans or CDI-regulated policies compared to publicly-funded DMHC-regulated Medi-Cal managed care plans, CHBRP applied two different prevalence rates.

Among enrollees with privately funded DMHC-regulated plans or CDI-regulated policies, CHBRP applied a rate of 0.4% to determine overall DGA utilization. This estimate of average utilization among the three populations included in AB 2643 corresponds to 4 instances of DGA per 1,000 enrollees. Among enrollees with publicly-funded DMHC-regulated Medi-Cal managed care plans, CHBRP applied a rate of 0.8% to determine overall DGA utilization. The higher utilization of DGA among Medi-Cal managed care enrollees is due to the disproportionately large share of Medi-Cal enrollees that are either developmentally disabled, have high medical needs, or are children under age seven years with severe dental caries. See Appendix C for complete discussion of utilization assumptions and methods.

CHBRP estimates that currently, a total of 124,000 enrollees DMHC-regulated plans or CDI-regulated policies annually use DGA, in any location. This population is comprised of 60,000 enrollees in publicly-funded DMHC-Medi-Cal managed care plans and 64,000 enrollees in commercial or CalPERS DMHC-regulated plans or CDI-regulated policies who annually use DGA in any location (Table 1). During the first year postmandate, CHBRP estimates no increase in total utilization for all populations, based on provider supply constraint and that DGA is used in cases of medical necessity (Table 1).<sup>43</sup>

Currently, 0.37 per 1,000 enrollees in commercial or CalPERS DMHC-regulated plans or CDI-regulated policies, and 1.45 per 1,000 enrollees in DMHC-Medi-Cal managed care plans use DGA in a hospital or surgical center setting (Table 1). CHBRP estimates that this prevalence rate will not change postmandate as AB 2643 does not increase coverage for general anesthesia for dental procedures in these locations.

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<sup>43</sup> E-mail communication with Dr. Ray Stewart, technical assistance expert, on March 27, 2018.

Currently, there are 3.63 per 1,000 enrollees in commercial or CalPERS DMHC-regulated plans or CDI-regulated policies, and 6.55 per 1,000 enrollees in DMHC-regulated Medi-Cal managed care plans that use DGA in dental offices, with limited coverage for these locations (Table 1). While enrollees in commercial or CalPERS DMHC-regulated plans or CDI-regulated policies pay for DGA in a dental office out-of-pocket, enrollees in DMHC-regulated Medi-Cal managed care plans have coverage for DGA through Denti-Cal. CHBRP estimates that in the first year postmandate, utilization of DGA in a dental office will remain the same due to supply constraints, but that the utilization will shift from being covered through out-of-pocket expenditures or Denti-Cal, to being covered through DMHC-regulated plans or CDI-regulated policies. Therefore, utilization covered through DMHC-plans or CDI-policies will increase postmandate by 3.63 per 1,000 enrollees in commercial or CalPERS plans or policies, and by 6.55 per 1,000 enrollees in Medi-Cal managed care (Table 1).

## Baseline and Postmandate Per-Unit Cost

Currently, the per-unit cost of DGA varies with the location of the service. In a hospital or surgical center setting, general anesthesia costs \$1,339. The per-unit cost for DGA is \$651 when provided in a dental office (see Table 1). With no evidence to support that the prices may change, CHBRP assumes that these prices will remain consistent in the first year postmandate.

The overall combined utilization of DGA covered through DMHC-regulated plans or CDI-regulated policies is currently weighted more heavily toward dental offices. CHBRP estimates that current weighted average per unit cost is \$652 (Table 1). This will remain the same in the first year postmandate.

## Baseline and Postmandate Expenditures

Table 4 and Table 5 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 2643 would increase total net annual expenditures by \$42,819,000 or 0.0275% for enrollees with DMHC-regulated plans and CDI-regulated policies. This is due to an \$80,413,000 increase in total health insurance premiums paid by employers and enrollees for newly covered benefits, adjusted by a decrease of \$37,594,000 in enrollee expenses for covered and/or noncovered benefits.

## Premiums

Changes in premiums as a result of AB 2643 would vary by market segment. Note that such changes are related to the number of enrollees (see Table 1, Table 4, and Table 5) with health insurance that would be subject to AB 2643. The size of premium changes depend on how many enrollees are in a particular market segment; therefore, a market segment with many enrollees may see a smaller per enrollee premium increase.

Premium increases in privately funded DMHC-regulated plans range from \$0.1835 for individual plans to \$0.2159 for large-group plans. Among CDI-regulated policies, premium increases range from \$0.0122 for large-group policies to \$0.1873 for individual policies. After offsetting decreases in enrollee expenses for noncovered benefits (see further explanation in *Out-of-Pocket Spending for Covered and Noncovered Expenses* below), premium increases in privately funded DMHC-plans or CDI-policies range from 0.0002% for CDI-regulated large-group policies to 0.0065% for CDI-regulated individual policies.

Among publicly funded DMHC-regulated health plans, premium increases range from \$0.2317 for CalPERS plans to \$0.4035 for Medi-Cal managed care plans, both for enrollees ages under 65 and for those ages 65+ years.

### **Enrollee Expenses**

AB 2643–related changes in enrollee expenses for covered benefits (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 with health insurance that would be subject to AB 2643 expected to use the relevant services during the year after enactment (see Table 1, Table 4, and Table 5).

CHBRP projects no change to existing copayments or coinsurance rates but does project an increase in coverage for DGA, and therefore there will be an increase in enrollee cost-sharing for covered expenses for covered DGA.

Among privately-funded plans and policies, enrollee expenses for covered benefits will increase by a range of \$0.0022 in CDI-regulated large-group policies to \$0.0507 in DMHC-regulated individual policies. Among publicly-funded plans and policies, CalPERS enrollees will have an increase in enrollee expenses for covered benefits, \$0.0198. However, these new expenses will be more than offset for all market segments by reductions in enrollee expenses for noncovered benefits, ranging from a decrease of \$0.0125 for CDI-regulated large-group policies to \$0.2167 for CalPERS enrollees.

Enrollees in DMHC-regulated Medi-Cal managed care plans currently have Denti-Cal coverage that pays for out-of-pocket costs. From the enrollee perspective, no out-of-pocket costs occur with this dual coverage, which is the most common practice for enrollees with Medi-Cal managed care plans. CHBRP is aware that some proportion of enrollees with Medi-Cal managed care are enrolled through share-of-cost Medi-Cal coverage for the medically needy, and therefore may have higher incomes and would not qualify for Denti-Cal coverage. This population may currently be paying for DGA out-of-pocket. CHBRP was unable to identify data to quantify the size of this enrollee population, and therefore assumed that all Medi-Cal managed care enrollees also have Denti-Cal. Postmandate, the expenses that would have occurred for DGA under the Denti-Cal program will transfer to Medi-Cal.

### **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). CHBRP estimates that the additional 21,966,000 enrollees with uncovered expenses at baseline would receive a \$37,594,000 reduction in their out-of-pocket spending for covered and noncovered expenses associated with general anesthesia for dental procedures (Table 1). Due to new coverage, CHBRP also estimates that total out-of-pocket expenses for enrollees with existing coverage at baseline and those newly covered who use general anesthesia for dental procedures would increase by a total of \$5,072,000 for all market segments, in the first year under the new mandate.

### **Potential Cost Offsets or Savings in the First 12 Months after Enactment**

According to the *Medical Effectiveness* section, there exists a preponderance of evidence in the research literature that receiving appropriate dental care using DGA prevents negative health outcomes later in life. However, CHBRP is unable to quantify what these prevented health outcomes may be, or whether they would offset costs during the first year postmandate, or later during the rest of an enrollee's lifespan.

## **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 Persons<sup>44</sup>**

Because the change in average premiums does not exceed 1% for any market segment (see Table 1, Table 4, and Table 5), CHBRP would expect no measurable change in the number of uninsured persons due to the enactment of AB 2643.

## **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 2643.

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

Currently, enrollees in DMHC-regulated plans and CDI-regulated policies may have separate dental insurance coverage through companies not subject to health insurance benefit mandates, such as Delta Dental. This private insurance company may cover DGA, depending on the particular plan. If it exists, this coverage is likely linked to the dental procedure (such as oral surgery) rather than the location in which the procedure takes place.<sup>45</sup> This coverage, though, may not cover all out-of-pocket expenses.

Enrollees in DMHC-regulated Medi-Cal managed care plans are also enrolled in Denti-Cal, which covers out-of-pocket expenses for DGA for full-scope Medi-Cal enrollees. These expenditures would be shifted to medical coverage under Medi-Cal, postmandate. PMPM increases projected in the CHBRP Cost and Coverage Model above quantify this shift from Denti-Cal to costs under Medi-Cal managed care plans.

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<sup>44</sup> See also CHBRP's *Criteria and Methods for Estimating the Impact of Mandates on the Number of Uninsured*, available at [www.chbrp.org/analysis\\_methodology/cost\\_impact\\_analysis.php](http://www.chbrp.org/analysis_methodology/cost_impact_analysis.php).

<sup>45</sup> Adara Citron personal conversation with representative from Delta Dental, March 7, 2018.

**Table 2.** Baseline per Member per Month Premiums and Total Expenditures by Market Segment, California, 2019

|   | DMHC-Regulated                            |                 |                 |                       |                           |                   | CDI-Regulated                             |                 |                 | Total                    |
|---|---|-----------------|-----------------|-----------------------|---------------------------|-------------------|---|-----------------|-----------------|--------------------------|
|   | Privately Funded Plans<br>(by Market) (a) |                 |                 | Publicly Funded Plans |                           |                   | Privately Funded Plans<br>(by Market) (a) |                 |                 |                          |
|   | Large<br>Group                            | Small<br>Group  | Individual      | CalPERS<br>HMOs (b)   | MCMC<br>(Under 65)<br>(c) | MCMC<br>(65+) (c) | Large<br>Group                            | Small<br>Group  | Individual      |                          |
| <b>Enrollee counts</b>  |   |                 |                 |                       |                           |                   |   |                 |                 |                          |
| Total enrollees in plans/policies subject to state mandates (d) | 9,371,000                                 | 3,117,000       | 2,081,000       | 887,000               | 6,832,000                 | 678,000           | 214,000                                   | 133,000         | 120,000         | 23,433,000               |
| Total enrollees in plans/policies subject to AB 2643            | 9,371,000                                 | 3,117,000       | 2,081,000       | 887,000               | 6,832,000                 | 678,000           | 214,000                                   | 133,000         | 120,000         | 23,433,000               |
| <b>Premiums</b>   |   |                 |                 |                       |                           |                   |   |                 |                 |                          |
| Average portion of premium paid by employer                     | \$482.65                                  | \$343.93        | \$0.00          | \$505.74              | \$276.66                  | \$808.46          | \$557.12                                  | \$459.26        | \$0.00          | \$103,945,637,000        |
| Average portion of premium paid by employee                     | \$122.24                                  | \$158.45        | \$588.53        | \$82.33               | \$0.00                    | \$0.00            | \$175.81                                  | \$167.30        | \$459.20        | \$36,625,181,000         |
| <b>Total premium</b>  | <b>\$604.88</b>                           | <b>\$502.38</b> | <b>\$588.53</b> | <b>\$588.07</b>       | <b>\$276.66</b>           | <b>\$808.46</b>   | <b>\$732.93</b>                           | <b>\$626.56</b> | <b>\$459.20</b> | <b>\$140,570,818,000</b> |
| <b>Enrollee expenses</b>  |   |                 |                 |                       |                           |                   |   |                 |                 |                          |
| For covered benefits (deductibles, copays, etc.)                | \$48.13                                   | \$111.60        | \$159.72        | \$50.14               | \$0.00                    | \$0.00            | \$133.93                                  | \$176.39        | \$112.74        | \$14,896,952,000         |
| For noncovered benefits (e)                                     | \$0.23                                    | \$0.22          | \$0.22          | \$0.27                | \$0.00                    | \$0.00            | \$0.00                                    | \$0.10          | \$0.20          | \$43,003,000             |
| <b>Total expenditures</b>                                       | <b>\$653.25</b>                           | <b>\$614.20</b> | <b>\$748.48</b> | <b>\$638.48</b>       | <b>\$276.66</b>           | <b>\$808.46</b>   | <b>\$866.86</b>                           | <b>\$803.05</b> | <b>\$572.15</b> | <b>\$155,510,773,000</b> |

Source: California Health Benefits Review Program, 2018.

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

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

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

**Table 3.** Postmandate Per Member per Month Premiums and Total Expenditures by Market Segment, California, 2019

|  | DMHC-Regulated                      |                 |                 |                       |                           |                   | CDI-Regulated                       |                 |                 | Total               |
|--|-------------------------------------|-----------------|-----------------|-----------------------|---------------------------|-------------------|-------------------------------------|-----------------|-----------------|---------------------|
|  | Commercial Plans<br>(by Market) (a) |                 |                 | Publicly Funded Plans |                           |                   | Commercial Plans<br>(by Market) (a) |                 |                 |                     |
|  | Large<br>Group                      | Small<br>Group  | Individual      | CalPERS<br>HMOs (b)   | MCMC<br>(Under<br>65) (c) | MCMC<br>(65+) (c) | Large<br>Group                      | Small<br>Group  | Individual      |                     |
| <b>Enrollee counts</b>   |                                     |                 |                 |                       |                           |                   |                                     |                 |                 |                     |
| Total enrollees in plans/policies subject to state Mandates (d)    | 9,371,000                           | 3,117,000       | 2,081,000       | 887,000               | 6,832,000                 | 678,000           | 214,000                             | 133,000         | 120,000         | 23,433,000          |
| Total enrollees in plans/policies subject to AB 2643               | 9,371,000                           | 3,117,000       | 2,081,000       | 887,000               | 6,832,000                 | 678,000           | 214,000                             | 133,000         | 120,000         | 23,433,000          |
| <b>Premium costs</b>   |                                     |                 |                 |                       |                           |                   |                                     |                 |                 |                     |
| Average portion of premium paid by employer                        | \$0.1723                            | \$0.1311        | \$0.0000        | \$0.1993              | \$0.4035                  | \$0.4035          | \$0.0093                            | \$0.0878        | \$0.0000        | \$62,921,000        |
| Average portion of premium paid by employee                        | \$0.0436                            | \$0.0604        | \$0.1835        | \$0.0324              | \$0.0000                  | \$0.0000          | \$0.0029                            | \$0.0320        | \$0.1873        | \$12,420,000        |
| <b>Total premium</b>   | <b>\$0.2159</b>                     | <b>\$0.1915</b> | <b>\$0.1835</b> | <b>\$0.2317</b>       | <b>\$0.4035</b>           | <b>\$0.4035</b>   | <b>\$0.0122</b>                     | <b>\$0.1197</b> | <b>\$0.1873</b> | <b>\$75,341,000</b> |
| <b>Enrollee expenses</b>   |                                     |                 |                 |                       |                           |                   |                                     |                 |                 |                     |
| Enrollee expenses for covered benefits (deductibles, copays, etc.) | \$0.0171                            | \$0.0420        | \$0.0507        | \$0.0198              | \$0.0000                  | \$0.0000          | \$0.0022                            | \$0.0328        | \$0.0330        | \$5,072,000         |
| Enrollee expenses for noncovered benefits (e)                      | -\$0.2006                           | -\$0.1952       | -\$0.1974       | -\$0.2167             | \$0.0000                  | \$0.0000          | -\$0.0125                           | -\$0.1286       | -\$0.1828       | -\$37,594,000       |
| <b>Total expenditures</b>  | <b>\$0.0324</b>                     | <b>\$0.0383</b> | <b>\$0.0367</b> | <b>\$0.0348</b>       | <b>\$0.4035</b>           | <b>\$0.4035</b>   | <b>\$0.0018</b>                     | <b>\$0.0239</b> | <b>\$0.0375</b> | <b>\$42,819,000</b> |
| <b>Postmandate percent change</b>                                  |                                     |                 |                 |                       |                           |                   |                                     |                 |                 |                     |

|   |         |         |         |         |         |         |         |         |         |         |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Percent change insured premiums             | 0.0357% | 0.0381% | 0.0312% | 0.0394% | 0.1458% | 0.0499% | 0.0017% | 0.0191% | 0.0408% | 0.0536% |
| <b>Percent change in total expenditures</b> | 0.0050% | 0.0062% | 0.0049% | 0.0054% | 0.1458% | 0.0499% | 0.0002% | 0.0030% | 0.0065% | 0.0275% |

Source: California Health Benefits Review Program, 2018.

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

(b) As of September 2017, 56% of CalPERS HMO members were state retirees under age 65, state employees or their dependents. CHBRP assumes the same ratio for 2019.

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

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

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

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

## PUBLIC HEALTH IMPACTS

As discussed in the *Policy Context* section, AB 2643 would mandate coverage of dental general anesthesia (DGA) conducted outside of hospitals and surgical centers (i.e., dental offices) among children under seven years of age, persons with mental or physical disabilities, or persons for whom general anesthesia is deemed medically necessary for dental treatment. AB 2643 would also require specific language about exploring nonsurgical options in the informed consent for parents of children who are undergoing DGA.

The public health impact analysis includes estimated impacts in the short term (within 12 months of implementation) and in the long term (beyond the first 12 months postmandate). This section estimates the short-term impact<sup>46</sup> of AB 2643 on parental choice of pediatric procedures requiring DGA due to changes to the informed consent text, improved oral health by increasing access to DGA, the safety/efficacy of general anesthesia performed in dental office-based settings instead of a hospital or surgical center, disparities in oral health and access to dental care for children and special needs populations by age and race/ethnicity. See *Long-Term Impacts* for discussion of premature death, economic loss, and social determinants of health.

### Estimated Public Health Outcomes

Measurable health outcomes relevant to AB 2643 include the safety/efficacy of DGA performed in dental office-based settings instead of a hospital or surgical center, improved oral health outcomes by increasing access to DGA in office-based settings, and changes in parental decisions about pediatric DGA procedures versus nonsurgical alternatives due to changes to the informed consent text.

As presented in *Medical Effectiveness*, there was:

- Limited evidence that procedures involving DGA in office-based settings are as safe and effective as those provided in hospitals or surgery centers.
- Inconclusive evidence that receiving dental surgery under conscious sedation versus DGA could affect outcomes, and insufficient evidence that there are effective alternate treatments for young children or special needs populations for which DGA or any type of sedation is not needed.
- A preponderance of evidence that lack of treatment for conditions such as dental caries can lead to secondary complications that could impact dental and overall health.
- Limited evidence suggesting that parents/caregivers do not read or have incomplete understanding of informed consent documents for pediatric procedures and insufficient evidence to suggest that adding text about exploring nonsurgical alternatives to the informed consent would change parental decisions to have their child undergo a procedure requiring DGA.

As presented in the *Benefit Coverage, Utilization, and Cost Impacts* section:

- There would be no measurable change in coverage or utilization due to the proposed DGA parental informed consent form changes based on Medical Effectiveness findings.
- Coverage for DGA in any setting would increase from 6% to 100% of Californians with insurance subject to AB 2643. However, an annual increase in utilization of DGA is not possible due to

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<sup>46</sup> CHBRP defines short-term impacts as changes occurring within 12 months of bill implementation.

indications that the DGA workforce is at or above capacity given expert estimates on the number of DGA providers in California and the Denti-Cal DGA waitlist that exceeds one year. Furthermore, because of this, the overall distribution of DGA cases in surgical centers and hospitals versus office-based settings is not expected to shift or change.

- In the first year postmandate, net out-of-pocket costs for DGA will decrease; enrollees with uncovered expenses at baseline would receive a \$37,594,000 reduction in their out-of-pocket spending for covered and noncovered expenses associated with DGA, which would be partially offset by an increase in out-of-pocket expenses of \$5,072,000 for enrollees with existing coverage at baseline and those newly covered who use DGA.

In the first year postmandate, there will be no public health impact of AB 2643 regarding adding text to the parental informed consent to explore nonsurgical treatment options on decisions about children receiving DGA due to no change in utilization and insufficient evidence that changing the language would impact parents' decisions.

As no change or shift in utilization is estimated, CHBRP estimates that coverage of DGA in office-based settings for pediatric and special needs populations will have no public health impact in the first 12 months postmandate other than a reduction in financial burden on enrollees who would have paid for noncovered DGA out-of-pocket premandate and now can obtain DGA as a covered benefit.

**Adding language to the informed consent for pediatric dental general anesthesia:** In the first year postmandate, there will be no public health impact of AB 2643 regarding adding text to the parental informed consent to explore nonsurgical treatment options on decisions about children receiving DGA due to insufficient evidence that changing the language would impact parents' decisions and consequently no estimated change in utilization or coverage.

**Insurance coverage of DGA in office-based settings:** In the first year postmandate, because no change or shift in utilization is estimated regardless of *Medical Effectiveness* findings, CHBRP estimates that coverage of DGA in office-based settings for pediatric and special needs populations will have no public health impact. However, there will be a reduction in financial burden on enrollees who would have paid for noncovered DGA out-of-pocket premandate and would obtain DGA as a covered benefit postmandate.

### Potential Harms from AB 2643

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 2643, there is evidence to suggest that an increase in the use of DGA in pediatric or special needs populations could result in harm. Potential harms include complications and mortality associated with DGA described in the *Background* section. However, as utilization is not expected to change overall or shift from hospitals/surgical centers to office-based settings, CHBRP estimates that there will be no harms associated with AB 2643.

## Impact on Disparities<sup>47</sup>

Insurance benefit mandates that bring more state-regulated plans and policies to parity may change an existing disparity. As described in the *Background*, disparities in oral health and access to dental care exist by race/ethnicity and age. Within the first 12 months postmandate, CHBRP estimates AB 2643 would not change disparities across age groups, race/ethnicity, and socioeconomic levels.

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<sup>47</sup> For details about CHBRP's methodological approach to analyzing disparities, see [www.chbrp.org/analysis\\_methodology/docs/Estimating Impacts on Racial and Ethnic Disparities FINAL.pdf](http://www.chbrp.org/analysis_methodology/docs/Estimating_Impacts_on_Racial_and_Ethnic_Disparities_FINAL.pdf).

## LONG-TERM IMPACTS

In this section, CHBRP estimates the long-term impact<sup>48</sup> of AB 2643, 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

Over the long-term, CHBRP estimates that utilization of DGA will remain similar to the one-year estimates in CHBRP's Cost and Coverage model, given the provider constraints on supply of DGA. However, the postmandate coverage under AB 2643 may encourage more dental providers to become licensed in DGA and to perform the service in a dental office, which would loosen the supply constraints. While overall utilization of DGA would still be constrained by medical necessity, the current waitlists could be shortened, and more instances of DGA could occur within a one-year timeframe. Although CHBRP cannot quantify this effect, it should be noted that the research literature has concluded that increased coverage of a service encourages dental providers to increase supply, to take advantage of the reimbursement (Buchmueller et al., 2014).

#### Cost Impacts

Consistent with utilization rates, CHBRP estimates that the cost impact of AB 2643 will be constrained by provider supply. If providers increase their ability to provide DGA in dental offices, then CHBRP estimates that costs will increase proportionally to the utilization increase.

### Long-Term Public Health Impacts

Some interventions in proposed mandates provide immediate measurable impacts (e.g., maternity service coverage or acute care treatments) while other interventions may take years to make a measurable impact (e.g., coverage for tobacco cessation or vaccinations). When possible, CHBRP estimates the long-term effects (beyond 12-months postmandate) to the public's health that would be attributable to the mandate, including impacts on social determinants of health, premature death, and economic loss.

In the case of AB 2643, CHBRP estimates the lack of change in utilization would likely persist in the longer term after the first year postmandate; therefore, despite a stable reduction in financial burden, there will be no long-term public health impacts. However, it stands to reason that given the increase in coverage especially for privately insured enrollees, in the longer term as out-of-pocket costs are reduced, demand for DGA may increase, and more dental professionals may become DGA-certified and offer DGA at their office-based practices as they will now be able to be reimbursed for the service by insurance, increasing the supply of DGA professionals; the lack thereof is the limiting factor preventing any forecasted increase or shift in DGA utilization over time.

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<sup>48</sup> See also CHBRP's *Criteria and Guidelines for the Analysis of Long-Term Impacts on Healthcare Costs and Public Health*, available at [www.chbrp.org/analysis\\_methodology/cost\\_impact\\_analysis.php](http://www.chbrp.org/analysis_methodology/cost_impact_analysis.php).

## Impacts on Disparities and the Social Determinants of Health<sup>49</sup>

Periodically, health insurance mandates can influence SDoH, which can mediate health inequities. Evidence presented in the *Background* indicates that socioeconomic status and geography are correlated with poor oral health and lower access to or utilization of needed dental services. In the case of AB 2643, although socioeconomic and geographic SDoH exist and likely contribute to racial/ethnic and age disparities in oral health and access to dental care, CHBRP projects no changes in these SDoH/disparities that would be attributable to AB 2643. The scenario described previously of AB 2643 leading to an increased supply of DGA professionals may impact disparities and SDoH should it occur, but CHBRP is currently unable to quantify this impact.

It stands to reason that AB 2643 could modify the effects of socioeconomic status and geography on access to DGA among children and special needs populations by increasing the number of facilities at which this service could be accessed and improving the affordability of this service for individuals with health insurance as a covered benefit.

## Impacts on Premature Death and Economic Loss

### *Premature death*

Premature death is often defined as death occurring before the age of 75 years (Cox, 2006).<sup>50</sup> In California, it is estimated that there are nearly 102,000 premature deaths each year, accounting for about 1.9 million years of potential life lost (YPLL) (CDPH, 2011).

Although limited evidence suggests that office-based DGA procedures are as safe as or safer than hospital or surgical center-based procedures, CHBRP estimates no predicted change in utilization, and therefore no impact on premature death.

### *Economic loss*

Economic loss associated with disease is generally presented in the literature as an estimation of the value of the YPLL in dollar amounts (i.e., valuation of a population's lost years of work over a lifetime). In addition, morbidity associated with the disease or condition of interest can also result in lost productivity by causing a worker to miss days of work due to illness or acting as a caregiver for someone else who is ill.

Although a potential economic loss (i.e., societal burden of direct and indirect costs) associated with untreated dental diseases is discussed in the *Background* section, we were unable to find specific data for this topic and population. In addition, CHBRP estimates no predicted change in utilization of DGA to treat serious dental issues in children and adults with special needs, and therefore no impact on indirect (i.e., productivity) economic loss in California. However, given the sustained reduction in financial burden (i.e., out-of-pocket costs) over time due to increased coverage of DGA among privately insured

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<sup>49</sup> For more information about SDoH, see CHBRP's publication *Incorporating Relevant Social Determinants of Health Into CHBRP Benefit Mandate Analyses* at [www.chbrp.org/analysis\\_methodology/docs/Incorporating Relevant Social Determinants of Health in CHBRP Analyses Final to WEBSITE 033016.pdf](http://www.chbrp.org/analysis_methodology/docs/Incorporating_Relevant_Social_Determinants_of_Health_in_CHBRP_Analyses_Final_to_WEBSITE_033016.pdf).

<sup>50</sup> The overall impact of premature death due to a particular disease can be measured in years of potential life lost prior to age 75 and summed for the population (generally referred to as "YPLL") (Cox, 2006). For more information about CHBRP's public health methodology, see: [www.chbrp.org/analysis\\_methodology/docs/Public%20Health%20Approach%20Final%20091216.pdf](http://www.chbrp.org/analysis_methodology/docs/Public%20Health%20Approach%20Final%20091216.pdf).

Californians, there may be a small reduction in direct medical costs associated with serious dental diseases for the small proportion of children and adults with special needs who require DGA. In the longer term, if the supply of DGA providers increases and more patients are able to receive treatment in office-based settings, direct costs may also decrease in a similar manner.

## APPENDIX A TEXT OF BILL ANALYZED

On February 15, 2018, the California Assembly Committee on Health requested that CHBRP analyze AB 2643.

**ASSEMBLY BILL**

**No. 2643**

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**Introduced by Assembly Member Irwin**

February 15, 2018

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An act to amend Section 1682 of the Business and Professions Code, to amend Section 1367.71 of the Health and Safety Code, and to amend Section 10119.9 of the Insurance Code, relating to health care.

### legislative counsel's digest

AB 2643, as introduced, Irwin. Dentistry: general anesthesia: health care coverage.

The Dental Practice Act provides for the licensure and regulation of dentists by the Dental Board of California. The act governs the use of general anesthesia, conscious sedation, and oral conscious sedation for pediatric and adult patients. The act makes it unprofessional conduct for any dentist to fail to obtain the written informed consent of a patient prior to administering general anesthesia or conscious sedation. With respect to a minor, the act also requires that the written informed consent include a specified statement that, among other things, encourages the parent or guardian to explore all the options available for a child's anesthesia for his or her dental treatment.

This bill would revise the required written informed consent statement, applicable for minors, to specify that it is required in the case of general anesthesia. The bill would also revise the content of that statement to require it to include a provision to encourage exploring nonsurgical treatment options.

Existing law, the Knox-Keene Service Plan Act of 1975, provides for the licensure and regulation of health care service plans by the Department of Managed Health Care and make a willful violation of that act a crime. Existing law also provides for the regulation of policies of disability insurance by the Insurance Commissioner.

Existing law provides that specified health care service plan contracts and disability insurance policies and certificates are deemed to cover general anesthesia and associated facility charges for dental procedures, upon specified authorization for enrollees or insureds under 7 years of age, enrollees or insureds who are developmentally disabled, or enrollees or insureds whose health is compromised and for whom general anesthesia is medically necessary, if certain other conditions are present. Under existing law, these provisions apply to those procedures rendered in a

hospital or surgery center.

This bill, with respect to contracts or policies issued, amended, or renewed on or after January 1, 2019, would remove the language that limits coverage to procedures rendered in a hospital or surgery center. Because a willful violation of that requirement by a health care service plan 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.

Vote: majority. Appropriation: no. Fiscal committee: yes.

State-mandated local program: yes.

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

- 1 SECTION 1. Section 1682 of the Business and Professions
- 2 Code is amended to read:
- 3 1682. In addition to other acts constituting unprofessional
- 4 conduct under this chapter, it is unprofessional conduct for:
- 5 (a) Any dentist performing dental procedures to have more than
- 6 one patient undergoing conscious sedation or general anesthesia
- 7 on an outpatient basis at any given time unless each patient is being
- 8 continuously monitored on a one-to-one ratio while sedated by
- 9 either the dentist or another licensed health professional authorized
- 10 by law to administer conscious sedation or general anesthesia.
- 11 (b) Any dentist with patients recovering from conscious sedation
- 12 or general anesthesia to fail to have the patients closely monitored
- 13 by licensed health professionals experienced in the care and

1 resuscitation of patients recovering from conscious sedation or  
2 general anesthesia. If one licensed professional is responsible for  
3 the recovery care of more than one patient at a time, all of the  
4 patients shall be physically in the same room to allow continuous  
5 visual contact with all patients and the patient to recovery staff  
6 ratio should not exceed three to one.

7 (c) Any dentist with patients who are undergoing conscious  
8 sedation to fail to have these patients continuously monitored  
9 during the dental procedure with a pulse oximeter or similar or  
10 superior monitoring equipment required by the board.

11 (d) Any dentist with patients who are undergoing conscious  
12 sedation to have dental office personnel directly involved with the  
13 care of those patients who are not certified in basic cardiac life  
14 support (CPR) and recertified biennially.

15 (e) (1) Any dentist to fail to obtain the written informed consent  
16 of a patient prior to administering general anesthesia or conscious  
17 sedation. In the case of a minor, the consent shall be obtained from  
18 the child's parent or guardian.

19 (2) The written informed ~~consent~~, *consent for general*  
20 *anesthesia*, in the case of a minor, shall include, but not be limited  
21 to, the following information:

22 "The administration and monitoring of general anesthesia may  
23 vary depending on the type of procedure, the type of practitioner,  
24 the age and health of the patient, and the setting in which anesthesia  
25 is provided. Risks may vary with each specific situation. You are  
26 encouraged to explore all the options available for your child's  
27 anesthesia for his or her dental ~~treatment~~, *treatment, including*  
28 *nonsurgical treatment options*, and consult with your dentist or  
29 pediatrician as needed."

30 (3) Nothing in this subdivision shall be construed to establish  
31 the reasonable standard of care for administering or monitoring  
32 oral conscious sedation, conscious sedation, or general anesthesia.

33 SEC. 2. Section 1367.71 of the Health and Safety Code is  
34 amended to read:

35 1367.71. (a) Every health care service plan contract, other than  
36 a specialized health care service plan contract, that is issued,  
37 amended, renewed, or delivered on or after January 1, ~~2000~~, 2019,  
38 shall be deemed to cover general anesthesia and associated facility  
39 charges for dental procedures ~~rendered in a hospital or surgery~~  
40 ~~center setting~~, when the clinical status or underlying medical

1 condition of the patient requires dental procedures that ordinarily  
2 would not require general anesthesia to be rendered in a hospital  
3 or surgery center setting. *anesthesia*. The health care service plan  
4 may require prior authorization of general anesthesia and associated  
5 charges required for dental care procedures in the same manner  
6 that prior authorization is required for other covered diseases or  
7 conditions.

8 (b) This section shall apply only to general anesthesia and  
9 associated facility charges for only the following enrollees, and  
10 only if the enrollees meet the criteria in subdivision (a):

11 (1) Enrollees who are under seven years of age.

12 (2) Enrollees who are developmentally disabled, regardless of  
13 age.

14 (3) Enrollees whose health is compromised and for whom  
15 general anesthesia is medically necessary, regardless of age.

16 (c) Nothing in this section shall require the health care service  
17 plan to cover any charges for the dental procedure itself, including,  
18 but not limited to, the professional fee of the dentist. Coverage for  
19 anesthesia and associated facility charges pursuant to this section  
20 shall be subject to all other terms and conditions of the plan that  
21 apply generally to other benefits.

22 (d) Nothing in this section shall be construed to allow a health  
23 care service plan to deny coverage for basic health care services,  
24 as defined in Section 1345.

25 (e) A health care service plan may include coverage specified  
26 in subdivision (a) at any time prior to January 1, 2000- 2019.

27 SEC. 3. Section 10119.9 of the Insurance Code is amended to  
28 read:

29 10119.9. (a) A disability insurance policy or certificate  
30 covering hospital, surgical, or medical expenses, that meets the  
31 definition of "health benefit plan" in subdivision (a) of Section  
32 10198.6, that is issued, amended, renewed, or delivered on or after  
33 January 1, 2000, 2019, shall be deemed to cover general anesthesia  
34 and associated facility charges for dental procedures rendered in  
35 a hospital or surgery center setting, when the clinical status or  
36 underlying medical condition of the insured requires dental  
37 procedures that ordinarily would not require general anesthesia to  
38 be rendered in a hospital or surgery center setting. *anesthesia*. The  
39 disability insurance policy or certificate may require prior  
40 authorization of general anesthesia and associated charges required

1 for dental care procedures in the same manner that prior  
2 authorization is required for other covered diseases or conditions.

3 (b) This section shall apply only to general anesthesia and  
4 associated facility charges for only the following insureds, and  
5 only if the insureds meet the criteria in subdivision (a):

6 (1) Insureds who are under seven years of age.

7 (2) Insureds who are developmentally disabled, regardless of  
8 age.

9 (3) Insureds whose health is compromised and for whom general  
10 anesthesia is medically necessary, regardless of age.

11 (c) Nothing in this section shall require insurers to cover any  
12 charges for the dental procedure itself, including the professional  
13 fee of the dentist. Coverage for anesthesia and associated facility  
14 charges pursuant to this section shall be subject to all other terms  
15 and conditions of the policy or certificate that apply generally to  
16 other benefits.

17 (d) Nothing in this section shall require insurers to cover  
18 anesthesia or related facility charges for dental procedures that  
19 ordinarily would require general anesthesia and that do not meet  
20 the requirements of subdivision (a), (b), or (c).

21 (e) A disability insurance policy may include coverage specified  
22 in subdivision (a) at any time prior to January 1, ~~2000~~ 2019.

23 SEC. 4. No reimbursement is required by this act pursuant to  
24 Section 6 of Article XIII B of the California Constitution because  
25 the only costs that may be incurred by a local agency or school  
26 district will be incurred because this act creates a new crime or  
27 infraction, eliminates a crime or infraction, or changes the penalty  
28 for a crime or infraction, within the meaning of Section 17556 of  
29 the Government Code, or changes the definition of a crime within  
30 the meaning of Section 6 of Article XIII B of the California  
31 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 the informed consent process as well as general anesthesia and nonsurgical treatment options 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.

The search was limited to abstracts of studies published in English. The medical effectiveness search was limited to studies published from 2008 to present. The literature on the effectiveness of XX treatments did not include any randomized controlled trials. The majority of the papers returned were case reports or systematic reviews).

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 332 articles, of which 40 were reviewed for inclusion in this report. A total of 23 studies were included in the medical effectiveness review for AB 2643.

### 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*.<sup>51</sup> 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.

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*

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<sup>51</sup> Available at: [www.chbrp.org/analysis\\_methodology/docs/medeffect\\_methods\\_detail.pdf](http://www.chbrp.org/analysis_methodology/docs/medeffect_methods_detail.pdf).

- *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)**

### *PubMed MeSH terms*

- absenteeism
- anesthesia, dental
- anesthesia, general
- cognitive therapy
- cost of illness
- costs and cost analysis
- deep sedation
- dental anxiety
- dental care/utilization
- dental care for disabled/utilization
- dental caries
- dental insurance
- dental offices
- dentists
- developmental disabilities
- dental care/utilization
- disabled persons
- ethic groups
- fear
- health services accessibility
- healthcare disparities
- hospitals
- incidence
- informed consent
- inpatients
- intellectual disability
- mortality
- mortality premature
- oral health
- outpatients
- patient safety
- pit and fissure sealants
- prevalence
- quality of life
- root canal therapy
- tooth extraction
- treatment outcome

*EMBASE Emtree terms*

- anesthesiological procedure
- anesthesiologist
- cognitive behavioral therapy
- cost
- cost of illness
- deep sedation
- dental anxiety
- dental caries
- dental facility
- dental procedure
- dentist
- dental anesthesia
- disabled person
- disability
- ethnic group
- ethnic or racial aspects
- fear
- general anesthesia
- health care disparity
- health care facilities and services
- hospital
- hospital patents
- incidence
- informed consent
- intellectual impairment
- general anesthesia
- handicapped child
- mortality
- outpatient
- patient safety
- pit and fissure sealants
- premature mortality
- prevalence
- quality of life
- school attendance
- silver diamine fluoride
- tooth extraction
- treatment outcome

*Keywords used to search PubMed, EMBASE, Google Scholar, and Google*

- access to care
- adverse event
- alternative setting
- American Academy of Pediatric Dentistry
- American Society of Anesthesiologist
- anxiety
- behavioral management
- Centers for Disease Control and Prevention
- childhood caries
- cognitive behavioral therapy
- costs
- dental caries
- dental office
- dental procedure
- dental rehabilitation
- dental treatment
- dentist anesthesiologists
- disease burden
- ethnicity
- extraction
- financial burden
- gender
- long term impacts
- National Institutes of Dental Research
- office based
- operation room
- oral health policies
- out of pocket
- parental consent
- Pediatric dental patients
- pediatric dental procedures
- pediatric dentistry
- periodontal surgery
- practice guidelines
- premature death
- productivity
- race
- racial ethnic disparities
- recommendations
- silver diamine fluoride
- special needs
- unmet dental needs

## 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, PricewaterhouseCoopers (PwC).<sup>52</sup>

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.<sup>53</sup>

This appendix describes 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 to specifically to an analysis of AB 2643

The cost analysis in this report was prepared by the members of the cost team, which consists of CHBRP task force members and contributors primarily from the University of California, Los Angeles, the University of California, as well as the contracted actuarial firm, PricewaterhouseCoopers (PwC).<sup>54</sup>

This subsection discusses the caveats and assumptions specifically relevant to the coverage requirement for general anesthesia for dental procedures for children under seven years old, persons with developmental disabilities, and persons with compromised health or general conditions for whom general anesthesia is medically necessary per AB2643.

The population subject to the mandated offering includes anyone covered by DMHC-regulated commercial insurance plans and CDI-regulated policies for large group, small group, individual marketplace plans, CalPERS and Medi-Cal plans.

The following table lists the CPT codes used to identify general anesthesia used during dental procedures, identified with carrier coverage guidelines and reviewed by a content expert.

| CPT/HCPCS Codes | Description:  |
|-----------------|---|
| 00170           | Under Anesthesia for Procedures on the Head                   |
| 00170-47        | Under Anesthesia for Procedures on the Head                   |
| 00100-47        | Under Anesthesia for Procedures on the Head                   |
| 41899           | Under Other Procedures on the Dentoalveolar Structures        |
| D9220           | Deep sedation/general anesthesia-first 30 minutes             |
| D9221           | Deep sedation/general anesthesia - each additional 15 minutes |
| D9222           | Deep sedation/general anesthesia – first 15 minutes           |
| D9223           | Deep sedation/general anesthesia - each 15 minute increment   |

<sup>52</sup> CHBRP’s authorizing statute, available at [www.chbrp.org/docs/authorizing\\_statute.pdf](http://www.chbrp.org/docs/authorizing_statute.pdf), requires that CHBRP use a certified actuary or “other person with relevant knowledge and expertise” to determine financial impact.

<sup>53</sup> See *2017 Cost Impact Analyses: Data Sources, Caveats, and Assumptions*, available at [www.chbrp.org/analysis\\_methodology/cost\\_impact\\_analysis.php](http://www.chbrp.org/analysis_methodology/cost_impact_analysis.php).

<sup>54</sup> CHBRP’s authorizing statute, available at [www.chbrp.org/docs/authorizing\\_statute.pdf](http://www.chbrp.org/docs/authorizing_statute.pdf), requires that CHBRP use a certified actuary or “other person with relevant knowledge and expertise” to determine financial impact.

CPT code 00170 (without modifier) was limited to procedures where the provider was a dentist or dental specialist in one of the following settings: Inpatient Hospital, Outpatient Hospital-On Campus, Ambulatory Surgical Center, and Outpatient Non-Emergent Center.

The following table lists the diagnosis codes used to identify developmentally disabled individuals. Any enrollee with one of the following diagnosis codes in Truven's 2016 MarketScan® commercial claims was flagged as a developmentally disabled individual:

| Diagnosis Codes (ICD-10): | Description  |
|---------------------------|--|
| O351                      | Maternal care for (suspected) chromosomal abnormality in fetus                               |
| Z8279                     | Family history of other congenital malformations, deformations and chromosomal abnormalities |
| Q9                        | Chromosomal abnormalities, not elsewhere classified  |
| F                         | Physical Rehabilitation and Diagnostic Audiology   |
| G80                       | Cerebral palsy   |
| Q86                       | Congenital malformation syndromes due to known exogenous causes, not elsewhere classified    |
| P043                      | Newborn affected by maternal use of alcohol  |
| Z818                      | Family history of other mental and behavioral disorders                                      |
| R47                       | Speech disturbances, not elsewhere classified  |
| P                         | Certain conditions originating in the perinatal period                                       |
| E70                       | Disorders of aromatic amino-acid metabolism  |
| S07                       | Crushing injury of head  |
| S08                       | Avulsion and traumatic amputation of part of head  |
| S09                       | Other and unspecified injuries of head   |
| Z77011                    | Contact with and (suspected) exposure to lead  |
| M101                      | Lead-induced gout  |
| T56                       | Toxic effect of metals   |
| P57                       | Kernicterus  |
| E00                       | Congenital iodine-deficiency syndrome  |
| E02                       | Subclinical iodine-deficiency hypothyroidism   |

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

- Baseline costs and cost sharing for dental general anesthesia were based on 2016 MarketScan® commercial claims and enrollment data for California. The baseline cost of general anesthesia for dental procedure was trended at 3% annual rate of increase from 2016 to 2019, for a total increase of 9.3% over the time period.
- In AB 2643 compliant plans, baseline users per 1,000 enrollees were developed based on members who had dental general anesthesia in hospital, ambulatory surgical center, office, or other settings from 2016 MarketScan® enrollment data in California
- In AB 2643 non-compliant plans,
  - baseline users per 1,000 enrollees who had dental general anesthesia in hospital or surgical center were developed from 2016 MarketScan® enrollment data for California.
  - baseline users per 1,000 enrollees who had dental general anesthesia in dental offices or other settings were estimated as half of the usage rate of enrollees in Medi-Cal managed care plans, based on estimates from Dr. Ray Stewart.<sup>55</sup>
- For Medi-Cal managed care plans, dental general anesthesia usage per 1,000 enrollees was based on confidential data provided by Denti-Cal.

<sup>55</sup> E-mail communication with Dr. Ray Stewart of UC San Francisco, on March 26, 2018.

- Carrier surveys were administered to estimate the percentage of enrollees who had dental general anesthesia coverage in the baseline period

### **Determining Public Demand for the Proposed Mandate**

This subsection discusses public demand for the benefits AB 2643 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 description treatment or service. 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 responses indicated that there were no substantive differences.

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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, **PricewaterhouseCoopers**, to assist in assessing the financial impact of each legislative proposal mandating or repealing a health insurance benefit.

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

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Sara McMenamin, PhD, and Steven Tally, PhD, both of the University of California, San Diego, prepared the medical effectiveness analysis. Min-Lin Fang, MLIS, from the University of California, San Francisco, conducted the literature search. Sara McMenamin, and PhD, Sarah Hiller, MA, both of the University of California, San Diego, prepared the public health impact analysis. Shana Charles, MPP, PhD, from the California State University, Fullerton, prepared the cost impact analysis. Peter Davidson, FSA, MAAA, of PricewaterhouseCoopers, and supporting actuarial staff, provided actuarial analysis. Content expert Leon Assael, DMD, from the University of California, San Francisco, provided technical assistance with the literature review and expert input on the analytic approach. Adara Citron, MPH, of CHBRP staff prepared the Policy Context and synthesized the individual sections into a single report. A subcommittee of CHBRP's National Advisory Council (see final pages of this report) and a member of the CHBRP Faculty Task Force, Brent Fulton, PhD, of the University of California, Berkeley reviewed the analysis for its accuracy, completeness, clarity, and responsiveness to the Legislature's request. 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](http://www.chbrp.org).

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