California Health Benefits Review Program

Analysis of Assembly Bill 460: Health Care Coverage: Infertility

A Report to the 2013–2014 California Legislature April 19, 2013

CALIFORNIA
HEALTH BENEFITS REVIEW PROGRAM

The California Health Benefits Review Program (CHBRP) responds to requests from the State Legislature to provide independent analyses of the medical, financial, and public health impacts of proposed health insurance benefit mandates and proposed repeals of health insurance benefit mandates. CHBRP was established in 2002 to respond to requests from the California Legislature to provide independent analysis of the medical, financial, and public health impacts of proposed health insurance benefit mandates and repeals per its authorizing statute.[1] The program was reauthorized in 2006 and again in 2009. CHBRP's authorizing statute defines legislation proposing to mandate or proposing to repeal an existing health insurance benefit as a proposal that would mandate or repeal a requirement that a health care service plan or health insurer: (1) permit covered individuals to obtain health care treatment or services from a particular type of health care provider; (2) offer or provide coverage for the screening, diagnosis, or treatment of a particular disease or condition; (3) offer or provide coverage of a particular type of health care treatment or service, or of medical equipment, medical supplies, or drugs used in connection with a health care treatment or service; and/or (4) specify terms (limits, timeframes, copayments, deductibles, coinsurance, etc.) for any of the other categories.

An analytic staff in the University of California's Office of the President supports a task force of faculty and staff from several campuses of the University of California to complete each analysis within a 60-day period, usually before the Legislature begins formal consideration of a mandate or repeal bill. A certified, independent actuary helps estimate the financial impacts. A strict conflict-of-interest policy ensures that the analyses are undertaken without financial or other interests that could bias the results. A National Advisory Council, drawn from experts from outside the state of California as well as Loma Linda University, the University of Southern California, and Stanford University, and designed to provide balanced representation among groups with an interest in health insurance benefit mandates or repeals, reviews draft studies to ensure their quality before they are transmitted to the Legislature. Each report summarizes scientific evidence relevant to the proposed mandate, or proposed mandate repeal, but does not make recommendations, deferring policy decision making to the Legislature. The State funds this work through an annual assessment on health plans and insurers in California. All CHBRP reports and information about current requests from the California Legislature are available on the CHBRP website, www.chbrp.org.

[1] Available at: www.chbrp.org/documents/authorizing_statute.pdf.

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PREFACE

This report provides an analysis of the medical, financial, and public health impacts of Assembly Bill 460. In response to a request from the California Assembly Committee on Health on February 20, 2013, the California Health Benefits Review Program (CHBRP) undertook this analysis pursuant to the program's authorizing statute.

Sara McMenamin, PhD, of the University of California, San Diego, prepared the medical effectiveness analysis. Stephen L. Clancy, MLS, AHIP, of the University of California, Irvine, conducted the literature search. Stephen McCurdy, MD, MPH, and Meghan Soulsby, MPH, of the University of California, Davis, prepared the public health impact analysis. Brent Fulton, PhD, of the University of California, Berkeley, prepared the cost impact analysis. Susan Pantely, FSA, MAAA, and Jose Carlo, of Milliman, provided actuarial analysis. H. Irene Su, MD, of the University of California, San Diego, provided technical assistance with the literature review and expert input on the analytic approach. Laura Grossmann, MPH, of CHBRP staff prepared the *Introduction* 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, Sylvia Guendelman, PhD, LCSW, of the University of California, Berkeley, reviewed the analysis for its accuracy, completeness, clarity, and responsiveness to the Legislature's request.

CHBRP gratefully acknowledges all of these contributions but assumes full responsibility for all of the report and its contents. Please direct any questions concerning this report to:

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EXECUTIVE SUMMARY

California Health Benefits Review Program Analysis of Assembly Bill 460

The California Assembly Committee on Health requested on February 20, 2013, that the California Health Benefits Review Program (CHBRP) conduct an evidence-based assessment of the medical, financial, and public health impacts of Assembly Bill (AB) 460, infertility. In response to this request, CHBRP undertook this analysis pursuant to the provisions of the program's authorizing statute.[2]

In 2014, CHBRP estimates that approximately 25.9 million Californians (67%) will have health insurance that may be subject to a health benefit mandate law passed at the state level.[3] Of the rest of the state's population, a portion will be uninsured (and so will have no health insurance subject to any benefit mandate), and another portion will have health insurance subject to other state laws or only to federal laws.

Uniquely, California has a bifurcated system of regulation for health insurance subject to state benefit mandates. The California Department of Managed Health Care (DMHC)[4] regulates health care service plans, which offer benefit coverage to their enrollees through health plan contracts. The California Department of Insurance (CDI) regulates health insurers,[5] which offer benefit coverage to their enrollees through health insurance policies.

Most DMHC-regulated plans and CDI-regulated policies in the small-group and large-group markets are subject to AB 460.[6] Individual-market DMHC-regulated plans and CDI-regulated policies are not subject to AB 460. In addition, the regulator, DMHC, and the purchaser, the California Department of Health Care Services, have indicated that by referencing "group" plans AB 460 would not require compliance from plans enrolling Medi-Cal beneficiaries into Medi-Cal Managed Care.[7,8] Therefore, the mandate would affect the health insurance of approximately 14.4 million enrollees (37% of all Californians).

Developing Estimates for 2014 and the Effects of the Affordable Care Act

The Affordable Care Act (ACA)[9] is expected to dramatically affect health insurance and its regulatory environment in California, with many changes becoming effective in 2014. It is

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[2] Available at: www.chbrp.org/docs/authorizing_statute.pdf.
[3] CHBRP's estimates are available at: www.chbrp.org/other_publications/index.php.
[4] The California Department of Managed Health Care (DMHC) was established in 2000 to enforce the Knox-Keene Health Care Service Plan of 1975; see Health and Safety Code (H&SC) Section 1340.
[5] The California Department of Insurance (CDI) licenses "disability insurers." Disability insurers may offer forms of insurance that are not health insurance. This report considers only the impact of the benefit mandate on health insurance policies, as defined in Insurance Code (IC) Section 106(b) or subdivision (a) of Section 10198.6.
[6] Small-group market DMHC-regulated plans with fewer than 20 employees are not subject to AB 460, as discussed in more depth later on in the *Executive Summary*.
[7] Personal communication, S. Lowenstein, DMHC, March 2013.
[8] Personal communication, C. Robinson, Department of Health Care Services, citing Sec. 2791 of the federal Public Health Service Act, March 2013.
[9] The federal "Patient Protection and Affordable Care Act" (P.L.111-148) and the "Health Care and Education Reconciliation Act" (P.L. 111-152) were enacted in March 2010. Together, these laws are referred to as the Affordable Care Act (ACA).

important to note that CHBRP's analysis of proposed benefit mandate bills typically address the marginal effects of the proposed bills—specifically, how the proposed mandate would affect benefit coverage, utilization, costs, and public health, holding all other factors constant. CHBRP's estimates of these marginal effects are presented in this report. Because expanded enrollment will not occur until January 2014, CHBRP relies on projections from the California Simulation of Insurance Markets (CalSIM) model[10] to help set baseline enrollment for 2014. From this projected baseline, CHBRP estimates the marginal impact of benefit mandates proposed that could be in effect after January 2014.

Bill-Specific Analysis of AB 460

AB 460 would modify a state benefit mandate that is currently law in Health and Safety Code (H&SC) Section 1374.55 and Insurance Code (IC) Code Section 10119.6. The current state benefit mandate requires group market DMHC-regulated plans and CDI-regulated policies to *offer* coverage for the treatment of infertility.[11] Under this "mandate to *offer*," the purchaser of the plan or policy has the option to include coverage for the treatment of infertility in their employee plans or policies; "mandates to *offer*," such as this one, are often referred to as "optional riders." (See below for a further discussion of "mandates to *offer*" and "mandates to *cover*.")

The current state benefit mandate, **hereafter referred to as the "current infertility treatment mandate,"** defines infertility as either:

(1) "the presence of a demonstrated condition recognized by a licensed physician and surgeon as a cause of infertility, or

(2) the inability to conceive a pregnancy or to carry a pregnancy to a live birth after a year or more of regular sexual relations without contraception."[12]

Under the current infertility treatment mandate, treatment for infertility includes, but is not limited to, diagnosis, diagnostic tests, medication, surgery, and gamete intrafallopian transfers (GIFT). **Offering coverage for in vitro fertilization (IVF) is not required.**

AB 460 would modify the current infertility treatment mandate, adding language that would require treatment for infertility be "offered and provided without discrimination." AB 460 would add the following language to the current state benefit mandate:

> *(g) Coverage for the treatment of infertility shall be offered and provided without discrimination on the basis of age, ancestry, color, disability, domestic partner status, gender, gender expression, gender identity, genetic information, marital status, national origin, race, religion, sex, or sexual orientation.*

[10] CalSIM was developed jointly and is operated by the University of California, Los Angeles Center for Health Policy Research, and the University of California, Berkeley Center for Labor Research and Education. The model estimates the impact of provisions in the ACA on employer decisions to offer, and individual decisions to obtain, health insurance.
[11] H&SC Section 1374.55 and IC Section 10119.6.
[12] H&SC Section 1374.55 and IC Section 10119.6.

Although AB 460 would add the words "offered and provided" to the H&SC and IC, both DMHC and CDI have indicated that the language AB 460 would add to the current infertility treatment mandate would not alter it from a "mandate to *offer*" to a "mandate to *cover*."[13]

AB 460 would modify a state benefit mandate that is currently law. The current state benefit AB 460 would modify is the "mandate to *offer*" coverage for the treatment of infertility. AB 460 would add language to the current infertility treatment mandate requiring that treatment for infertility be "offered and provided without discrimination," but would not alter the current infertility treatment mandate from a "mandate to *offer*" to a "mandate to *cover*."

Analytic Approach and Key Assumptions

Discrimination

The medical policies of DMHC-regulated plans and CDI-regulated insurers are not identical in how they define infertility, but, generally, infertility for heterosexual couples is defined as the inability to achieve conception after having frequent, unprotected intercourse for at least a year, or for 6 months for a woman over the age of 35. For a single woman, infertility is defined as the inability to achieve conception after having 6 to 12 cycles of artificial insemination, generally within a 1-year period.[14] Sometimes the language for the definition of infertility for a single woman includes the words "medically supervised" artificial insemination.

The bill author's office indicated that their intention is to address discrimination in coverage for the treatment of infertility specifically for single people, transgender people, and same-sex couples.[15] The bill author's office provided examples of how they believe definitions in medical policies are discriminatory, including: a single woman must pay for artificial insemination prior to being able to meet the definition of infertility, whereas a heterosexual couple does not face a similar cost to meet the definition of infertility; a single woman may be subject to medical supervision and documentation requirements to which a heterosexual couple may not be subject; and the definitions of infertility apply to a single woman, but not to a single man.[16] The bill author's office did not provide examples of how discrimination in coverage for the treatment of infertility may occur as a result of the other factors listed in the language AB 460 would add to the current infertility treatment mandate (e.g., age, ancestry, color, disability, national origin, race, religion).

CHBRP is not able to say whether these definitions or practices would be discriminatory or whether other definitions or practices would be considered discriminatory, nor was literature found that addressed discrimination in issuance of health insurance coverage for the treatment of infertility. Legal analysis, which CHBRP does not do, is required to understand how discrimination would be interpreted as it relates to coverage of treatment for infertility.[17] DMHC and CDI were unable to provide this level of legal analysis within CHBRP's 60-day analysis

[13] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.
[14] These definitions align with how infertility is defined by the American Society of Reproductive Medicine (ASRM), as discussed in the subsection below, "*Definitions of infertility*."
[15] Personal communication, W. Hill, Office of Assemblymember Tom Ammiano, March 2013.
[16] Personal communication, W. Hill, Office of Assemblymember Tom Ammiano, March 2013.
[17] Personal communication, S. Lowenstein, DMHC, March 2013.

time frame, nor could they provide guidance on how discrimination would be interpreted as it relates to coverage for the treatment of infertility, indicating that the impact AB 460 may have is unknown at this time.[18]

Because the impact AB 460 may have is unknown, CHBRP is unable to estimate the marginal impact, if any, of AB 460. In this report, CHBRP presents information on infertility and infertility treatments, the impact of insurance coverage for infertility treatment on utilization, and information on current coverage for the treatment of infertility in DMHC-regulated plans and CDI-regulated policies.

What may or may not be considered discrimination as it relates to coverage for the treatment of infertility is unknown. Therefore, CHBRP is unable to estimate the marginal impact, if any, of AB 460. This report presents information on infertility and infertility treatments, the impact of insurance coverage for infertility treatment on utilization, and information on current coverage of treatments for infertility in DMHC-regulated plans and CDI-regulated policies.

Definitions of infertility

There are multiple definitions of infertility:

- The current infertility treatment mandate includes a definition of infertility;
- The medical policies for DMHC-regulated plans and CDI-regulated insurers include definitions of infertility;
- The National Survey on Family Growth (NSFG) defines infertility; and
- The American Society of Reproductive Medicine (ASRM) defines infertility.[19]

DHMC-regulated plans and CDI-regulated policies are subject to the H&SC and IC, respectively, which includes one definition of infertility, and DMHC-regulated plans and CDI-regulated insurers include other definitions of infertility in their medical policies. The definitions in the medical policies of DMHC-regulated plans and CDI-regulated insurers, discussed above, generally align with the ASRM definition, which defines infertility as the failure to achieve a successful pregnancy after 12 months or more of appropriate, timed unprotected intercourse or therapeutic donor insemination. However, because much of the literature on infertility treatment uses information and data from the NSFG, the definitions used by the NSFG inform much of this report. (See the *Background on Infertility* section below for NSFG definitions).

"Mandates to cover" and "mandates to offer"

State benefit mandates can be "mandates to *cover*" or "mandates to *offer*" coverage.

[18] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.

[19] There are likely further definitions of infertility beyond those listed here. These definitions are addressed in this report because they directly relate to AB 460 and/or the data and literature discussed in the report.

- Most California state benefit mandates are "mandates to *cover*," meaning they require DMHC-regulated plans and CDI-regulated policies subject to the benefit mandate to cover particular services, treatments, health conditions, or provider types.[20]
- Some California state benefit mandates are "mandates to *offer*" coverage, meaning they require DMHC-regulated plans or CDI-regulated policies subject to the benefit mandate to *offer* to cover particular services, treatments, health conditions, or provider types.[21]

"Mandates to *offer*" can be referred to as "optional riders" because the purchaser of the plan or policy decides to accept or not accept the optional coverage. If the coverage in the optional rider is accepted, it is included in addition to the benefits covered in the standard DMHC-regulated plan contract[22] or CDI-regulated policy.[23] The current infertility treatment mandate in H&SC Section 1374.55 and IC Section 10119.6 that AB 460 would modify is the "mandate to *offer"* coverage for the treatment of infertility in group market DMHC-regulated plans and CDI-regulated policies. Even with the words "offered and provided" in the language that AB 460 would add to the existing mandate, if AB 460 were enacted, the current infertility treatment mandate would remain a "mandate to *offer*" coverage for the treatment of infertility.[24]

Required coverage in DMHC-regulated plans and CDI-regulated policies

AB 460 would apply to the same DMHC-regulated plans and CDI-regulated policies that are subject to the current infertility treatment mandate. The current infertility treatment mandate requiring an *offer* of coverage for the treatment of infertility only applies to group market DMHC-regulated plans and CDI-regulated policies. Therefore, individual-market DMHC-regulated plans and CDI-regulated policies are not subject to the current mandate, nor are Medi-Cal Managed Care Plans.

For CDI-regulated policies, all group-market policies, both small group and large group, are subject to the current infertility treatment mandate requiring them to *offer* coverage for the treatment of infertility.

For DMHC-regulated plans, the language in the current infertility treatment mandate differentiates between non-health maintenance organizations (HMOs) and HMOs, as defined in H&SC Section 1373.10. DMHC oversees all HMOs in California. DMHC also oversees preferred provider organizations (PPOs) issued by Blue Cross of California and Blue Shield of California.

H&SC Section 1374.55, which AB 460 would modify, requires that DMHC-regulated non-HMOs *offer* coverage to all groups in the DMHC-regulated small-group and large-group market,

[20] Some state benefit mandates require DMHC-regulated plans or CDI-regulated policies subject to the benefit mandate to abide by the terms and conditions set by the benefit mandate, as opposed to requiring coverage for a specific test, treatment, or services.
[21] CHBRP's list of California state benefit mandates includes information on which mandates are "mandates to cover" and which are "mandates to offer" coverage, available at: www.chbrp.org/other_publications/index.php.
[22] DMHC regulates health care service plans, which enroll people (enrollees) through health care service plan contracts.
[23] CDI regulates health insurers, which enroll people (enrollees) through CDI-regulated polices.
[24] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.

regardless of size, but that DMHC-regulated HMOs only *offer* coverage to groups with 20 or more employees.[25] However, DMHC has indicated that the broad definition of HMOs in H&SC Section 1373.10 would encompass all DMHC-regulated plans.[26] Therefore, CHBRP has assumed that DMHC-regulated plans are only required to *offer* coverage for the treatment of infertility to groups with 20 or more employees.[27]

Independent medical review

Both DMHC-regulated plans and CDI-regulated policies are subject to the Independent Medical Review (IMR) process for covered benefits. CHBRP examined IMR complaints from 2011 through March 2013 for both DMHC and CDI. During that period, there were three complaints, all through the DMHC IMR process, related to infertility. Of these three complaints, none involved a complaint related to discrimination.

Interaction With Other California Requirements

As stated, AB 460 would modify the current infertility treatment mandate that requires group market DMHC-regulated plans and CDI-regulated policies to *offer* coverage for the treatment of infertility.[28]

In addition, both the H&SC and the IC have language prohibiting plans or policies from refusing to enter into contracts or policies or modifying the terms of contracts or policies because of race, color, religion, sex, and sexual orientation, as well as other factors.[29] However, how these provisions in the H&SC and IC interact, if at all, with the definition of infertility and how treatment of infertility is covered would require legal analysis to answer and is unknown at this time.[30]

Requirements in Other States

There are 15 states, including California, that have an infertility state benefit mandate. Of these 15 states, 2 states—California and Texas—have "mandates to *offer*" coverage for infertility as opposed to "mandates to *cover*" infertility. Additionally, of the 15 states, 3 specifically exclude coverage for IVF: California, Louisiana, and New York. Further, some infertility benefit mandates in other states include restrictions, such as limiting coverage by age.

Background on Infertility

- The NSFG defines impaired fecundity (ability to reproduce) as a broad category encompassing difficulty conceiving or carrying a pregnancy to term for women (and their

[25] In California, a small group is defined as 2 to 50 employees, and a large group is defined as 51 or more employees. The ACA defines a large group as >100 employees. However, ACA Section 1304(b)(3) allows states to treat groups between 50 and 100 as large for plan years beginning before 2016.
[26] Personal communication, S. Lowenstein, DMHC, April 2013.
[27] Personal communication, S. Lowenstein, DMHC, April 2013.
[28] H&SC Section 1374.55 and IC Section 10119.6.
[29] H&SC Section 1365 and IC Section 10140.
[30] Personal communication, S. Lowenstein, DMHC, March 2013.

husbands or partners), whereas infertility is specific to difficulty conceiving among women who have been continuously married or cohabitating.

  - The current infertility treatment mandate defines "infertility" in a different manner. H&SC Section 1374.55 and IC Section 10119.6 define infertility as either: "(1) the presence of a demonstrated condition recognized by a licensed physician and surgeon as a cause of infertility, or (2) the inability to conceive a pregnancy or to carry a pregnancy to a live birth after a year or more of regular sexual activities without contraception."
  - People included in the NSFG definitions of impaired fecundity and infertility would likely meet the definition of infertility under the current infertility treatment mandate, and would therefore be eligible for the treatment of infertility. Single women (who may meet the medical policy definition of infertility) and same-sex couples are not included in the NSFG definition for either impaired fecundity or infertility. However, these enrollees—single women and same-sex couples—may meet the H&SC and IC definition of infertility. Therefore, although the NSFG is an important source of population-based information regarding reproductive health, this information must be interpreted cautiously because of differences in definitions of impaired fecundity and infertility used by the NSFG and those definitions relevant to the proposed mandate.

- There are many causes of infertility in women and men. Nearly 40% of infertility cases are due to female factors, 20% are due to male factors, 27% are due to both female and male factors, and the remaining cases are idiopathic (unexplained) and cannot be attributed to either partner.
- Of women aged 15–44 in the United States, over 7 million have impaired fecundity, over half of whom (4.2 million) are infertile, as defined by the NSFG. Of men, 7.3 million men report infertility problems. Over 7 million women have ever received any infertility treatment, with the most common being advice and infertility testing. Although infertility rates are highest among racial/ethnic minorities, the *use* of infertility treatment services is highest among non-Hispanic white women.

Medical Effectiveness

Infertility treatment generally begins with a diagnostic work-up of both the male and female reproductive organs and other bodily functions related to reproductive health. Once the cause of the infertility has been investigated, there are four types of treatment options that can be offered: surgery; medications; artificial insemination; and assisted reproductive technology.

It is not feasible for CHBRP to review the literature on effectiveness of the numerous diagnostic and treatment options for all causes of infertility to which AB 460 applies within the 60-day time frame allotted for this analysis. In light of the wide range of conditions that cause infertility and the types of treatments to which AB 460 would apply and the fact that AB 460 addresses provision of coverage for infertility benefits, CHBRP focused the medical effectiveness review on the impact of health insurance coverage (either voluntary or mandated) for infertility treatment. Thus, the medical effectiveness review for this report summarizes the literature on the effects of insurance coverage or insurance mandates for infertility treatment on utilization, pregnancy rates, and live births of persons with infertility issues.

- Fourteen studies were identified that assessed the impact of health insurance coverage on infertility treatment utilization or outcomes.
    - None of this research looked specifically at mandates like the one currently in place in California, i.e., a "mandate to *offer*" infertility treatment coverage as an optional rider, excluding IVF treatment.
    - Therefore, the *Medical Effectiveness* review will provide a summary of the available literature on benefit mandates for infertility treatments, benefit mandates for IVF treatments, and general health insurance coverage. Although none of this literature is directly applicable to the current infertility treatment mandate that AB 460 would modify, it will provide a context for the rest of the report.

CHBRP Terminology for Grading Evidence of Medical Effectiveness

CHBRP uses the following terms to characterize the strength of the evidence it identifies regarding the medical effectiveness of a treatment for which a bill would mandate coverage:

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

A grade of *clear and convincing evidence* indicates that there are multiple studies of a treatment and that the large majority of studies 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 included in the medical effectiveness review are consistent in their findings that treatment is either effective or not effective.

A grade of *ambiguous/conflicting evidence* indicates that although some studies included in the medical effectiveness review find that a treatment is effective, a similar number of studies 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.

Study Findings

- There is a **preponderance of evidence** that infertility treatment health insurance mandates are associated with an increase in utilization of infertility treatments. This association is strongest for "mandates to *cover*" infertility treatments compared to "mandates to *offer*" infertility treatments as an optional rider.

- There is a **preponderance of evidence** that IVF insurance mandates are associated with a decrease in the number of embryos transferred per IVF cycle, the number of births per IVF cycle, and the likelihood of multiple births associated with IVF.
- There is **insufficient evidence** to assess the impact of infertility treatment health insurance mandates on health outcomes outside of the impact of IVF mandates.
- There is a **preponderance of evidence** that private health insurance coverage is associated with an increase in utilization of infertility treatments.

Benefit Coverage, Utilization, and Cost Impacts

An estimated 14.4 million enrollees would be subject to AB 460 if it were enacted, the same number subject to the current infertility treatment mandate. DMHC and CDI were unable to say how discrimination would be interpreted as it relates to coverage of treatment for infertility, indicating that the impact AB 460 may have is unknown at this time.[31] **Because the impact of AB 460 is unknown, CHBRP is unable to estimate the marginal cost impact, if any, of AB 460.** This section focuses on current coverage, utilization, and cost of treatment for infertility.

Current Coverage

- CHBRP surveyed the seven largest providers of health insurance in California to estimate coverage for treatment of infertility in the privately funded DMHC-regulated and CDI-regulated small-group and large-group markets. Of the 14.4 million enrollees that would be subject to AB 460, an estimated 10.1 million (or 70%) currently have coverage for at least one type of treatment, including diagnosis, diagnostic tests, surgeries, artificial insemination, GIFT, or medication. Approximately 4.0 million of the 10.1 million enrollees are aged 19–44.

Current Utilization

CHBRP used the 2010 MarketScan claims data to estimate utilization of treatments for infertility by the estimated 4.0 million enrollees aged 19-44 with coverage.[32] The outpatient, inpatient, and prescription drug claims included the treatments for which coverage is required under the current infertility treatment mandate that AB 460 would modify, which include, but are not limited to, diagnosis, diagnostic tests, surgery, GIFT, and medication. IVF was excluded, because it is excluded from AB 460. Of the 4.0 million enrollees aged 19–44 estimated to have coverage for infertility, an estimated:[33]

[31] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.
[32] The National Survey of Family Growth (NSFG) reports data on people aged 15–44. However, the *Benefit Coverage, Utilization, and Cost Impacts* section of this report provides estimated utilization of treatments for infertility and costs for enrollees aged 19–44 with coverage, due to the way age bands are defined in the MarketScan claims data that was used. Utilization and costs among enrollees outside the 19–44 age range were assumed to be zero.
[33] These estimates are based on numbers that are more precise than the rounded numbers reported here.

- 1.12% of enrollees (or 45,000), including 1.83% of female and 0.41% of male enrollees, annually utilize 413,000 outpatient procedures for infertility;
- 0.007% of enrollees (or 300), including 0.015% of female and no male enrollees, annually utilize 1,100 inpatient days for infertility; and
- 0.52% of enrollees (or 21,000), including 1.02% of female and 0.02% of male enrollees, annually utilize 81,000 prescriptions for infertility.

Current Unit Costs

- CHBRP used the 2010 MarketScan claims data to estimate the average costs of treatments for infertility and applied a medical trend to inflate the costs to 2014. The average costs for an outpatient procedure is $135, for an inpatient day is $4,954, and for a prescription is $696. This results in an estimated $117 million in annual expenditures on treatment for infertility by the estimated 4.0 million enrollees aged 19-44 with coverage.

Public Health Impacts

- Medical Effectiveness found insufficient evidence to assess the impact of infertility treatment mandates on outcomes (such as pregnancy rates and live births) outside of the impact of IVF, which is excluded in the current infertility treatment mandate. Please note that the absence of evidence is not "evidence of no effect." It is possible that an impact—positive or negative—could result. However, currently available evidence does not allow CHBRP to estimate either. Although AB 460 could impact utilization of infertility treatments, CHBRP is unable to estimate any change in utilization (see the *Benefit Coverage, Utilization, and Cost Impacts* section). Therefore, the public health impact is unknown.
- Harms related to an infertility diagnosis include stress, distress, anxiety, depression, and social stigma attributed to infertility.
- Qualitative studies with patients and providers have documented problems with access to infertility diagnosis and treatment because of race/ethnicity, language, religion, culture, and age. **Regarding discrimination at the *health plan and health insurer level*, CHBRP found no literature that addressed discrimination on the basis of age, ancestry, color, disability, domestic partner status, gender, gender expression, gender identity, genetic information, marital status, national origin, race, religion, sex, or sexual orientation.**
- The prevalence of infertility is higher among women than men, and CHBRP found that the percentage of women utilizing treatments for infertility is higher than that of men; however, the impact of AB 460 on utilization of treatments for infertility is unknown (see the *Benefit Coverage, Utilization, and Cost Impacts* section). Therefore, the impact of AB 460 on reducing gender disparities is unknown.
- National survey data show disparities in self-reported infertility treatment utilization by race/ethnicity. Infertility rates are highest among non-Hispanic black and African American women, yet infertility treatment use is highest among non-Hispanic white

women. Although there are racial/ethnic disparities in the prevalence of infertility and infertility treatment utilization, the impact of AB 460 on utilization of treatments for infertility is unknown, thus the impact of AB 460 on reducing disparities among racial and ethnic groups is unknown.

- Infertility is not known to be a frequent cause of premature death; therefore AB 460 would not be expected to have a state-wide impact on mortality rates or years of potential life lost.
- Treatment of infertility is associated with high costs, both direct (e.g., for the treatments themselves) and indirect (e.g., lost work time). However, CHBRP was unable to identify studies quantifying these costs or assessing the impact on people related to their insurance characteristics. Because CHBRP is unable to estimate a change in utilization of treatments for infertility and because of a lack of literature quantifying economic loss as a result of treatment for infertility, the impact of AB 460 on economic loss is unknown.

Interaction With the Federal Affordable Care Act

Below is an analysis of how this proposed benefit mandate may interact with the ACA's requirement for certain health insurance to cover "essential health benefits" (EHBs).[34]

AB 460 and Essential Health Benefits

California has selected the Kaiser Foundation Health Plan Small Group HMO 30 plan as its benchmark plan for defining EHBs in 2014 and 2015.[35] The ACA allows a state to "require that a qualified health plan offered in [an exchange] offer benefits in addition to the essential health benefits."[36] If the state does so, the state must make payments to defray the cost of those additionally mandated benefits, either by paying the purchaser directly or by paying the qualified health plan (QHP).

The Kaiser Small Group HMO 30 benchmark plan excludes coverage for the treatment of infertility, therefore DMHC-regulated plans and CDI-regulated policies subject to the EHB coverage requirement are not required to cover treatment for infertility.[37]

State benefits mandate that "are not part of the EHB package that are required to be offered only" are separate from the EHB coverage requirements, as these benefits are "optional from the purchaser's perspective."[38] As AB 460 would not change the current infertility treatment mandate from a "mandate to *offer*" to a "mandate to *cover*," the current infertility treatment mandate, and thus AB 460, does not interact with the EHB coverage requirement and AB 460 would not trigger the requirement that the state defray costs in 2014 and 2015 were it to be enacted.[39]

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[34] Resources on EHBs and other ACA impacts are available on the CHBRP website: www.chbrp.org/other_publications/index.php.
[35] H&SC Section 1367.005; IC Section 10112.27.
[36] ACA Section 1311(d)(3).
[37] Personal communication, S. Lowenstein, DMHC, March 2013.
[38] Department of Health and Human Services. Centers for Medicare and Medicaid Services. Part I Unified Rate Review Template Instructions. March 18, 2013; 27. Available at: www.serff.com/documents/plan_management_data_templates_help_partI_unified_rate_review.pdf.
[39] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.

INTRODUCTION

The California Assembly Committee on Health requested on February 20, 2013, that the California Health Benefits Review Program (CHBRP) conduct an evidence-based assessment of the medical, financial, and public health impacts of Assembly Bill (AB) 460, infertility. In response to this request, CHBRP undertook this analysis pursuant to the provisions of the program's authorizing statute.[40]

In 2014, CHBRP estimates that approximately 25.9 million Californians (67%) will have health insurance that may be subject to a health benefit mandate law passed at the state level.[41] Of the rest of the state's population, a portion will be uninsured (and so will have no health insurance subject to any benefit mandate), and another portion will have health insurance subject to other state laws or only to federal laws.

Uniquely, California has a bifurcated system of regulation for health insurance subject to state benefit mandates. The California Department of Managed Health Care (DMHC)[42] regulates health care service plans, which offer benefit coverage to their enrollees through health plan contracts. The California Department of Insurance (CDI) regulates health insurers,[43] which offer benefit coverage to their enrollees through health insurance policies.

Most DMHC-regulated plans and CDI-regulated policies in the small-group and large-group markets are subject to AB 460.[44] Individual-market DMHC-regulated plans and CDI-regulated policies are not subject to AB 460. In addition, the regulator, DMHC, and the purchaser, the California Department of Health Care Services, have indicated that by referencing "group" plans AB 460 would not require compliance from plans enrolling Medi-Cal beneficiaries into Medi-Cal Managed Care.[45,46] Therefore, the mandate would affect the health insurance of approximately 14.4 million enrollees (37% of all Californians).

Developing Estimates for 2014 and the Effects of the Affordable Care Act

The Affordable Care Act (ACA)[47] is expected to dramatically affect health insurance and its regulatory environment in California, with many changes becoming effective in 2014. Beginning in 2014, an expansion of the Medicaid program to cover people up to 133% of the federal poverty

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[40] Available at: www.chbrp.org/docs/authorizing_statute.pdf.
[41] CHBRP's estimates are available at: www.chbrp.org/other_publications/index.php.
[42] The California Department of Managed Care (DMHC) was established in 2000 to enforce the Knox-Keene Health Care Service Plan of 1975; see Health and Safety Code (H&SC) Section 1340.
[43] The California Department of Insurance (CDI) licenses "disability insurers." Disability insurers may offer forms of insurance that are not health insurance. This report considers only the impact of the benefit mandate on health insurance policies, as defined in Insurance Code (IC) Section 106(b) or subdivision (a) of Section 10198.6.
[44] Small-group market DMHC-regulated plans with fewer than 20 employees are not subject to AB 460, as discussed in more depth later on in the *Introduction*.
[45] Personal communication, S. Lowenstein, DMHC, March 2013.
[46] Personal communication, C. Robinson, Department of Health Care Services, citing Sec. 2791 of the federal Public Health Service Act, March 2013.
[47] The federal "Patient Protection and Affordable Care Act" (P.L.111-148) and the "Health Care and Education Reconciliation Act" (P.L 111-152) were enacted in March 2010. Together, these laws are referred to as the Affordable Care Act (ACA).

level (FPL)[48] and the availability of subsidized and nonsubsidized health insurance coverage purchased through newly established state health insurance exchanges are expected to significantly increase the number of people with health insurance in the United States.

State exchanges will sell health insurance in the small-group and individual market[49] through qualified health plans (QHPs), which will be certified by and sold in a state's exchange. QHPs sold through California's state exchange, Covered California,[50] will be DMHC-regulated plans or CDI-regulated policies, and as such will be subject to California state benefit mandates.

It is important to note that CHBRP's analysis of proposed benefit mandate bills typically address the marginal effects of the proposed bills—specifically, how the proposed mandate would impact benefit coverage, utilization, costs, and public health, holding all other factors constant. CHBRP's estimates of these marginal effects are presented in this report. Because expanded enrollment will not occur until January 2014, CHBRP relies on projections from the California Simulation of Insurance Markets (CalSIM) model[51] to help set baseline enrollment for 2014. From this projected baseline, CHBRP estimates the marginal impact of proposed benefit mandates that could be in effect after January 2014. CHBRP's methods for estimating baseline 2014 enrollment from CalSIM projections are provided in further detail in Appendix D.

Bill-Specific Analysis of AB 460

Bill Language

The full text of AB 460 can be found in Appendix A.

AB 460 would modify a state benefit mandate that is currently law in Health and Safety Code (H&SC) Section 1374.55 and Insurance Code (IC) Code Section 10119.6. The current state benefit mandate requires group market DMHC-regulated plans and CDI-regulated policies to *offer* coverage for the treatment of infertility.[52] Under this "mandate to *offer*," the purchaser of the plan or policy has the option to include coverage for the treatment of infertility in their employee plans or policies; "mandates to offer," such as this one, are often referred to as "optional riders." (See below for a further discussion of "mandates to *offer*" and "mandates to *cover*.")

The current state benefit mandate, **hereafter referred to as the "current infertility treatment mandate,"** defines infertility as either:

[48] The Medicaid expansion, which California will pursue, is to 133% of the federal poverty level (FPL)—138% with a 5% income disregard.
[49] Effective 2017, states may allow large-group purchasing through the exchange, which may make some large-group plans and policies subject to EHB requirements [ACA Section 1312(f)(2)(B)].
[50] The California Health Benefits Exchange Authorizing Statute is available here: www.healthexchange.ca.gov/Documents/California%20Codes%20Governing%20the%20Health%20Benefit%20Exchange.pdf.
[51] CalSIM was developed jointly and is operated by the University of California, Los Angeles Center for Health Policy Research, and the University of California, Berkeley Center for Labor Research. The model estimates the impact of provisions in the ACA on employer decisions to offer, and individual decisions to obtain, health insurance.
[52] H&SC Section 1374.55 and IC Section 10119.6.

(1) "the presence of a demonstrated condition recognized by a licensed physician and surgeon as a cause of infertility, or

(2) the inability to conceive a pregnancy or to carry a pregnancy to a live birth after a year or more of regular sexual relations without contraception."[53]

Under the current infertility treatment mandate, treatment for infertility includes, but is not limited to, diagnosis, diagnostic tests, medication, surgery, and gamete intrafallopian transfers (GIFT). **Offering coverage for in vitro fertilization (IVF) is not required.**

AB 460 would modify the current infertility treatment mandate, adding language that would require infertility treatment to be "offered and provided without discrimination." AB 460 would add the following language to the current state benefit mandate:

> *(g) Coverage for the treatment of infertility shall be offered and provided without discrimination on the basis of age, ancestry, color, disability, domestic partner status, gender, gender expression, gender identity, genetic information, marital status, national origin, race, religion, sex, or sexual orientation.*

Although AB 460 would add the words "offered and provided" to H&SC Section 1374.55 and IC Section 10119.6, both DMHC and CDI have indicated that the language AB 460 would add to the current infertility treatment mandate would not alter it from a "mandate to *offer*" to a "mandate to *cover*"[54] (see below for a further discussion of this language, "offered and provided").

AB 460 would modify a state benefit mandate that is currently law. The current state benefit that AB 460 would modify is the "mandate to *offer*" coverage for the treatment of infertility. AB 460 would add language to the current infertility treatment mandate requiring that infertility treatment be "offered and provided without discrimination," but would not alter the current infertility treatment mandate from a "mandate to *offer*" to a "mandate to *cover*."

Analytic Approach and Key Assumptions

Discrimination

The medical policies of DMHC-regulated plans and CDI-regulated insurers are not identical in how they define infertility, but, generally, infertility for heterosexual couples is defined as the inability to achieve conception after having frequent, unprotected intercourse for at least a year, or for 6 months for a woman over the age of 35. For a single woman, infertility is defined as the inability to achieve conception after having 6 to 12 cycles of artificial insemination, generally within a 1-year period.[55] Sometimes the language for the definition of infertility for a single woman includes the words "medically supervised" artificial insemination.

[53] H&SC Section 1374.55 and IC Section 10119.6.
[54] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.
[55] These definitions align with how infertility is defined by the American Society of Reproductive Medicine (ASRM), as discussed in the subsection below, "*Definitions of infertility*," and in the *Medical Effectiveness* section of this report.

The bill author's office indicated that their intention is to address discrimination in coverage for the treatment of infertility specifically for single people, transgender people, and same-sex couples.[56] The bill author's office provided examples of how they believe definitions in medical policies are discriminatory, including: a single woman must pay for artificial insemination prior to being able to meet the definition of infertility, whereas a heterosexual couple does not face a similar cost to meet the definition of infertility; a single woman may be subject to medical supervision and documentation requirements to which a heterosexual couple may not be subject; and the definitions of infertility apply to a single woman, but not to a single man.[57] The bill author's office did not provide examples of how discrimination in coverage for the treatment of infertility may occur as a result of the other factors listed in the language AB 460 would add to the current infertility treatment mandate (e.g., age, ancestry, color, disability, national origin, race, religion).

CHBRP is not able to say whether these definitions or practices would be discriminatory or whether other definitions or practices would be considered discriminatory, nor was literature found that addressed discrimination in issuance of health insurance coverage for the treatment of infertility. Legal analysis, which CHBRP does not do, is required to understand how discrimination would be interpreted as it relates to coverage for treatment of infertility.[58] DMHC and CDI were unable to provide this level of legal analysis within CHBRP's 60-day analysis time frame, nor could they provide guidance on how discrimination would be interpreted as it relates to coverage for the treatment of infertility, indicating that the impact AB 460 may have is unknown at this time.[59]

Because the impact AB 460 may have is unknown, CHBRP is unable to estimate the marginal impact, if any, of AB 460. In this report, CHBRP presents information on infertility and infertility treatments, the impact of insurance coverage for infertility treatment on utilization, and information on current coverage for the treatment of infertility in DMHC-regulated plans and CDI-regulated policies.

What may or may not be considered discriminatory as it relates to coverage for the treatment of infertility is unknown. Therefore, CHBRP is unable to estimate the marginal impact, if any, of AB 460. This report presents information on infertility and infertility treatments, the impact of insurance coverage for infertility treatment on utilization, and information on current coverage of treatments for infertility in DMHC-regulated plans and CDI-regulated policies.

Definitions of infertility

There are multiple definitions of infertility:

- The current infertility treatment mandate includes a definition of infertility;
- The medical policies for DMHC-regulated plans and CDI-regulated policies include definitions of infertility;
- The National Survey on Family Growth (NSFG) defines infertility; and

[56] Personal communication, W. Hill, Office of Assemblymember Tom Ammiano, March 2013.
[57] Personal communication, W. Hill, Office of Assemblymember Tom Ammiano, March 2013.
[58] Personal communication, S. Lowenstein, DMHC, March 2013.
[59] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.

- The American Society of Reproductive Medicine (ASRM) defines infertility.[60]

Current infertility treatment mandate. As stated previously, the current infertility treatment mandate defines infertility as either: "(1) the presence of a demonstrated condition recognized by a licensed physician and surgeon as a cause of infertility, or (2) the inability to conceive a pregnancy or to carry a pregnancy to a live birth after a year or more of regular sexual relations without contraception."

Medical policies. As discussed above, the medical policies of DMHC-regulated plans and CDI-regulated insurers are not identical in how they define infertility, but the medical policies generally define infertility for heterosexual couples as the inability to achieve conception after having frequent, unprotected intercourse for at least a year, or for 6 months for a woman over the age of 35. For a single woman, infertility is defined as the inability to achieve conception after having 6 to 12 cycles of artificial insemination, generally within a 1-year period. Sometimes, the language for the definition of infertility for a single woman includes the words "medically supervised" artificial insemination.

National Survey on Family Growth. The NSFG defines fecundity as the ability of a woman or couple to have a child (Chandra et al., 2005), and then defines "impaired fecundity," which encompasses their definition of infertility.

American Society for Reproductive Medicine. The ASRM defines infertility as a disease. The definition of infertility is the failure to achieve a successful pregnancy after 12 months or more of appropriate, timed unprotected intercourse or therapeutic donor insemination" (ASRM, 2013a).

Whether any of these varying definitions could be considered discriminatory is unknown.

DHMC-regulated plans and CDI-regulated policies are subject to the H&SC and IC, respectively, which includes one definition of infertility, and DMHC-regulated plans and CDI-regulated insurers include other definitions of infertility in their medical policies, which generally align with the ASRM definition. However, because much of the information and data presented in the *Background on Infertility* section of this report and the literature reviewed in the *Medical Effectiveness* section of this report rely on the NSFG, the definitions used by the NSFG inform much of this report. The NSFG definitions of impaired fecundity and infertility are discussed in more depth in the *Background on Infertility* section.

Definition for men and women in same-sex relationships. The National Institute for Health and Clinical Excellence (NICE) recently released updated clinical guidelines on assessment and treatment for people with fertility problems. Included in the guidelines are definitions for when men and women in same-sex relationships not having vaginal intercourse should be eligible for assessment and possible treatment for infertility. Specifically, the clinical guidelines state that "for same-sex couples, failure to conceive after 6 cycles of [artificial insemination] within the 12 past months should be the indication for further assessment" (NICE, 2013).

[60] There are likely further definitions of infertility beyond those listed here. These definitions are addressed in this report because they directly relate to AB 460 and/or the data and literature discussed in the report.

"Mandates to cover" and "mandates to offer"

State benefit mandates can be "mandates to *cover*" or "mandates to *offer*" coverage.

- Most California state benefit mandates are "mandates to *cover*," meaning they require DMHC-regulated plans and CDI-regulated policies subject to the benefit mandate to cover particular services, treatments, health conditions, or provider types.[61]
- Some California state benefit mandates are "mandates to *offer*" coverage meaning they require DMHC-regulated plans or CDI-regulated policies subject to the benefit mandate to *offer* to cover particular services, treatments, health conditions, or provider types.[62]

"Mandates to *offer*" can be referred to as "optional riders" because the purchaser of the plan or policy decides to accept or not accept the optional coverage. If the coverage in the optional rider is accepted, it is included in addition to the benefits covered in the standard DMHC-regulated plan contract[63] or CDI-regulated policy.[64] The current infertility treatment mandate in H&SC Section 1374.55 and IC Section 10119.6 that AB 460 would modify is the "mandate to *offer"* coverage for the treatment of infertility in group market DMHC-regulated plans and CDI-regulated policies.

"Offered and provided." The language that AB 460 would add to the current infertility treatment mandate includes the phrase:

"*Coverage for the treatment of infertility shall be* ***offered and provided****…*" (emphasis added).

The words "provide" or "provided" have specific statutory meaning generally signifying that a state benefit mandate is a "mandate to *cover*" the particular services, treatments, health conditions, or provider types for enrollees in DMHC-regulated plans and CDI-regulated policies subject to the benefit mandate.[65] However, both DMHC and CDI have indicated that the language AB 460 would add to the current infertility treatment mandate would not alter it from a "mandate to *offer*" to a "mandate to *cover*."[66]

Required coverage in DMHC-regulated plans and CDI-regulated policies

AB 460 would apply to the same DMHC-regulated plans and CDI-regulated policies that are subject to the current infertility treatment mandate. The current infertility treatment mandate requiring an *offer* of coverage for the treatment of infertility only applies to group market DMHC-regulated plans and CDI-regulated policies. Therefore, individual market DMHC-regulated plans and CDI-regulated policies are not subject to the current mandate, nor are Medi-Cal Managed Care Plans.

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[61] Some state benefit mandates require DMHC-regulated plans or CDI-regulated policies subject to the benefit mandate to abide by the terms and conditions set by the benefit mandate, as opposed to requiring coverage for a specific test, treatment, or services.

[62] CHBRP's list of California state benefit mandates includes information on which mandates are "mandates to *cover*" and which are "mandates to *offer*" coverage, available at: www.chbrp.org/other_publications/index.php.

[63] DMHC regulates health care service plans, which enroll people (enrollees) through health care service plan contracts.

[64] CDI regulates health insurers, which enroll people (enrollees) through CDI-regulated polices.

[65] Personal communication, S. Lowenstein, DMHC, March 2013.

[66] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.

CDI-regulated group-market policies. For CDI-regulated policies, all group-market policies, both small group and large group, are subject to the current infertility treatment mandate requiring them to *offer* coverage for the treatment of infertility.

DMHC-regulated group-market plans. For DMHC-regulated plans, the language in the current infertility treatment mandate differentiates between non-health maintenance organizations (HMOs) and HMOs, as defined in H&SC Section 1373.10. DMHC oversees all HMOs in California (DMHC, 2012a). DMHC also oversees preferred provider organizations (PPOs) issued by Blue Cross of California and Blue Shield of California (DMHC, 2012b).

H&SC Section 1374.55, which AB 460 would modify, requires that DMHC-regulated non-HMOs *offer* coverage to all groups in the DMHC-regulated small-group and large-group markets, regardless of size, but that DMHC-regulated HMOs *offer* coverage only to groups with 20 or more employees.[67] However, DMHC has indicated that the broad definition of HMOs in H&SC Section 1373.10 would encompass all DMHC-regulated plans.[68] Therefore, CHBRP has assumed that DMHC-regulated plans are only required to *offer* coverage for the treatment of infertility to groups with 20 or more employees.[69]

Independent medical review

Both DMHC-regulated plans and CDI-regulated policies are subject to the Independent Medical Review (IMR) process for covered benefits. CHBRP examined IMR complaints from 2011 through March 2013 for both DMHC and CDI. During that period, there were three complaints, all through the DMHC IMR process, related to infertility. Of these three complaints, none involved a complaint related to discrimination nor did any involve a denial of coverage because of age, sexual orientation, marital status, or another factor included in the language AB 460 would add to the current infertility treatment mandate.

Interaction With Other California Requirements

As stated, AB 460 would modify the current infertility treatment mandate that requires group market DMHC-regulated plans and CDI-regulated policies to *offer* coverage for the treatment of infertility.[70]

In Section 1365.5 of the H&SC, DMHC-regulated plans are prohibited from refusing to "enter into any contract," "cancel or decline to renew or reinstate any contract," modify the terms of any contract, or subject the benefit or coverage of any contract to limitations, exceptions, exclusions, deductibles, or other modifications because of the "*race, color, national origin, ancestry, religion, sex, marital status, sexual orientation, or age* of any contracting party, prospective contracting party, or person reasonably expected to benefit from that contract as a subscriber, enrollee, member, or otherwise" (emphasis added). However, how these provisions of the H&SC interact, if

[67] In California, a small group is defined as 2 to 50 employees, and a large group is defined as 51 or more employees. The ACA defines a large group as >100 employees. However, ACA Section 1304(b)(3) allows states to treat groups between 50 and 100 as large for plan years beginning before 2016.
[68] Personal communication, S. Lowenstein, DMHC, April 2013.
[69] Personal communication, S. Lowenstein, DMHC, April 2013.
[70] H&SC Section 1374.55 and IC Section 10119.6.

at all, with the definition of infertility and how the treatment of infertility is covered would require legal analysis to answer and is unknown at this time.[71]

Similar, though not identical, language to H&SC Section 1365.5 can be found in IC Section 10140.

Requirements in Other States

There are 15 states, including California, that have an infertility state benefit mandate (NCSL, 2012). The 15 states with infertility state benefit mandates are: Arkansas, California, Connecticut, Hawaii, Illinois, Louisiana, Maryland, Massachusetts, Montana, New Jersey, New York, Ohio, Rhode Island, Texas, and West Virginia. Of these 15 states, 2 states—California and Texas—have "mandates to *offer*" coverage for infertility as opposed to "mandates to *cover*" infertility (NCSL, 2012). Additionally, of the 15 states, 3 specifically exclude coverage for IVF—California, Louisiana, and New York (NCSL, 2012), whereas 4 states only cover IVF—Arkansas, Hawaii, Maryland, and Texas (ASRM, 2013b). Of the 4 states that only include coverage for IVF in their infertility state benefit mandate, they all require that the patient's eggs be fertilized with her spouse's sperm (ASRM, 2013b). California's current infertility treatment mandate specifically excludes coverage for IVF and does not include this language. In addition, some state infertility benefit mandates include restrictions, such as limiting coverage by age. Four states set specific age limitations within their infertility state benefit mandates—Connecticut, New Jersey, New York, and Rhode Island (ASRM, 2013b; NCSL, 2012). California does not have an age limitation in its current infertility treatment mandate.

Interaction With the Affordable Care Act

A number of ACA provisions have the potential to or do interact with state benefit mandates. Below is an analysis of how this proposed benefit mandate may interact with requirements in the ACA, specifically the requirement for certain health insurance to cover "essential health benefits" (EHBs).[72]

Essential Health Benefits

Effective 2014, the ACA requires nongrandfathered small-group and individual-market health insurance—including but not limited to QHPs that will be sold in Covered California—to cover 10 specified categories of EHBs.[73] 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

[71] Personal communication, S. Lowenstein, DMHC, March 2013.
[72] Resources on EHBs and other ACA impacts are available on the CHBRP website: www.chbrp.org/other_publications/index.php.
[73] The 10 specified categories of essential health benefits (EHBs) are ambulatory patient services; emergency services; hospitalization; maternity and newborn care; mental health and substance use disorder services, including behavioral health treatment; prescription drugs; rehabilitative and habilitative services and devices; laboratory services; preventive and wellness services and chronic disease management; and pediatric services, including oral and vision care. [ACA Section 1302(b)].

benchmark plan options.[74] California has selected the Kaiser Foundation Health Plan Small Group HMO 30 plan as its benchmark plan.[75]

The ACA allows a state to "require that a qualified health plan offered in [an exchange] offer benefits in addition to the essential health benefits."[76] If the state does so, the state must make payments to defray the cost of those additionally mandated benefits, either by paying the purchaser directly or by paying the QHP. However, as laid out in the Final Rule on EHBs that HHS released in February 2013,[77] state benefit mandates enacted on or before December 31, 2011, would be included in a state's EHBs for 2014 and 2015, 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. State benefit mandates that could exceed EHBs would "be specific to the care, treatment, and services that a state requires issuers to offer to its enrollees," whereas "state rules related to provider types, cost-sharing, or reimbursement methods" would not meet the definition of state benefit mandates that could exceed EHBs. A state's exchange 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.[78]

AB 460 and essential health benefits

The Kaiser Small Group HMO 30 benchmark plan excludes coverage for the treatment of infertility, therefore DMHC-regulated plans and CDI-regulated policies subject to the EHB coverage requirement are not required to cover treatment for infertility.[79]

State benefits mandate that "are not part of the EHB package that are required to be offered only" are separate from the EHB coverage requirements, as these benefits are "optional from the purchaser's perspective."[80] As AB 460 would not change the current infertility treatment mandate from a "mandate to *offer*" to a "mandate to *cover*," the current infertility treatment mandate, and thus AB 460, does not interact with the EHB coverage requirement and AB 460 would not trigger the requirement that the state defray costs in 2014 and 2015 were it to be enacted.[81]

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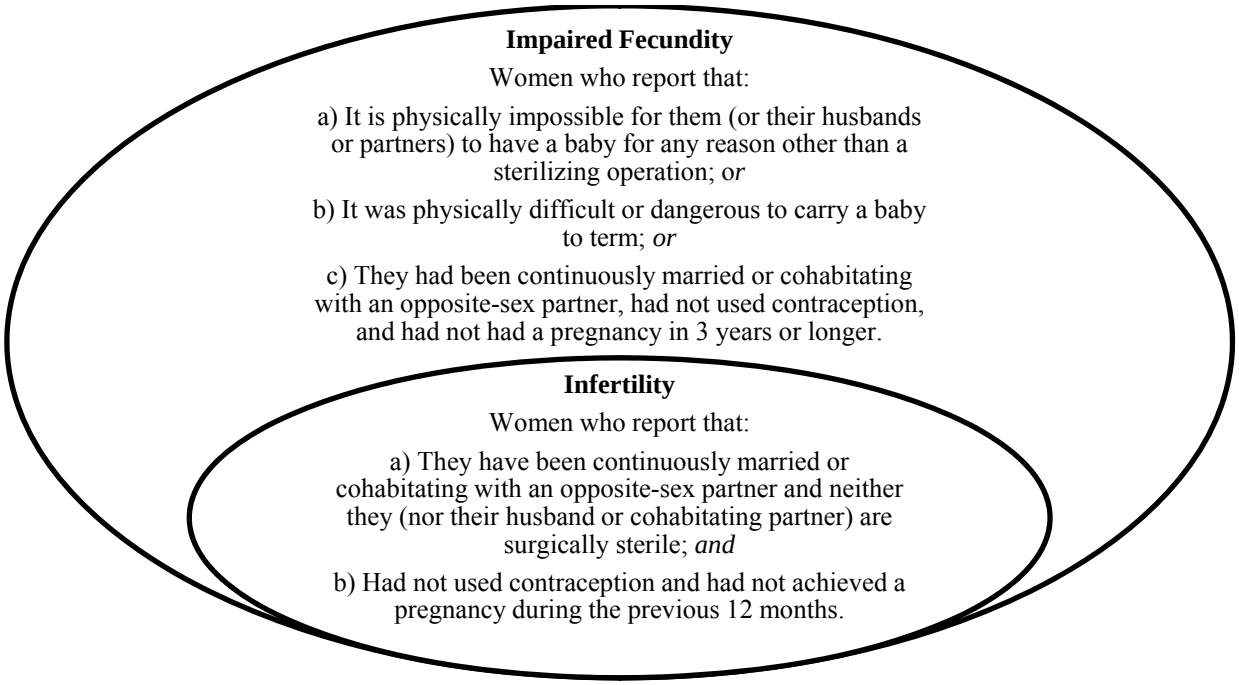
[74] CCIIO, Essential Health Benefits Bulletin. Available at: http://cciio.cms.gov/resources/files/Files2/12162011/essential_health_benefits_bulletin.pdf. Accessed December 16, 2011.
[75] H&SC Section 1367.005; IC Section 10112.27.
[76] ACA Section 1311(d)(3).
[77] Department of Health and Human Services. 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; 12843. Available at: www.gpo.gov/fdsys/pkg/FR-2013-02-25/pdf/2013-04084.pdf.
[78] Essential Health Benefits. Final Rule. 12843.
[79] Personal communication, S. Lowenstein, DMHC, March 2013.
[80] Department of Health and Human Services. Centers for Medicare and Medicaid Services. Part I Unified Rate Review Template Instructions. March 18, 2013; 27. Available at: www.serff.com/documents/plan_management_data_templates_help_partI_unified_rate_review.pdf.
[81] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.

BACKGROUND ON INFERTILITY

As defined by the National Survey of Family Growth (NSFG),[82] "infertility" is a subset of the broader term "impaired fecundity" (see Figure 1). Impaired fecundity is the difficulty conceiving or carrying a pregnancy to term for women (and their husbands or partners), whereas infertility is specific to difficulty conceiving among women who have been continuously married or cohabitating (Chandra et al., 2005).

Figure 1. *National Survey on Family Growth:* Relationship Between Impaired Fecundity and Infertility Definitions*



Source: California Health Benefits Review Program, based on Chandra et al., 2005.
Note: *Single women (who may meet the medical policy definition of infertility, as described in the *Introduction*) and same-sex couples are not included in the NSFG definition for either impaired fecundity or infertility.
Key: NSFG=National Survey of Family Growth.

The current infertility treatment mandate defines "infertility" in a different manner than the NSFG. Health and Safety Code (H&SC) Section 1374.55 and Insurance Code (IC) Section 10119.6 define infertility as either: "(1) the presence of a demonstrated condition recognized by a licensed physician and surgeon as a cause of infertility, or (2) the inability to conceive a pregnancy or to carry a pregnancy to a live birth after a year or more of regular sexual activities without contraception."

This section includes information on impaired fecundity and infertility as defined by the NSFG. People included in the NSFG definitions of impaired fecundity and infertility would likely meet the definition of infertility under the current infertility treatment mandate, and would therefore be

[82] The NSFG consists of nationally representative data gathered from in-person interviews with males and females 15–44 years old, administered by trained interviewers. Only one person per household was interviewed.

eligible for treatment of infertility. Single women (who may meet the medical policy definition of infertility [see the *Introduction* for information on this definition]) and same-sex couples are not included in the NSFG definition for either impaired fecundity or infertility; however, these enrollees (single women and same-sex couples) may meet the H&SC and IC definition of infertility. Therefore, although the NSFG is an important source of population-based information regarding reproductive health, this information must be interpreted cautiously because of differences in definitions of impaired fecundity and infertility used by the NSFG and those definitions relevant to the proposed mandate

Causes of Infertility

According to the World Health Organization (WHO), 38% of infertility cases are attributable to female factors, 20% are attributable to male factors, 27% are attributable to both partners, and 15% cannot be attributed to either partner (Swerdloff and Wang, 2012). As outlined below, there are many causes of infertility in males and females. Among males, the leading causes of infertility are idiopathic (or unexplained) infertility and primary hypogonadism, or diminished gonad function, which account for 40%–50% and 30%–40% of cases, respectively (Swerdloff and Wang, 2012). Among females, the most common cause of infertility is ovulatory disorders (25%) (Kuohung and Hornstein, 2012).

Common causes of infertility among **males** are:

- *Hypothalamic-pituitary disease*: any hypothalamic or pituitary disease can cause gonadotropin or gonadotropin-releasing hormone (GnRH) deficiency (also called hypogonadotropic hypogonadism). There are four causes of hypogonadotropic hypogonadism:
  - Congenital disorders, sometimes caused by genetic mutations;
  - Acquired diseases that interrupt hypothalamic-pituitary circulation or inhibit GnRH or gonadotropin secretion. Examples include pituitary tumors, vascular lesions (e.g., pituitary infarction), androgen excess, hormonal imbalances, and central nervous system–activating drugs (e.g., opioids);
  - Systemic illness or chronic nutritional deficiency; and
  - Obesity, which is associated with low serum total testosterone concentrations.
- *Primary hypogonadism*: primary gonadal deficiency (also called hypergonadotropic hypogonadism) results in testicular dysfunction. There are three causes of primary hypogonadism:
  - Congenital disorders, such as Klinefelter's syndrome (sex chromosome aneuploidy, often resulting in an extra X chromosome); autosomal and X chromosome defects; Y chromosome defects; cryptorchidism (failure of testes to descend into the scrotum); varicoceles (widening of the veins along the cord that holds up the testicles); and defective androgen receptor or synthesis;
  - Acquired disorders of the testes, including testicular cancer; infections (such as mumps); drugs (such as antiandrogens, which inhibit testicular androgen production or

action); hyperthermia (prolonged high testicular temperature); and health behaviors, such as cigarette smoking; and

  - Systemic disorders, such a chronic renal insufficiency, cirrhosis, or chronic nutritional deficiency.

- *Disorders of sperm transport*: includes abnormalities of the epididymis (which connect the testicles to the vas deferens) and the vas deferens (which transport sperm from the epididymis for ejaculation), and defective ejaculation, which may be caused by spinal cord trauma or erectile dysfunction.
- *Idiopathic/unexplained causes.*

Common causes of infertility among **females** are:

- *Ovulatory disorders*: includes infrequent ovulation (oligoovulation) and absent ovulation (anovulation).
- *Oocyte aging*: aging likely contributes to a decline in the quality and quantity of oocytes, or eggs.
- *Fallopian tube abnormalities/pelvic adhesions*: both inhibit transport of oocytes and sperm though the Fallopian tube. Tubal abnormalities are often caused by pelvic inflammatory disease, which results from infections such as Chlamydia or gonorrhea.
- *Uterine disorders:*
  - Uterine leiomyomata, which are benign smooth muscle tumors;
  - Uterine anomalies, including mullerian anomalies (defects in reproductive development) such as the absence of a uterus or double uteruses; and
  - Luteal phase defect, resulting in inadequate production of progesterone, which is necessary for implantation.
- *Endometriosis:* can cause pelvic adhesions, as well as damage to the ovaries and the production of cytokines (regulatory proteins), which can lead to impaired ovulation, fertilization, and implantation.
- *Cervical factors:* causes include cervical trauma or congenital malformations of the cervix, leading to narrowing of the cervix and the inability to produce normal mucous, which is necessary for sperm transport.
- *Immune factors:* antiphospholipid syndrome (APS), which leads to the immune system rejecting early pregnancy or to placental damage.
- *Genetic causes:* most common is Turner syndrome (45,X), which is the absence of the all or part of the X chromosome.
- *Idiopathic/unexplained causes.*

There is some evidence that causes of infertility among females differ by race/ethnicity. Among females obtaining infertility treatment in Ohio, Green et al. found that the leading causes of

infertility among white patients were ovarian disorders (46.5% of patients), male factors (24.5%), and other causes (e.g., pituitary adenomas; 15.3%), whereas the leading causes among black patients were tubal disorders (41.0%), surgical sterilization (25.6%), and ovarian disorders (14.0%). The authors note that surgical sterilization is more prevalent among patients without insurance, and in this study, over half of black patients did not have insurance (Green et al., 2001).

Impaired Fecundity and Infertility Prevalence in the United States

Nearly 12% of women (7.2 million) in the United States have impaired fecundity, over half of whom (4.2 million) are infertile (Chandra et al., 2005). Additionally, 1.2% of men (7.3 million) report infertility problems; of those, 0.9% of men have semen abnormalities, and 0.4% have varicocele, which is an abnormal dilation of the veins along the cord that holds up the testicles. As shown in Table 1, impaired fecundity and infertility prevalence among women increases with age. Non-Hispanic white women have the highest prevalence of impaired fecundity, whereas non-Hispanic Black or African American women have the highest prevalence of infertility, a subset of impaired fecundity specific to difficulty conceiving among women who are married or cohabitating with an opposite-sex partner.

Table 1. Fertility Status Among Individuals 15–44 Years Old, by Demographic Factors, National Survey of Family Growth, 2002

	Impaired Fecundity		Infertility			
	Number of Women (n)	% of All Women With Impaired Fecundity (%)	Number of Women (n)	% of Married Women With Infertility (a) (%)	Number of Men (n)	% of Men With Infertility Problems (%)
Overall	61,561	11.8	28,237	7.4	61,147	1.2
Age (years)						
15–29	28,923	8.4	7,246	6.3	29,317	0.4
30–34	10,272	14.1	6,351	8.1	10,138	1.7
35–39	10,853	12.1	3,989	5.7	10,557	2.1
40–44	11,512	17.9	7,740	9.4	11,135	2.0
Race/ethnicity						
Hispanic/Latino/a	974	10.7	319	7.7	10,188	0.6
Non-Hispanic white	4,898	12.4	1,404	7.0	38,738	1.6
Non-Hispanic black or African American	866	10.5	245	11.5	6,940	μ
Relationship status (b, c)						
Currently married	28,237	15.1	28,237	7.4	25,808	2.4
Currently cohabitating	5,570	12.6	—	—	35,340	0.3
Never married, not cohabitating	21,568	7.1	—	—		
Formerly married, not cohabitating	6,096	12.3	—	—		

Source: Chandra et al., 2005; Martinez et al., 2006.
Note: (a) The NSFG defines infertility among married women only.
(b) For men, NSFG only breaks out relationship status by "married" or "unmarried."
(c) The NSFG expresses infertility rates for married women only.
Key: μ=statistically unstable; NSFG=National Survey on Family Growth.

Treatment Options for Infertility in the United States

There are a number of treatment options for women seeking medical help to achieve a pregnancy, including medical advice, infertility tests (for either the male or female partner, or both), ovulation drugs, surgery or treatment for blocked Fallopian tubes, artificial insemination, and assisted reproductive technology (ART).[83] According to the 2002 NSFG, nearly 12% of women (7.3 million) ever received any infertility treatment, which includes medical help to get pregnant and to prevent a miscarriage (Table 2). Of women only ever seeking help to get pregnant, nearly 85% met the broader definition of impaired fecundity, whereas 45% met the more narrow definition of infertile (as defined by the NSFG) (Chandra et al., 2005). The number of women receiving any infertility treatment increases with age and is highest among non-Hispanic whites.

Table 2. Percent Distribution of Infertility Treatment Use Among Women 15–44 Years Old, National Survey of Family Growth, 2002

	N	Any Infertility Service (a)	Advice	Infertility Testing (b)	Ovulation Drugs	Surgery/ Treatment Blocked Tubes	AI	ART
Overall	61,561	11.9	6.1	4.8	3.8	0.7	1.1	0.3
Age (years)								
15–29	28,923	4.9	2.1	1.4	1.0	0.1	0.2	—
30–34	10,272	17.7	9.1	6.4	5.3	1.0	1.8	0.4
35–39	10,853	17.3	9.5	6.7	4.6	1.3	1.4	0.3
40–44	11,512	19.2	9.7	10.0	8.4	1.5	2.6	0.7
Race/ethnicity								
Hispanic/Latina	9,107	8.2	3.2	2.2	1.9	0.4	0.4	0.1
Non-Hispanic white	39,498	13.8	7.7	6.3	4.9	0.9	1.5	0.4
Non-Hispanic black or African American	8,250	8.4	2.8	1.6	1.3	0.6	0.2	0.1

Source: Chandra et al., 2005.
Note: (a) Includes seeking medical help to prevent a miscarriage.
(b) Infertility testing may be done on the male or female partner, or both partners.
Key: AI=artificial insemination; ART=assisted reproductive technology; (—)=quantity zero.

There are fewer treatment options for men with infertility. The 2002 NSFG reported that 7.6% of male respondents (4.6 million) report that they (or their wife or partner) have ever received any infertility treatment; of those men, 0.4% received treatment for varicocele, which involves redirecting blood flow from the widened veins to normal veins along the cord that holds up the testicles (Martinez et al., 2006).

[83] 99% of assisted reproductive technology procedures are done using in vitro fertilization (IVF); however, the current infertility treatment mandate excludes required coverage of IVF.

MEDICAL EFFECTIVENESS

As discussed in the *Introduction*, Assembly Bill (AB) 460 would modify the current infertility treatment mandate, which requires most group market Department of Managed Health Care (DMHC)-regulated plans and California Department of Insurance (CDI)-regulated policies to *offer* coverage as an optional rider for the treatment of infertility.[84] AB 460 would add language to the current infertility treatment mandate requiring that the treatment of infertility be "offered and provided without discrimination," but would not alter the current infertility treatment mandate from a "mandate to *offer*" to a "mandate to *cover*."[85]

Infertility treatment generally begins with a diagnostic work-up of both the male and female reproductive organs and other bodily functions related to reproductive health. Once the cause of the infertility has been investigated, there are four types of treatment options that can be offered: surgery, medications, artificial insemination (AI), and assisted reproductive technology (ART).

Summary of Infertility Treatments

Diagnostic evaluation for infertility is recommended for couples that have not become pregnant after a year of unprotected intercourse or 6 months of unprotected intercourse for women over 35 years of age (ASRM, 2012a). Women who are planning on attempting insemination might also benefit from a diagnostic evaluation (ASRM, 2012a). As presented in the *Background on Infertility* section, 4.8% of women age 15–44 report that either they or their male partner had ever undergone tests to diagnose infertility (Chandra et al., 2005). The diagnostic evaluation typically starts with a thorough medical examination as well as a discussion of sexual, reproductive, and family history. Depending on the results of the preliminary evaluation, females are assessed for ovulatory function, ovarian reserve, uterine abnormalities, tubal patency (Fallopian tube functioning), or peritoneal factors (endometriosis or pelvic adhesions) (ASRM, 2012a). After preliminary evaluation, males are evaluated using a semen analysis, endocrine evaluation, urinalysis, transrectal ultrasonography, or scrotal ultrasonography (ASRM, 2012b). A diagnostic evaluation can effectively identify the source of the infertility problem in 70% of cases. In the 30% where infertility cannot be identified, a protocol for treatment of unspecified infertility is recommended (ASRM, 2006).

After diagnostic tests have been performed, there are four types of treatment options typically offered depending on the results of testing: surgery; medications; AI; and ART. There are four surgeries that are most commonly performed to treat infertility in women: surgery to treat blocked Fallopian tubes; surgery to treat uterine fibroids; surgery to treat endometriosis; and surgery to remove uterine polyps. When ovulatory dysfunction is suspected, there are many different types of medications that can be used to improve functioning: clomiphene citrate; metformin; follicle-stimulating hormone (FSH); luteinizing hormone (LH); human chorionic gonadotropin (hCG); human menopausal gonadotropin (hMG); dopamine agonists; gonadotropin-releasing hormone (GnRH); GnRH agonists; GnRH antagonists; aromatase inhibitors; and dexamethasone (ASRM, 2012e; Bidet et al., 2010). It is estimated that 3.8% of women age 15–44 have ever used medications to improve ovulation (Chandra et al., 2005). AI—the deliberate introduction of semen

[84] H&SC Section 1374.55 and IC Section 10119.6.
[85] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.

into the female cervix (intracervical insemination) or introduction of sperm into the uterus (intrauterine insemination)—is another method for treating infertility in opposite-sex couples or for achieving pregnancy for single women or same-sex couples. An estimated 1.1% of women aged 15–44 have ever used AI (Chandra et al., 2005).

ART is defined as any procedure in which both the oocyte (egg) and sperm are handled (CDC, 2013). There are four main types of ART procedures: in vitro fertilization–embryo transfer (IVF-ET); gamete intrafallopian transfer (GIFT); zygote intrafallopian transfer (ZIFT); and frozen embryo transfer (FET) (SART, 2013). In the United States in 2010, more than 99% of ART procedures were IVF-ET, with less than 1% being GIFT, ZIFT, or FET (CDC, 2012). IVF-ET and ZIFT both involve obtaining oocytes from the female or egg donor and combining the oocytes with sperm in a culture dish, with fertilization occurring in a laboratory. During IVF-ET, the resulting embryos are transferred into the uterus. During ZIFT, the embryos are transferred into the Fallopian tubes. During GIFT, the oocytes and sperm are mixed outside of the female body but are inserted into the Fallopian tubes prior to fertilization; thus fertilization occurs inside the Fallopian tubes instead of the laboratory. Although GIFT is the only type of ART specifically included in the current infertility treatment mandate that AB 460 would modify, and IVF is specifically excluded, the entire list of procedures is included here as part of a complete list of infertility treatments.

Research Approach and Methods

As presented above, infertility diagnosis and treatment encompasses a wide range of tests, treatments, and medications. It is not feasible for the California Health Benefits Review Program (CHBRP) to review the literature on the effectiveness of the numerous diagnostic and treatment options for all causes of infertility to which AB 460 applies within the 60-day time frame allotted for this analysis. In light of the wide range of conditions that cause infertility and the types of treatments to which AB 460 would apply and the fact that AB 460 addresses the provision of coverage of infertility benefits, CHBRP focused the medical effectiveness review for this bill on the impact of health insurance coverage (either voluntarily or mandated) for infertility treatments. The literature search encompassed articles and reports on the impact of having health insurance coverage versus no insurance coverage for infertility treatments, as well as the literature on the effect of having more comprehensive coverage for infertility treatments. This approach is consistent with the approach CHBRP has taken to its analysis of previous bills with numerous diagnostic and treatment options.[86]

Studies of insurance coverage for infertility treatments 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; the International Network of Agencies for Health Technology Assessment (INAHTA); the National Health Service (NHS)

[86] For an example of a previous CHBRP report employing this methodology, see: California Health Benefits Review Program. *Analysis of Assembly Bill 754: Durable Medical Equipment*. 2010. Report to the California State Legislature. Oakland, CA. Available at: www.chbrp.org/completed_analyses/index.php.

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. A total of 14 studies were included in the medical effectiveness review for this report. The other articles were eliminated because they did not focus on infertility treatments or did not include insurance coverage as a variable in the analysis. A more thorough description of the methods used to conduct the medical effectiveness review and the process used to grade the evidence are presented in Appendix B: Literature Review Methods. Appendix C includes a table describing the studies that CHBRP reviewed (Table C-1).

Methodological Considerations

CHBRP classifies research by levels I–V. Level I research includes well-implemented randomized controlled trials (RCTs) and cluster RCTs. Level II research includes RCTs and cluster RCTs with major weaknesses. Level III research consists of nonrandomized studies that include an intervention group and one or more comparison groups, time series analyses, and cross-sectional surveys. Level IV research consists of case series and case reports. Level V represents clinical/ practical guidelines based on consensus or opinion. Using these standards, most of the research related to insurance coverage for infertility treatments would be classified as level III. Using these standards, most of the research related to insurance coverage for infertility treatments would be classified as level III and level IV.

Outcomes Assessed

For studies of the impact of coverage for infertility treatments, CHBRP assessed effects on two types of outcomes: (1) use of infertility treatments; and (2) health outcomes of infertility treatments, such as pregnancy rates, live birth rates, and rates of multiple births. CHBRP's decision to analyze both of these outcomes reflects the causal pathway by which coverage for infertility treatments could affect fertility and pregnancy outcomes.

Study Findings

CHBRP identified 14 studies that address the effects of health insurance on the use of infertility treatments. Ten of these studies looked specifically at the effects of infertility treatment insurance mandates. The studies categorized each state as belonging to one of the following groups:

- Mandate to cover infertility treatments;
- Mandate to offer infertility treatment coverage as an optional rider ("mandate to *offer*"); and
- No mandate in place.

In addition, 4 of the 10 studies further classified mandates as either including or excluding IVF treatment.

None of the papers looked specifically at mandates to cover infertility treatments or offer infertility treatment coverage as an optional rider by the inclusion or exclusion of IVF treatment. The current infertility treatment mandate that AB 460 would modify is a "mandate to *offer*" coverage for the treatment of infertility as an optional rider, excluding IVF treatment. California is currently the only state that has a "mandate to *offer*" coverage for the treatment of infertility as an optional rider excluding IVF treatment. None of the studies identified presents results separately for the specific type of mandate in place in California. In addition, five studies were identified that looked at the relationship between health insurance coverage (not specific to infertility treatments) and utilization and outcomes of infertility treatment. The studies were not able to assess whether the health insurance coverage included infertility coverage, so its relevancy for AB 460 is in question as well.

Although none of the identified literature is directly applicable to the current infertility treatment mandate in California, the *Medical Effectiveness* review provides a summary of the literature on mandates to cover infertility treatments, mandates for IVF treatment, and general health insurance coverage to provide the reader with an idea of the documented impact of health insurance mandates and private health insurance coverage to provide a context for the rest of the report.

The majority of the 14 studies identified through the literature search present data either from the National Survey of Family Growth (NSFG) or the Society for Assisted Reproductive Technology (SART) registry data. These two datasets are described below.

Infertility Treatment and Outcomes Datasets

The NSFG is the national fertility survey of the United States and is conducted by the Centers for Disease Control and Prevention and funded by the U.S. Department of Health and Human Services. The frequency of the interviews varies, with Cycle 1 interviews taking place in 1973 followed by Cycle 2 in 1976, Cycle 3 in 1982, Cycle 4 in 1988, Cycle 5 in 1995, and Cycle 6 in 2002. Data from the 2006–2010 cycle of NSFG interviews was released in October 2011. The literature review did not find any articles published using this data. The most recent articles, published in 2012, utilized data from the 2002 interview cycle. Each cycle of the survey includes a nationally representative sample of women ages 15–44, with approximately 7,500 women surveyed in each cycle. Although the NSFG contains a question relating to insurance coverage for infertility treatments, it was only asked of women utilizing infertility treatments and thus was not asked of the entire sample. Therefore, analysis of the NSFG for relationship between insurance and utilization was done using a variable measuring any private health insurance coverage.

The literature review found six studies using clinic reports of ART cycle success rates collected by SART, an affiliated society to the American Society for Reproductive Medicine (ASRM). This database is a registry for outcomes data reported by 85% of the ART clinics in the United States.[87] Only patients who used ART methods are included in the database, so although there are measures of ART outcomes, there are no data on utilization rates of ARTs.

[87] www.sart.org/What_is_SART/.

Impact of Infertility Treatment Health Insurance Mandates

Bitler and Schmidt (2006, 2012) examine the impact of state-level insurance mandates for infertility coverage on the utilization of infertility treatments using pooled data from the 1982, 1988, 1995, and 2002 NSFG surveys. Their 2006 findings indicated that women age 30 and older with some college education had higher infertility treatment utilization rates in states with insurance mandates for infertility coverage compared to those in states without mandates (Bitler and Schmidt, 2006). This finding was explored further in the 2012 paper where the authors re-examined the data with more specific models. Separating out utilization of infertility treatments into two groups (medical help to get pregnant and medical help to avoid miscarriage), they found that women aged 30 and above with some college education were more likely to use medical help to get pregnant in states with infertility mandates compared to states with no infertility mandates (Bitler and Schmidt, 2012). Looking at specific treatments, the effects were largest for the use of ovulation-inducing drugs, artificial insemination, and infertility testing in females (Bitler and Schmidt, 2012). In the NSFG, women age 30 and older with some college education make up 44% of the sample.

As discussed previously in the *Introduction*, there are two types of mandates: "mandates to *offer*" coverage for infertility treatments and "mandates to *cover"* infertility treatments. Bitler and Schmidt broke out their results by states with these two types of mandates and found that there was no difference in these two types of mandates in the rate of using any infertility treatment (Bitler and Schmidt, 2012). Looking at utilization of specific infertility treatments, the authors found that states with "mandates to *cover*" had higher utilization rates for ovulation-inducing drugs, artificial insemination, and female infertility testing compared to states with "mandates to *offer*" coverage for infertility treatments (Bitler and Schmidt, 2012). It should be noted that no data were included regarding the extent to which purchasers in states with "mandates to *offer*" opted to purchase the infertility riders, so the effects of different proportions of the populations having policies with infertility coverage in these states is unknown.

Schmidt used the National Center for Health Statistics' Vital Statistics Detail Natality Data combined with population counts obtained from the United States Census Bureau to examine the effects of infertility health insurance mandates on infertility treatment outcomes for the years 1981–1999. Among women age 35 and older, rates of first births increased by 19% for white mothers in states with health insurance mandates for infertility treatments (Schmidt, 2007). Birth rates among women age 34 and younger were not impacted (Schmidt, 2007). Similar to the research using the NSFG, Schmidt found that when mandate type was taken into account, "mandates to *cover*" were associated with higher birth rates, whereas "mandates to *offer*" were not.

Impact of IVF health insurance mandates

Although the mandate in place in California explicitly excludes coverage for IVF, the literature found on the impact of health insurance mandates on IVF utilization and outcomes is presented here. The rationale behind this is twofold. First, most of the literature surrounding the impact of mandates on infertility treatments has been conducted using the SART registry of IVF procedures and outcomes. This dataset has the advantage of being very comprehensive and includes data on approximately 85% of IVF procedures conducted in the United States. Second, the literature on health outcomes is almost exclusively conducted on the SART database, whereas the literature

outside of IVF is more focused on utilization of infertility treatments. For these reasons, CHBRP determined that this information would be of interest to the readers of the AB 460 report, although it does not directly apply to the current infertility treatment mandate, which excludes IVF.

Six studies were identified through the literature review that used SART registry data to estimate the impact of "mandates to *cover*" IVF treatment on fertility treatment outcomes such as pregnancy rates, live birth rates, and rates of multiple births. The results presented in these studies were consistent in their findings that clinics in states with infertility treatment insurance mandates had an increase in the number of IVF cycles, lower numbers of embryos transferred per cycle, lower pregnancy rates, fewer births per cycle, and lower rates of multiple births compared to states without mandates (Banks et al., 2010; Henne and Bundorf, 2008; Jain et al., 2002; Martin et al., 2011; Navarro et al., 2008; Reynolds et al., 2003). This effect of infertility insurance may be specific to the type of treatment—IVF—where insurance coverage reduces financial pressure to achieve a pregnancy in the minimal number of IVF cycles, thus decreasing the pressure to transfer more embryos per cycle (Martin et al., 2011). This in turn reduces birth rates and multiple birth rates (Martin et al., 2011). Transferring more embryos increases the likelihood of a pregnancy and also the likelihood of multiple births (Martin et al., 2011). Multiple births are an adverse outcome of IVF—leading to more complications and worse health outcomes for both mother and infant (Martin et al., 2011). These results have led some to question whether mandating IVF health insurance coverage could be done as a way to reduce multiple births and improve maternal and child health outcomes (Griffin and Panak, 1998; Jain et al., 2002; Martin et al., 2011).

In the SART database, 99% of the procedures done are IVF. The current infertility treatment mandate in California, which AB 460 would modify, specifically excludes coverage for IVF, so the SART results may not be directly applicable.

The interaction of health insurance mandates and age

The risk of infertility increases with age; therefore, the literature was examined to identify any studies that looked at the interaction of health insurance mandates and age on infertility treatment utilization and outcomes. Five studies were identified: Banks et al., 2010; Bitler and Schmidt, 2006, 2012; Martin et al., 2011; and Schmidt, 2007. Schmidt (2007) found that among white women, there was a differential impact of health insurance mandates by age where women aged 35 and older showed increased rates of first births as a result of mandates whereas white women under 35 did not (Schmidt, 2007). This finding was replicated using different data, where women aged 30 and older with a college education were more impacted by mandates—showing higher rates of utilization of infertility treatments (Bitler and Schmidt, 2006, 2012). Looking specifically at IVF mandates, the literature is less consistent. One study found that although there was a consistent relationship between mandates and number of embryos transferred across all age groups, the impact of mandates on the number of births per transfer was only seen for the youngest (under age 35) and oldest (41–42) age groups. (Banks et al., 2010). Martin et al. found that the impact of state mandates was more pronounced in the under age 35 and 35–37 age groups compared to the 38–40 or 41–42 age groups (Martin et al., 2010).

There is a **preponderance of evidence** that infertility treatment health insurance mandates are associated with an increase in utilization of infertility treatments. This association is strongest for mandates *to cover* infertility treatments compared to mandates *to offer* an infertility rider. There is a **preponderance of evidence** that IVF insurance mandates are associated with a decrease in the number of embryos transferred per IVF cycle, the number of births per IVF cycle, and the likelihood of multiple births associated with IVF. There is **insufficient evidence** to assess the impact of infertility treatment health insurance mandates on health outcomes outside the impact of IVF mandates.

Impact of Private Health Insurance Coverage

Research was also identified that examined the impact of having private health insurance coverage (not specific to coverage for infertility treatments) on utilization of infertility treatments. As mentioned previously, the NSFG does not allow examination of the impact of health insurance coverage for infertility treatments on utilization of these treatments. Therefore, these studies have used private health insurance coverage as a proxy for coverage for infertility treatments. Studies using NSFG data have found consistently that compared to public or no insurance, having private health insurance is associated with an increased use of infertility treatments (Chandra and Stephen, 2010; Farley Ordovensky Staniec and Web, 2007). In terms of specific infertility treatments, private insurance coverage was also associated with an increase in utilization of medications to improve fertility and tubal surgery (Farley Ordovensky Staniec and Web, 2007). A separate study, the National Survey on Fertility Barriers (NSFB), has also been examined to answer questions regarding factors that impact the utilization of infertility treatments. Greil and colleagues used the NSFB and confirmed findings from the NSFG that having private health insurance coverage was positively associated with seeing a doctor for an infertility-related visit, undergoing infertility testing, and receiving treatment for infertility (Greil et al., 2011).

Only one study was identified that looked specifically at individuals with reported health insurance coverage for infertility treatment (as opposed to a proxy for infertility treatment insurance coverage, such as state-level mandates or private insurance coverage). Farr and colleagues found that having private health insurance for infertility treatments was associated with higher pregnancy rates (Farr et al., 2009).

The findings from the above studies found that private health insurance coverage was associated with utilization of infertility treatments even after controlling for demographic variables such as income and educational status.

There is a **preponderance of evidence** that private health insurance coverage is associated with an increase in utilization of infertility treatments.

BENEFIT COVERAGE, UTILIZATION, AND COST IMPACTS

Assembly Bill (AB) 460 would modify the current infertility treatment mandate, which requires most group market Department of Managed Health Care (DMHC)-regulated plans and California Department of Insurance (CDI)-regulated policies to *offer* coverage for the treatment of infertility.[88] AB 460 would add language to the current infertility treatment mandate requiring that the treatment of infertility be "offered and provided without discrimination." However, as stated in the *Introduction*, even with the inclusion of the words "offered and provided," AB 460 would not alter the current infertility treatment mandate from a "mandate to *offer*" to a "mandate to *cover*."[89] AB 460 would require that the "mandate to *offer*" coverage for the treatment of infertility be "offered and provided without discrimination on the basis of age, ancestry, color, disability, domestic partner status, gender, gender expression, gender identity, genectic information, marital status, national origin, race, religion, sex, or sexual orientation."

AB 460 would apply to the same markets as the current mandate, totaling an estimated 14.4 million enrollees (see Table 5). It would apply to large- and small-group DMHC-regulated plans, including California Public Employees' Retirement System (CalPERS) health maintenance organizations (HMOs), and large- and small-group CDI-regulated policies. It would not apply to small-group DMHC-regulated plans with fewer than 20 employees (as discussed in the *Introduction*), individual-market DMHC-regulated plans, individual-market CDI-regulated policies, or Medi-Cal Managed Care Plans.

DMHC and CDI were unable to say how discrimination would be interpreted as it relates to coverage for the treatment of infertility. Therefore, the impact that AB 460 may have is unknown at this time.[90] **Because the impact of AB 460 is unknown, the California Health Benefits Review Program (CHBRP) is unable to estimate the marginal cost impact, if any, of AB 460.** This section will present the current (baseline) benefit coverage, utilization, and costs related to infertility treatment. For further details on the underlying data sources and methods, please see Appendix D at the end of this document.

CHBRP used the 2010 MarketScan claims data, the most recent year available when CHBRP began its analysis, to estimate utilization and cost of treatments for infertility. Although the National Survey of Family Growth (NSFG) reports data on people aged 15–44, this report provides information on enrollees aged 19–44, due to the way age bands are defined in the MarketScan claims data that was used. Utilization and costs among enrollees outside the 19–44 age range were assumed to be zero.

[88] H&SC Section 1374.55 and IC Section 10119.6. A mandate to offer coverage means that the purchaser of the plan or policy—typically an employer—must be given the option to include coverage for infertility in plans or policies offered to their employees.
[89] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.
[90] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.

Current (Baseline) Benefit Coverage, Utilization, and Cost

Current Coverage of the Mandated Benefit

Current coverage of treatment for infertility was determined by a survey of the seven largest providers of health insurance in California. CHBRP surveys the largest major health plans and insurers regarding coverage. Responses to this survey represented 39.2% of the privately funded, CDI-regulated market and 72.8% of the privately funded, DMHC-regulated market. Combined, responses to this survey represent 64.7% of the privately funded market subject to state mandates.

Coverage for infertility varied significantly by health plan and health insurer. An estimated 70% of group-market enrollees in DMHC-regulated plans and CDI-regulated policies are covered for at least one type of treatment, including diagnosis, diagnostic tests, surgeries, artificial insemination, gamete intrafallopian transfers (GIFT), or medication. Therefore, of the 14.4 million enrollees that would be subject to AB 460, an estimated 10.1 million (or 70%) currently have coverage for the treatment of infertility. Approximately 4.0 million of the 10.1 million enrollees are aged 19–44.

An estimated 70% of group-market enrollees in DMHC-regulated plans and CDI-regulated policies have coverage for at least one type of treatment for infertility.

Current Utilization Levels

CHBRP used the 2010 MarketScan claims data to estimate the utilization of treatments for infertility for enrollees with an infertility diagnosis. The MarketScan dataset does not include data on coverage for infertility. In order to estimate utilization for enrollees with coverage for the treatment of infertility, CHBRP assumed the coverage rate of 70% reported above, and adjusted the utilization estimates derived from the claims data (for more details, see Appendix D).

The MarketScan claims data include outpatient and inpatient claims, as well as prescription drug claims, which, in combination, capture the infertility treatments for which coverage is required under the current infertility treatment mandate, and thus AB 460. Under the current infertility treatment mandate, treatment for infertility includes, but is not limited to, diagnosis, diagnostic tests, medication, surgery, and GIFT. CHBRP estimated utilization by only including outpatient and inpatient claims for which a diagnosis of infertility was coded. In vitro fertilization (IVF) claims were removed because coverage for IVF is not required under the current infertility treatment mandate, and AB 460 would not alter this. CHBRP estimated utilization for the following 12 types of medications used to treat infertility, because they are used when ovulatory dysfunction is suspected: clomiphene citrate; metformin; follicle-stimulating hormone (FSH); luteinizing hormone (LH); human chorionic gonadotropin (hCG); human menopausal gonadotropin (hMG); dopamine agonists; gonadotropin-releasing hormone (GnRH); GnRH agonists; GnRH antagonists; aromatase inhibitors; and dexamethasone (ASRM, 2012e; Bidet et al., 2010). Prescription drug claims were only included for enrollees that had an infertility diagnosis on an inpatient or outpatient claim.

Based on the 2010 MarketScan claims data, Table 3 and Table 4 show estimated utilization of treatments for infertility in 2014 by gender and age for Californians with group-market insurance that includes coverage for infertility. Table 3 shows the percentage of enrollees by gender and age

estimated to utilize outpatient procedures[91] and inpatient days (e.g., infertility treatments for diagnosis, diagnostic tests, surgery, and GIFT, excluding IVF) and prescriptions. Across all enrollees with coverage, 1.12% are estimated to utilize outpatient procedures, 0.007% utilize inpatient days, and 0.52% receive medication prescriptions. The percentage of women utilizing treatments is higher than that of men for each type of utilization. For example, 1.83% of enrolled women utilize outpatient procedures, whereas only 0.41% of men are estimated to do so. The parallel percentages for receiving prescription drugs were 1.02% and 0.02%. Utilization peaks among women aged 35–39. For example, almost 3% of women aged 35–39 utilize outpatient procedures and almost 1.6% receive prescriptions. By contrast, these percentages are only 0.3% and 0.2% among for women under 25 (who were subscribers or spouses).

Table 3. Estimated Percentages of Enrollees Utilizing Treatments for Infertility by Gender and Age for Californians With Group Market Health Insurance That Includes Coverage for Infertility, 2014

	Percentage of Covered Enrollees Using Outpatient Procedures			Percentage of Covered Enrollees Using Inpatient Days			Percentage of Covered Enrollees Receiving Prescriptions		
Age	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**
Dependents									
19-22	0.07%	0.01%	0.04%	0.000%	0.000%	0.000%	0.01%	0.00%	0.01%
23-25	0.14%	0.02%	0.08%	0.012%	0.000%	0.006%	0.05%	0.00%	0.02%
Subscribers/spouses									
<25	0.34%	0.06%	0.19%	0.000%	0.000%	0.000%	0.21%	0.00%	0.10%
25-29	1.50%	0.40%	0.93%	0.005%	0.000%	0.002%	0.94%	0.01%	0.47%
30-34	2.88%	0.73%	1.79%	0.020%	0.000%	0.010%	1.73%	0.04%	0.88%
35-39	2.95%	0.61%	1.78%	0.026%	0.000%	0.013%	1.58%	0.02%	0.80%
40-44	1.78%	0.35%	1.08%	0.020%	0.000%	0.011%	0.89%	0.03%	0.47%
Total	1.83%	0.41%	1.12%	0.015%	0.000%	0.007%	1.02%	0.02%	0.52%

Source: 2010 MarketScan claims data; 2013 CHBRP survey of the seven largest providers of health insurance in California.

Table 4 shows the number of treatments per 1,000 of enrollees by gender and age for outpatient procedures, inpatient days, and prescriptions. Across all enrollees with coverage for infertility, they use or receive 103.2 outpatient procedures, 0.28 inpatient days, and 20.2 prescriptions per 1,000 enrollees. Utilization among women is higher than among men for each type of utilization (e.g., outpatient procedures, inpatient days, and prescriptions).

[91] Outpatient procedures include a mix of professional and facility outpatient services ranging from inexpensive laboratory tests to expensive procedures.

Table 4. Estimated Utilization of Treatments for Infertility by Gender and Age for Californians With Group Market Health Insurance That Includes Coverage for Infertility, 2014

	Number of Outpatient Procedures per 1,000 Covered Enrollees			Number of Inpatient Days per 1,000 Covered Enrollees			Number of Prescriptions per 1,000 Covered Enrollees		
Age	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**
Dependents									
19-22	2.4	0.2	1.3	0.00	0.00	0.00	0.4	0.0	0.2
23-25	6.2	0.5	3.3	0.35	0.00	0.18	1.4	0.0	0.7
Subscribers/spouses									
<25	17.2	2.0	9.1	0.00	0.00	0.00	6.0	0.0	3.0
25-29	116.8	12.1	62.8	0.37	0.00	0.18	32.6	0.2	16.1
30-34	299.9	20.7	158.7	1.15	0.00	0.57	66.2	0.9	33.3
35-39	337.6	19.3	178.6	0.72	0.00	0.36	62.4	0.9	31.9
40-44	212.6	10.9	112.9	0.53	0.00	0.27	37.8	1.1	19.8
Total	195.3	12.5	103.2	0.55	0.00	0.28	39.7	0.7	20.2

Source: 2010 MarketScan claims data; 2013 CHBRP survey of the seven largest providers of health insurance in California.

Based on the information in Table 3 and Table 4, of the 4.0 million enrollees aged 19–44 estimated to have coverage for infertility, an estimated:[92]

- 1.12% of enrollees (or 45,000), including 1.83% of female and 0.41% of male enrollees, annually utilize 413,000 outpatient procedures for infertility;
- 0.007% of enrollees (or 300), including 0.015% of female and no male enrollees, annually utilize 1,100 inpatient days for infertility; and
- 0.52% of enrollees (or 21,000), including 1.02% of female and 0.02% of male enrollees, annually utilize 81,000 prescriptions for infertility.

Per-Unit Cost of Treatments for Infertility

CHBRP used the 2010 MarketScan claims data to estimate the average costs of treatments for infertility and applied a medical trend to inflate the costs to 2014. The average costs for an outpatient procedure is $135, for an inpatient day is $4,954, and for a prescription is $696. This results in an estimated $117 million in annual expenditures on treatment for infertility by the estimated 4.0 million enrollees aged 19-44 with coverage.

Current (Baseline) Premiums and Expenditures

Table 5 (at the end of this section) presents per member per month (PMPM) premandate estimates for premiums and expenditures by market segment for DMHC-regulated plans and CDI-regulated policies. Total expenditures PMPM are $549 and $706 in large-group DMHC-regulated plans and CDI-regulated policies, respectively; and are $530 and $822 in small-group DMHC-regulated

[92] These estimates are based on numbers that are more precise than the rounded numbers displayed in Table 3 and Table 4.

plans and CDI-regulated policies, respectively. The final column in Table 5 gives the total annual PMPM for all DMHC-regulated plans and CDI-regulated policies.

The Extent to Which Costs Resulting From Lack of Coverage Are Shifted to Other Payers, Including Both Public and Private Entities

Because AB 460's impact on costs is *unknown*, CHBRP did not estimate whether there may be a shift in costs among private or public payers if AB 460 were enacted.

Public Demand for Benefit Coverage

Considering the criteria specified by CHBRP's authorizing statute, CHBRP reviews public demand for benefits relevant to a proposed mandate. To do this, CHBRP compares the benefits provided by self-insured health plans or policies (which are not regulated by DMHC or CDI and so not are subject to state-level mandates) with the benefits that are provided by plans or policies that would be subject to the mandate.

Among publicly funded self-insured health insurance policies, the preferred provider organization (PPO) plans offered by CalPERS currently have the largest number of enrollees. The CalPERS PPOs *currently* do not provide benefit coverage for the treatment of infertility.

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; coverage for infertility treatment was *offered* as an optional rider, and some employers accept the offer and others do not, resulting in a range of coverage for the treatment of infertility in these self-insured plans and policies.

Coverage for the treatment of infertility varies both within health insurance subject to the current infertility mandate and within self-insured health insurance. Given the general match between health insurance subject to the current infertility benefit mandate and self-insured health insurance (not subject to state-level mandates), CHBRP concludes that public demand for coverage is essentially satisfied by the current state of the market.

Impacts of Mandated Benefit Coverage

AB 460 would modify the current infertility treatment mandate that requires group market DMHC-regulated plans and CDI-regulated policies to *offer* coverage for the treatment of infertility.[93] It would require that coverage for the treatment of infertility be "offered and provided without discrimination on the basis of age, ancestry, color, disability, domestic partner status, gender, gender expression, gender identity, genetic information, marital status, national origin, race, religion, sex, or sexual orientation."

[93] H&SC Section 1374.55 and IC Section 10119.6. A mandate to offer coverage means that the purchaser of the plan or policy—typically an employer—must be given the option to include coverage for infertility in plans or policies offered to their employees.

DMHC and CDI were unable to say how discrimination would be interpreted as it relates to coverage for the treatment of infertility, indicating that the impact AB 460 may have is unknown at this time.[94] **Because the impact AB 460 may have is unknown, CHBRP is unable to estimate the impact of AB 460 on coverage, costs, and utilization**.

Postmandate, because the impact AB 460 would have is unknown, CHBRP is unable to estimate the impact AB 460 would have, if any, on coverage, costs, and utilization were it to be enacted.

CHBRP generally assess the impact of a benefit mandate bill by analyzing:

- How the proposed mandate would change benefit coverage overall, and how it would impact access and health treatment/service availability as well as per-unit cost;
- How the proposed mandate might directly or indirectly change utilization:
- What impact the proposed mandate would have on administrative and other expenses;
- What impact the mandate would have on total health care costs, including the change in total expenditures, potential cost offsets or savings in the first 12 months after enactment, and the impact on costs beyond the initial 12 months;
- What impact the proposed mandate would have on each category of payer; and
- What impact the proposed mandate would have on the uninsured and public programs.

Because the impact AB 460 would have is unknown, the impact of this proposed mandate in all of these areas is unknown at this time.

[94] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.

Table 5. Baseline (Premandate) Per Member Per Month Premiums and Total Expenditures by Market Segment, California, 2014

	DMHC-Regulated							CDI-Regulated			Total
	Privately Funded Plans (by Market) (a)			CalPERS HMOs (b)	Medi-Cal Managed Care Plans			Privately Funded Policies (by Market) (a)			
	Large Group	Small Group	Individual		65 and Over (c)	Under 65	Medi-Cal/Formerly Healthy Families Program (d)	Large Group	Small Group	Individual	
Total enrollees in plans/policies subject to state mandates (e)	11,289,000	2,479,000	1,029,000	854,000	688,000	5,203,000	626,000	539,000	1,315,000	1,877,000	25,899,000
Total enrollees in plans/policies subject to AB 460	11,289,000	427,690	0	854,000	0	0	0	539,000	1,315,000	0	14,424,690
Average portion of premium paid by employer	$437.53	$313.63	$0.00	$391.90	$279.00	$163.00	$88.83	$483.35	$421.89	$0.00	$95,549,186,000
Average portion of premium paid by employee	$83.30	$169.52	$546.88	$97.98	$0.00	$0.00	$8.79	$135.14	$190.22	$305.75	$34,912,666,000
Total premium	$520.83	$483.15	$546.88	$489.88	$279.00	$163.00	$97.62	$618.49	$612.11	$305.75	$130,461,851,000
Enrollee expenses for covered benefits (deductibles, copays, etc.)	$28.54	$46.99	$109.38	$25.99	$0.00	$0.00	$4.51	$87.22	$209.80	$163.07	$14,462,198,000
Enrollee expenses for benefits not covered (f)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0
Total expenditures	$549.37	$530.15	$656.26	$515.87	$279.00	$163.00	$102.13	$705.72	$821.91	$468.82	$144,924,050,000

Source: California Health Benefits Review Program, 2013.

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

(b) As of September 30, 2012, 57.5%, or 469,000, CalPERS members were state retirees, state employees, or their dependents. CHBRP assumes the same ratio for 2014.

(c) Medi-Cal Managed Care Plan expenditures for members over 65 include those who also have Medicare coverage.

(d) Children in Healthy Families, California's CHIP, will be moved into Medi-Cal Managed Care by January 1, 2014, as part of the 2012–2013 budget.

(e) 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.

(f) 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; CHIP=Children's Health Insurance Program; DMHC=Department of Managed Health Care.

PUBLIC HEALTH IMPACTS

As discussed in the *Introduction*, Assembly Bill (AB) 460 would modify the current infertility treatment mandate, which requires most group market Department of Managed Health Care (DMHC)-regulated plans and California Department of Insurance (CDI)-regulated policies to *offer* coverage as an optional rider for the treatment of infertility.[95] AB 460 would add language to the current infertility treatment mandate requiring that treatment of infertility be "offered and provided without discrimination," but would not alter the current infertility treatment mandate from a "mandate to *offer*" to a "mandate to *cover*."[96]

Under the current state benefit mandate, "infertility" is defined as "the presence of a demonstrated condition recognized by a licensed physician and surgeon as a cause of infertility, or "the inability to conceive a pregnancy or to carry a pregnancy to a live birth after a year or more of regular sexual relations without contraception."[97]

This section presents the overall public health impact of AB 460, followed by an analysis examining the potential for reduction in gender and racial/ethnic disparities in health outcomes and the potential for the mandate to reduce premature death and societal economic losses.

Estimated Public Health Outcomes

As presented in the *Medical Effectiveness* section, there is a preponderance of evidence that health insurance for infertility treatments is associated with an increase in utilization of those treatments, including in vitro fertilization (IVF). However, AB 460 does not apply to coverage for IVF. As described in the *Medical Effectiveness* section, there is insufficient evidence to assess the impact of infertility insurance mandates on health outcomes, such as pregnancy rates and live births, outside of the impact of IVF.

As presented in the *Benefit Coverage, Utilization, and Cost Impacts* section, coverage for at least one type of infertility treatment varied by health plan and health insurer, with an average of 70% of enrollees having coverage for at least one type of diagnostic test, treatment, or medication for infertility. Of the 4.0 million enrollees aged 19–44 estimated to have coverage for infertility, an estimated 1.12% (45,000) of enrollees use outpatient procedures, 0.007% (300) of enrollees use inpatient days, 0.52% (21,000) of enrollees use prescriptions for the treatment of infertility on an annual basis. However, DMHC and CDI were unable to say how discrimination would be interpreted as it relates to coverage of treatment for infertility, indicating that the impact AB 460 may have is unknown at this time.[98] Therefore, the impact of AB 460 on coverage, utilization and cost is unknown.

[95] H&SC Section 1374.55 and IC Section 10119.6.
[96] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.
[97] H&SC Section 1374.55 and IC Section 10119.6.
[98] Personal communication, S. Lowenstein, DMHC, and J. Figueroa, CDI, March 2013.

Medical Effectiveness found insufficient evidence to assess the impact of infertility treatment mandates on outcomes (such as pregnancy rates and live births) outside of the impact of IVF (which is excluded from AB 460). Please note that the absence of evidence is not "evidence of no effect." It is possible that an impact—positive or negative—could result. However, currently available evidence does not allow CHBRP to estimate either. Although AB 460 could impact utilization of infertility treatments, CHBRP is unable to estimate any change in utilization (see *Benefit Coverage, Utilization, and Cost Impacts* section). Therefore, the public health impact is unknown.

Potential Harms From Infertility

Infertility can be a cause of stress, distress, anxiety, and depression among both female and male partners (Greil et al, 2010). The stress attributable to infertility in females has been compared to that experienced by female cancer patients (Roudsari et al., 2007). In one study of heterosexual couples seeking infertility treatments, nearly one-third of females reported depression, with 13% reporting severe depressive symptoms (Nelson et al., 2008). Higher levels of psychological distress have been found among females who view their future happiness as contingent on becoming a parent (Greil et al., 2010). The social stigma attached to infertility is also concerning to many women. In a survey of women receiving infertility treatments, Missmer et al. found that African American women were up to four times more likely than white women to be concerned with failing to conceive naturally and the social stigma of infertility. Compared to white women, Asian American women were 7 times as likely to be concerned with social stigma of infertility; women of Chinese decent were nearly 60 times as likely to name social stigma as a significant worry or concern in seeking infertility treatment (Missmer et al., 2011).

In addition to the psychological harms of infertility, there are harms specific to infertility treatments, such as medication side effects and/or multiple births (ASRM, 2012c, 2012d). However, CHBRP cannot assess the impact of AB 460 on these harms because the impact AB 460 may or may not have on utilization of treatments for infertility is unknown (see the *Benefit Coverage, Utilization, and Cost Impacts* section). Therefore, the public health impact on infertility treatment-related harms is unknown.

Discrimination

Qualitative studies have studied access-to-service issues at both the patient level and provider level. Inhorn and Fakih conducted semistructured interviews with Arab American men presenting for infertility diagnosis and treatment, and found that despite finding physicians who are Arabic-speaking and/or Muslim who would not discriminate against them due to their culture, these men still reported difficulty accessing infertility treatments due to economic factors and immigrant status (Inhorn and Fakih, 2006). Missmer et al. surveyed over 1,300 women receiving infertility treatments and reported numerous cultural differences in access to infertility care. Compared with whites, African American and Hispanic women reported more difficulty finding a physician they felt comfortable with and that their race or ethnicity made it more difficult to obtain treatment. Additionally, Catholic women were nine times more likely than Protestant women to report that difficulty obtaining treatment was specifically due to their

religion (Missmer et al., 2011). Stern et al. surveyed nearly 200 assisted reproductive technology (ART) clinics across the country to assess the opinions of clinic directors on access-to-service issues in comparison to their clinic policy. They found that 18% of clinic directors would like to restrict treatment beyond current clinic policy not to discriminate in the treatment of unmarried heterosexual couples, single women, and lesbian women. Opinions on restrictions based on female age were consistent with existing clinic policy, but significantly more clinic directors would like to restrict treatment based on male age; most clinics set limits on couples undergoing treatment based on the female partner's age, but few did so based on the male partner's age (Stern et al., 2002).

As described in the *Introduction*, the medical policies of DMHC-regulated plans and CDI-regulated insurers generally define infertility for a heterosexual couple as the inability to achieve conception after having frequent, unprotected intercourse for at least a year, or for 6 months for a woman over the age of 35. For a single woman, infertility is defined as the inability to achieve conception after having 6 to 12 cycles of artificial insemination, generally within a 1-year period. Sometimes, the language for the definition of infertility for a single woman includes the words "medically supervised" artificial insemination. As described in the *Introduction*, whether these definitions may be interpreted as discriminatory is unknown. DHMC and CDI were unable to provide guidance at this time on how discrimination would be interpreted as it relates to coverage of treatment for infertility. Additionally, CHBRP found no literature that addressed discrimintion in issuance of health insurance coverage for infertility treatments.

Regarding discrimination at the *health plan and health insurer level*, CHBRP found no literature that addressed discrimination in issuance of health insurance coverage for infertility treatments on the basis of age, ancestry, color, disability, domestic partner status, gender, gender expression, gender identity, genetic information, marital status, national origin, race, religion, sex, or sexual orientation. In addition, DHMC and CDI were unable to provide guidance at this time on how discrimination would be interpreted as it relates to coverage of treatment for infertility. It is possible that discrimination at the health plan and health insurer level does occur; however, currently available evidence does not allow CHBRP to address this.

Impact on Gender and Racial Disparities

Several competing definitions of "health disparities" exist. CHBRP relies on the following definition:

> A health disparity/inequality is a particular type of difference in health or in the most important influences of health that could potentially be shaped by policies; it is a difference in which disadvantaged social groups (such as the poor, racial/ethnic minorities, women or other groups that have persistently experienced social disadvantage or discrimination) systematically experience worse health or great health risks than more advantaged groups (Braveman, 2006).

Impact on Gender Disparities

According to the World Health Organization (WHO), 38% of infertility cases are attributable to female factors, 20% are attributable to male factors, 27% are attributable to both partners, and

15% cannot be attributed to either partner (Swerdloff and Wang, 2012). According to the 2002 National Survey on Family Growth (NSFG), more females have been diagnosed with infertility than males have. As described in the *Benefit Coverage, Utilization, and Cost Impacts* section, the percentage of females utilizing infertility treatments is higher than that of males.

Although females are more likely than males to be diagnosed with infertility and utilize infertility treatments, CHBRP is unable to estimate any change in utilization of infertility treatments (see the *Benefit Coverage, Utilization, and Cost Impacts* section). Therefore, the impact of AB 460 on reducing gender disparities is unknown.

Impact on Racial/Ethnic Disparities

Evaluating the impact on racial and ethnic health disparities is particularly important because racial and ethnic minorities report having poorer health status and worse health indicators (KFF, 2007). One important contributor to racial and ethnic health disparities is differences in the prevalence of insurance, where minorities are more likely than whites to be uninsured. However, coverage disparities still exist within the insured population and may contribute to gaps in access and/or utilization among those covered (Kirby et al., 2006; Lillie-Blanton and Hoffman, 2005; Rosenthal et al., 2009). To the extent that racial/ethnic groups are disproportionately distributed among policies with more or less coverage, a mandate bringing all policies to parity may impact an existing disparity.

CHBRP analyses are limited to the insured population (because the uninsured would not be affected by a health benefit mandate). Therefore, to assess a mandate's possible effects on health disparities (assuming the covered intervention is medically effective), CHBRP must answer two questions:

(1) Are there known racial/ethnic disparities in the prevalence or incidence of the infertility; and

(2) Are there known racial/ethnic disparities in premandate benefit coverage and/or utilization?

Infertility rates are higher among racial/minorities compared to white women. Overall infertility rates are highest among non-Hispanic black and African American women, yet utilization of infertility treatments is highest among non-Hispanic white women (Chandra et al., 2005). Bitler and Schmidt pooled 1982, 1988, 1995, and 2002 NSFG data and linked this individual-level data to whether a woman lived in a state that mandated coverage of infertility treatment. Although non-white women and those with lower socioeconomic status were more likely to report impaired fecundity or infertility (see the *Background on Infertility* section for definitions), these women are significantly less likely to have ever received any infertility treatment. Bitler and Schmidt found that state infertility mandates had no significant impact on infertility treatment use in the overall NSFG population. They also performed regression analyses to test whether these mandates had differential effects for different groups of women, based on socioeconomic status and race/ethnicity, but found no evidence that mandates have expanded access to these groups (Bitler and Schmidt, 2006).

There may be several reasons racial/ethnic minorities seek out infertility treatments less often than non-Hispanic whites do. Greil et al. analyzed data from the National Survey of Fertility Barriers (NSFB) and found that black and Hispanic women reported infertility-related stigma more frequently than whites and Asians, and were less likely to seek treatment as a result of encouragement from a partner or family member. Additionally, compared to white women, all racial/ethnic groups in this study reported some or serious ethical concerns about infertility treatments, such as artificial insemination (with partner or donor sperm) (Greil et al., 2011). A study of over 1,300 women receiving infertility treatments at a university-based fertility center found that, compared to whites, African-American and Hispanic women felt it was more difficult to obtain infertility treatment, and this difficulty was a direct result of their race or ethnicity (Missmer et al., 2011).

Although there are racial/ethnic disparities in the prevalence of infertility and infertility treatment utilization, CHBRP is unable to estimate any change in utilization of infertility treatments (see the *Benefit Coverage, Utilization, and Cost Impacts* section). Therefore, the impact of AB 460 on reducing racial/ethnic disparities is unknown.

Impacts on Premature Death and Economic Loss

Premature Death

Premature death is often defined as death before the age of 75 years (Cox, 2006). The overall impact of premature death due to a particular disease can be measured in years of potential life lost (generally referred to as "YPLL") prior to age 75 and summed for the population (Cox, 2006; Gardner and Sanborn, 1990). In California, it is estimated that there are nearly 102,000 premature deaths each year, accounting for more than two million YPLL (CDPH, 2011; Cox, 2006). In order to measure the impact of premature mortality across the population impacted by a proposed mandate, CHBRP first collects baseline mortality rates. Next, the literature is examined to determine whether the proposed mandated benefit impacts mortality and whether YPLL have been established for the given condition. Some diseases and conditions do not result in death, and therefore a mortality outcome is not relevant.

Infertility is not known to be a frequent cause of premature death, therefore AB 460 would not be expected to have a state-wide impact on mortality rates or years of potential life lost.

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). For CHBRP analyses, a literature review is conducted to determine whether lost productivity has been established in the literature. In addition, morbidity associated with the disease or condition of interest can also result in lost productivity; either by causing the worker to miss days of work due to their illness or due to their role as a caregiver for someone else who is ill.

Wu et al. found that heterosexual couples undergoing infertility treatments spent an average of 125 hours (equivalent to 15.6 workdays) on fertility care over an 18-month period. Heterosexual

couples seeking less intensive treatments, such as medical advice or surgery for endometriosis spent less time on fertility care (average of 58 hours, equivalent to 7.3 work days) compared to those seeking more intensive treatments, such as intrauterine insemination (average of 142 hours, equivalent to 17.8 work days). This equates to 7 work days spent pursuing less intensive treatments and nearly 18 days spent pursuing intensive treatments (Wu et al., 2013).

In addition, there is a potential for a disproportionate cost burden for same-sex couples in that there is a financial cost associated with AI and therefore a disadvantage for those attempting to conceive by that route (NICE, 2013). Heterosexual couples having unprotected intercourse do not have to pay to get pregnant, whereas same-sex couples are "at a disadvantage as they have to pay for a number of cycles of AI before they can be considered for assessment and possible treatment" for infertility (NICE, 2013).

Although infertility treatments are costly in terms of time to search for and undergo treatments, the impact of AB 460 on economic loss is unknown due to lack of evidence of economic loss and because CHBRP is unable to estimate a change in utilization of infertility treatments (see *Benefit Coverage, Utilization, and Cost Impacts* section).

APPENDICES

Appendix A: Text of Bill Analyzed

On February 20, 2013, the Assembly Committee on Health requested that CHBRP analyze AB 460.

ASSEMBLY BILL 460

Introduced by Assembly Member Ammiano

FEBRUARY 19, 2013

An act to amend Section 1374.55 of the Health and Safety Code, and to amend Section 10119.6 of the Insurance Code, relating to health care coverage.

LEGISLATIVE COUNSEL'S DIGEST

AB 460, as introduced, Ammiano. Health care coverage: infertility.

(1) Existing law, the Knox-Keene Health Care Service Plan Act of 1975, provides for the regulation of health care service plans by the Department of Managed Health Care and makes a willful violation of the act a crime. Existing law provides for the regulation of health insurers by the Department of Insurance. Existing law also imposes various requirements and restrictions on health care service plans and health insurers, including, among other things, a requirement that every health care service plan contract or health insurance policy that is issued, amended, or renewed on or after January 1, 1990, offer coverage for the treatment of infertility, except in vitro fertilization, under those terms and conditions as may be agreed upon between the group subscriber or the group policyholder and the plan or the insurer, except as provided.

This bill would require that the coverage for the treatment of infertility be offered and provided without discrimination on the basis of age, ancestry, color, disability, domestic partner status, gender, gender expression, gender identity, genetic information, marital status, national origin, race, religion, sex, or sexual orientation. Because a willful violation of the bill's provisions by a health care service plan would be a crime, the bill would impose a state-mandated local program.

(2) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the

state. Statutory provisions establish procedures for making that reimbursement.

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

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

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

SECTION 1. Section 1374.55 of the Health and Safety Code is amended to read:

1374.55. (a) On and after January 1, 1990, every health care service plan contract ~~which~~ *that* is issued, amended, or renewed that covers hospital, medical, or surgical expenses on a group basis, where the plan is not a health maintenance organization as defined in Section 1373.10, shall offer coverage for the treatment of infertility, except in vitro fertilization, under those terms and conditions as may be agreed upon between the group subscriber and the plan. Every plan shall communicate the availability of that coverage to all group contractholders and to all prospective group contractholders with whom they are negotiating.

(b) For purposes of this section, "infertility" means either (1) the presence of a demonstrated condition recognized by a licensed physician and surgeon as a cause of infertility, or (2) the inability to conceive a pregnancy or to carry a pregnancy to a live birth after a year or more of regular sexual relations without contraception. "Treatment for infertility" means procedures consistent with established medical practices in the treatment of infertility by licensed physicians and surgeons including, but not limited to, diagnosis, diagnostic tests, medication, surgery, and gamete intrafallopian transfer. "In vitro fertilization" means the laboratory medical procedures involving the actual in vitro fertilization process.

(c) On and after January 1, 1990, every health care service plan ~~which~~ *that* is a health maintenance organization, as defined in Section 1373.10, and ~~which~~ *that* issues, renews, or amends a health care service plan contract that provides group coverage for hospital, medical, or surgical expenses shall offer the coverage specified in subdivision (a), according to the terms and conditions that may be agreed upon between the group subscriber and the plan to group contractholders with at least 20 employees to whom the plan is offered. The plan shall communicate the availability of the coverage

to those group contractholders and prospective group contractholders with whom the plan is negotiating.

(d) ~~Nothing in this~~ *This* section shall *not* be construed to deny or restrict in any way any existing right or benefit to coverage and treatment of infertility under an existing law, plan , or policy.

(e) ~~Nothing in this~~ *This* section shall *not* be construed to require any employer that is a religious organization to offer coverage for forms of treatment of infertility in a manner inconsistent with the religious organization's religious and ethical principles.

(f) ~~Nothing in this~~ *This* section shall *not* be construed to require any plan, which is a subsidiary of an entity whose owner or corporate member is a religious organization, to offer coverage for treatment of infertility in a manner inconsistent with that religious organization's religious and ethical principles.

For purposes of this subdivision, "subsidiary" of a specified corporation means a corporation more than 45 percent of the voting power of which is owned directly, or indirectly through one or more subsidiaries, by the specified corporation.

(g) Coverage for the treatment of infertility shall be offered and provided without discrimination on the basis of age, ancestry, color, disability, domestic partner status, gender, gender expression, gender identity, genetic information, marital status, national origin, race, religion, sex, or sexual orientation.

SEC. 2. Section 10119.6 of the Insurance Code is amended to read:

10119.6. (a) On and after January 1, 1990, every insurer issuing, renewing, or amending a policy of disability insurance ~~which~~ *that* covers hospital, medical, or surgical expenses on a group basis shall offer coverage of infertility treatment, except in vitro fertilization, under those terms and conditions as may be agreed upon between the group policyholder and the insurer. Every insurer shall communicate the availability of that coverage to all group policyholders and to all prospective group policyholders with whom they are negotiating.

(b) For purposes of this section, "infertility" means either (1) the presence of a demonstrated condition recognized by a licensed physician and surgeon as a cause of infertility, or (2) the inability to conceive a pregnancy or to carry a pregnancy to a live birth after a year or more of regular sexual relations without contraception. "Treatment for infertility" means procedures consistent with established medical practices in the treatment of infertility by licensed physicians and surgeons , including, but not limited to, diagnosis, diagnostic tests,

medication, surgery, and gamete intrafallopian transfer. "In vitro fertilization" means the laboratory medical procedures involving the actual in vitro fertilization process.

(c) ~~Nothing in this~~ *This* section shall *not* be construed to deny or restrict in any way any existing right or benefit to coverage and treatment of infertility under an existing law, plan , or policy.

(d) ~~Nothing in this~~ *This* section shall *not* be construed to require any employer that is a religious organization to offer coverage for forms of treatment of infertility in a manner inconsistent with the religious organization's religious and ethical principles.

(e) ~~Nothing in this section~~ *This section* shall *not* be construed to require any insurer, which is a subsidiary of an entity whose owner or corporate member is a religious organization, to offer coverage for treatment of infertility in a manner inconsistent with that religious organization's religious and ethical principles.

For purposes of this subdivision, "subsidiary" of a specified corporation means a corporation more than 45 percent of the voting power of which is owned directly, or indirectly through one or more subsidiaries, by the specified corporation.

(f) This section applies to every disability insurance policy ~~which~~ *that* is issued, amended, or renewed to residents of this state regardless of the situs of the contract.

(g) Coverage for the treatment of infertility shall be offered and provided without discrimination on the basis of age, ancestry, color, disability, domestic partner status, gender, gender expression, gender identity, genetic information, marital status, national origin, race, religion, sex, or sexual orientation.

SEC. 3. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within the meaning of Section 6 of Article XIII B of the California Constitution.

Appendix B: Literature Review Methods

Appendix B describes methods used in the medical effectiveness literature review conducted for this report. A discussion of CHBRP's system for grading evidence, as well as lists of MeSH Terms, Publication Types, and Keywords, follows.

As noted previously, infertility diagnosis and treatment encompasses such a wide range of tests, treatments, and medications that a systematic review of the literature on the effectiveness of all of these treatments was not feasible. In light of the wide range of conditions that cause infertility and the types of treatments to which AB 460 would apply and the fact that AB 460 addresses the provision of coverage of infertility benefits, CHBRP focused the medical effectiveness review for this bill on the impact of health insurance coverage (either voluntarily or mandated) for infertility treatments. The literature search encompassed articles and reports on the impact of having health insurance versus no insurance for infertility treatments, as well as the literature on the effect of having more comprehensive coverage for infertility treatments.

Studies of insurance coverage for infertility treatments 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, 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. A total of 14 studies were included in the medical effectiveness review for this report. 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 other articles were eliminated because they did not focus on infertility treatments or did not include insurance coverage as a variable in the analysis.

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.*[99] 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;

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

- 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;
- Ambiguous/conflicting evidence; and
- Insufficient evidence.

A grade of *clear and convincing evidence* indicates that there are multiple studies of a treatment and that the large majority of studies 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 *ambiguous/conflicting evidence* indicates that although some studies included in the medical effectiveness review find that a treatment is effective, a similar number of studies 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.

Databases Searched

- PubMed
- Biosis
- Business Source Complete
- Cochrane Library
- EconLit
- Web of Science

Search Terms (* indicates truncation of the word stem)

PubMed

Medical Subject Headings (MeSH)—PubMed

Age Factors
Congenital Abnormalities
Continental Population Groups
Cost of Illness
Costs and Cost Analysis
Culture
Developmental Disabilities
Disabled Persons
Endometriosis/diet therapy
Endometriosis/drug therapy
Endometriosis/prevention and control
Endometriosis/radiotherapy
Endometriosis/surgery
Ethnic Groups
Fallopian Tube Diseases/prevention and control
Fallopian Tube Diseases/radiotherapy
Fallopian Tube Diseases/rehabilitation
Fallopian Tube Diseases/surgery
Fallopian Tubes/surgery
Gender Identity
Gestational Age
Gonadotropin-Releasing Hormone
Health Care Costs
Health Impact Assessment/economics
Health Services Accessibility
Health Services Needs and Demand
Healthcare Disparities
Infant, Low Birth Weight
Infertility
Infertility/drug therapy
Infertility/radiotherapy
Infertility/rehabilitation
Infertility/surgery
Infertility/therapy
Insemination, Artificial
Insurance, Health
Leiomyoma/drug therapy
Leiomyoma/prevention and control
Leiomyoma/radiotherapy
Leiomyoma/surgery
Leiomyoma/therapy
Leiomyoma/therapy
Live Birth
Marital Status
Menotropins
Minority Health
Ovulation Induction
Pregnancy Outcome
Pregnancy Rate
Prejudice
Premature Birth
Religion
Sexuality
supply and distribution[Subheading]
Transgendered Persons
utilization[Subheading]

Keywords—PubMed

absenteeism
access to care
age
ancestry
artificial insemination
barrier*
bisexual*
blocked fallopian
bravelle
bromocriptine
burden
burdens
cabergoline
clomid
clomiphene citrate
cost
cost effectiv*
cost of treatment
cost offset
cost offsets
cost saving
cost savings
cost utility
cost-utility
cultural
dexamethasone
disabilities
disability
disabled
discriminate
discriminated
discrimination
disparities
disparity
domestic partner
donor sperm insemination
dostinex
economic loss
economic losses
endometriosis
ethnic
ethnicity
fallopian surgery
fallopian surgical
femara
fertility
financial
financial burden

Keywords—PubMed (Cont.)

financial burdens
follicle-stimulating hormone
follistim
fsh
gestational age
glucophage
gnrh
gn-rh
gonadotropin-releasing hormone
gonal-f
heterosexual*
hmg
homosexual*
human menopausal gonadotropin
infertility
intracervical insemination
intrauterine insemination
iui
laser
lasers
leiomyoma*
lesbian*
letrozole
live birth
live birth*
low birth weight
marital
menopur
metformin
national origin
outcome*
out-of-pocket
ovulate
ovulation induced
ovulation induction
parlodel
pergonal
pregnancy outcome
pregnancy outcome rate
pregnancy outcome rates
pregnancy outcomes
premature
premium*
price elasticity
racial
racist
recanalisation
religion
religious
repronex
rider policies
rider policy
salpingostomy
sex orientation
sexism
sexual orientation
transgender*
treatment cost
treatment costs
tubal reanastomosis
tubal surgery
unit cost
unit costs
uterine fibroid
uterine fibroids
uterine fibroma
uterine fibromas
uterine fibromyoma
uterine fibromyomas
uterine polyp resection
uterine polypectomy
uterus polypectomy
utilisation
utilization

Business Source Complete

Keywords

absenteeism
ancestry
artificial insemination
birth defect*
birth defects
bisexual*
bravelle
bromocriptine
cabergoline
clomid
clomiphene citrate
congenital
congenital abnormalities
cost
cost-utility
cost analysis
cost effectiv*
cost effective
cost effectiveness
cost of treatment
cost offset
cost offsets
cost saving
cost savings
cost utility
costs
coverage
developmental disabil*
dexamethasone
disabilities
disability
disabled
discriminate
discriminated
discrimination
disparities

Keywords—Business Source Complete (Cont.)

disparity
domestic partner
donor sperm insemination
dostinex
economic burden
economic burdens
economic loss
endometriosis surgery
endometriosis therapy
endometriosis treatment
ethnic
ethnicity
fallopian tubes surgery
femara
fertility
fertilization in vitro
financial burden
financial burdens
follicle-stimulating hormone
follistim
fsh
gender identity
gestational age
glucophage
gn-rh
gnrh
gonadotropin-releasing hormone
gonal-f
handicapped
heterosexual*
hmg
homosexual*
human menopausal gonadotropin
infertility
insurance
intracervical insemination
intrauterine insemination
lesbian*
letrozole
live birth*
low birth weight*
mandate*
marital
marriage
married
menopur
menotropins
metformin
national origin
nonmarital
ovulation induced
ovulation induction
ovum transfer
parlodel
pergonal
policies
polypectomy
pregnancy
pregnancy outcome*
pregnancy rate*
prejudice
premature
premature birth*
premiums
preterm birth*
price elasticity
productivity
racial
racist
recanalisation
religion
religious
repronex
rider policy
salpingostomy
sex orientation
sexism
sexual orientation
transgender*
treatment cost
treatment costs
tubal reanastomosis
tubal surgery
unit cost
unit costs
uterine fibroid surgery
uterine fibroid therapy
uterine fibroid treatment
uterine fibroids surgery
uterine fibroids therapy
uterine fibroids treatment
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uterine fibromas treatment
uterine fibromyoma surgery
uterine fibromyoma therapy
uterine fibromyoma treatment
uterine fibromyomas surgery
uterine fibromyomas therapy
uterine fibromyomas treatment
uterine polyp resection
utilisation
utilization

Econlit

Keywords

access
ancestry
artificial insemination
bisexual*
bravelle
bromocriptine
cabergoline
clomid
clomiphene citrate
coverage
dexamethasone
disabilities
disability
disabled
discriminate
discriminated
discrimination
disparities
disparity
domestic partner
donor sperm insemination
dostinex
endometriosis surgery
endometriosis therapy
endometriosis treatment
ethnic
ethnicity
fallopian
fallopian tubes
femara
fertility
follicle-stimulating hormone
follistim
fsh
gender identity
glucophage
gn-rh
gnrh
gonadotrophin-releasing hormone
gonal-f
handicapped
heterosexual*
hmg
homosexual*
human menopausal gonadotrophin
infertility
intracervical insemination
intrauterine insemination
lesbian*
letrozole
mandate*
marital
marriage
married
menopur
menotropins
metformin
national origin
nonmarital
orientation
ovulation induced
ovulation induction
parlodel
polypectomy
prejudice
productivity
racial
racist
recanalisation
religion
religious
repronex
salpingostomy
sex orientation
sexism
sexual orientation
transgender*
tubal reanastomosis
tubal surgery
usage
uterine fibroid surgery
uterine fibroid therapy
uterine fibroid treatment
uterine fibroids surgery
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uterine fibromas treatment
uterine fibromyoma surgery
uterine fibromyoma therapy
uterine fibromyoma treatment
uterine fibromyomas surgery
uterine fibromyomas therapy
uterine fibromyomas treatment
uterine polyp resection
utilisation
utilising
utilization
utilizing

Web of Science

Keywords

absenteeism
ancestry
artificial insemination
bisexual*
cost
cost-utility
cost analysis
cost effective
cost effectiveness
cost of treatment
cost offset
cost offsets
cost saving
cost savings
cost utility
costs
coverage
disabilities
disability
disabled
discriminate
discriminated
discrimination
disparities
disparity
domestic partner
economic burden
economic burdens
economic loss
endometriosis surgery
endometriosis therapy
endometriosis treatment
ethnic
ethnicity
fallopian
fallopian tubes
financial burden
financial burdens
gender identity
handicapped
heterosexual*
homosexual*
infertility
insurance
lesbian*
mandate*
marital
marriage
married
national origin
nonmarital
ovulation induced
ovulation induction
policies
policy
polypectomy
prejudice
price elasticity
productivity
racial
racist
recanalisation
religion
religious
rider
salpingostomy
sex orientation
sexism
sexual orientation
transgender*
treatment cost
treatment costs
tubal reanastomosis
tubal surgery
unit cost
unit costs
uterine fibroid surgery
uterine fibroid therapy
uterine fibroid treatment
uterine fibroids surgery
uterine fibroids therapy
uterine fibroids treatment
uterine fibroma surgery
uterine fibroma therapy
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uterine fibromyoma surgery
uterine fibromyoma therapy
uterine fibromyoma treatment
uterine fibromyomas surgery
uterine fibromyomas therapy
uterine fibromyomas treatment
uterine polyp resection
utilisation
utilization

BIOSIS

Keywords

absenteeism
ancestry
birth defects
bisexual*
bravelle
bromocriptine
cabergoline
clomid
clomiphene citrate
congenital abnormalities
cost
cost-utility
cost analysis
cost effective
cost effectiveness
cost of treatment
cost offset
cost offsets
cost saving
cost savings
cost utility
costs
coverage
developmental disabil*
dexamethasone
disabilities
disability
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discriminated
discrimination
disparities
disparity
domestic partner
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economic burden
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economic loss
ethnic
ethnicity
femara
financial burden
financial burdens
follicle-stimulating hormone
follistim
fsh
gender identity
gestational age delivery
glucophage
gn-rh
gnrh
gonadotropin-releasing hormone
gonal-f
handicapped
heterosexual*
hmg
homosexual*
human medicine
human menopausal gonadotropin
infertility
insurance
lesbian*
letrozole
live birth*
low birth weight*
mandate*
marital
marriage
married
menopur
menotropins
metformin
national origin
nonmarital
parlodel
pergonal
policies
policy
pregnancy outcome*
pregnancy rate*
prejudice
premature birth*
premiums
preterm birth*
price elasticity
productivity
racial
racist
religion
religious
repronex
results
rider
sex orientation
sexism
sexual
sexual orientation
transgender*
treatment cost
treatment costs
unit cost
unit costs
utilisation
utilization

Cochrane Library

Keywords

absenteeism
ancestry
artificial insemination
bisexual*
cost
cost-utility
cost analysis
cost effective
cost effectiveness
cost of treatment
cost offset
cost offsets
cost saving
cost savings
cost utility
costs
coverage
disabilities
disability
disabled
disabled
discriminate
discriminated
discrimination
disparities
disparity
domestic partner
donor sperm insemination
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economic burdens
economic loss
endometriosis therapy
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ethnicity
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fallopian tubes surgery
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financial burdens
gender identity
handicapped
heterosexual*
homosexual*
infertility
insurance
intracervical insemination
intrauterine insemination
lesbian*
mandate*
marital
marriage
married
national origin
nonmarital
ovulation induced
ovulation induction
policies
policy rider
polypectomy
prejudice
price elasticity
productivity
racial
racist
recanalisation
religion
religious
salpingostomy
sex orientation
sexism
sexual orientation
transgender*
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uterine fibromyomas surgery
uterine fibromyomas therapy
uterine fibromyomas treatment
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uterine polyp resection
utilization
utilization

Appendix C: Description of Studies on Infertility Treatments

Appendix C describes the meta-analyses, systematic reviews, and individual studies on insurance coverage or insurance mandates for infertility treatments that were analyzed by the medical effectiveness team.

Table C-1. Characteristics of Studies That Examined the Impact of Health Insurance Coverage for Infertility Treatments

Citation	Data Source (Years)	Population Studied	Research Methods	Location
Banks et al., 2010	SART registry (1997–2006)	IVF transfer cycles at 3,853 clinics in the US from 1997–2006	Multivariate least-squares regression analysis at the clinic-year level.	United States
Bitler and Schmidt, 2006	NSFG (1982; 1988; 1995; 2002)	30,149 women aged 15–44	Pooled-individual level data from 4 cycles of the NSFG (a cross-sectional, nationally representative survey of women aged 15–44)	United States
Bitler and Schmidt; 2012	NSFG (1982; 1988; 1995; 2002)	30,149 women aged 15–44	Pooled-individual level data from 4 cycles of the NSFG (a cross-sectional, nationally representative survey of women aged 15–44)	United States
Chandra and Stephen, 2010	NSFG (1995 and 2002)	2,005 fertility impaired women aged 22–44	Pooled-individual level data from 2 cycles of the NSFG (a cross-sectional, nationally representative survey of women aged 15–44)	United States
Farley Ordovensky Staniec and Webb, 2007	NSGF (1995)	1,210 infertile or subfecund women aged 15–44	Cross-sectional analysis of individual-level data from the NSFG (nationally representative survey of women aged 15–44)	United States
Farr et al., 2009	NSFG (2002)	530 women aged 18–44 who had been to a health care provider to talk about ways to get pregnant	Cross-sectional analysis of individual-level data from the NSFG (nationally representative survey of women ages 15-44)	United States
Greil et al., 2011	NSFB (2004–2006)	2,162 women aged 25–45 who had experienced infertility at some point in their lives	Cross-sectional analysis of individual-level data from a national survey that oversampled women who had ever experienced infertility.	United States

Table C-1. Characteristics of Studies That Examined the Impact of Health Insurance Coverage for Infertility Treatments (Cont'd)

Citation	Data Source (Years)	Population Studied	Research Methods	Location
Griffin and Panak, 1998	Massachusetts Department of Insurance (1986–1993); SART registry (1993)	ART users both in Massachusetts and outside of Massachusetts	Time-series analysis of insurance expenditure variables, and cross sectional study of 1993 SART data.	United States and Canada
Henne and Bundorf, 2008	SART registry (1990–2001); Census data (1990–2001)	Clinic-level data from SART registry	Time-series analysis of 1990–2001 SART data to examine the relationship between state mandates and IVF use and outcomes, controlling for state-level characteristics.	United States
Jain et al., 2002	SART registry (1998); Census data (2000)	Clinic-level data from SART registry, combined with state-level census data.	Cross sectional analysis of 1998 SART clinic data, controlling for state-level demographic characteristics provided by the 2000 census.	United States
Martin et al., 2011	SART registry (2006)	91,753 fresh, nondonor IVF cycles	Retrospective analysis of all fresh IVF cycles in the United States in 2006.	United States
Navarro et al., 2008	SART registry (2003); ESHRE registry data (2003)	SART clinic registry and ESHRE clinic registry	Retrospective analysis of ART activity records in the United States and 10 European countries.	United States and Europe
Reynolds et al., 2003	SART registry (1998)	SART clinic data from Illinois, Massachusetts, Rhode Island, Indiana, Michigan, and New Jersey	Retrospective analysis of ART activity in 3 states with comprehensive IVF mandates and 3 states with no mandated coverage.	Selected states in the United States
Schmidt, 2007	VSDND birth data: (1981–1999); Census data: (1981-1999)	Birth certificate data and population estimates from 1981–1999.	Difference-in-difference-in-difference analysis of variation in mandates across states and over time, by age group.	United States

Source: California Health Benefits Review Program, 2013.
Key: ART=assisted reproductive technology; ESHRE=European Society of Human Reproduction and Embryology; IVF=in vitro fertilization; NSFB=National Survey of Fertility Barriers; NSFG=National Survey of Family Growth; SART=Society for Assisted Reproductive Technologies; VSDND=Vital Statistics Detail Natality Data.

Table C-2. Summary of Findings from Studies of the Effects of Health Insurance Coverage on the Use of and Outcomes Related to Infertility Treatments

Citation	Data Source (Years)	Insurance Variable	Results	Conclusion
Outcome: Use of Any Infertility Treatments				
Bitler and Schmidt, 2012	NSFG (1982; 1988; 1995; 2002)	Any mandate Mandate to cover Mandate to offer No mandate Mandate includes IVF Mandate without IVF	Any mandate vs. no mandate • No significant difference in overall utilization • Among women aged ≥30 with some college education: 4.1%-point increase in any infertility treatment Cover mandate vs. no mandate • Among women aged ≥30 with some college education: 5.5% point increase in any infertility treatment Offer mandate vs. no mandate • Among women aged ≥30 with some college education: 4.3%-point increase in medical help to get pregnant Mandate includes IVF vs. mandates without IVF • Among women aged ≥30 with some college education: 4.9%-point increase in any infertility treatment 44% of women in the sample are aged 30 or older with some college education.	State-level mandates are associated with a significant increase in utilization of infertility treatment, with the largest effects among older, more educated women.
Bitler and Schmidt, 2006	NSFG (1982; 1988; 1995; 2002)	Any mandate No mandate	Any mandate vs. no mandate • No significant difference in overall utilization • Among women aged ≥30 with some college education: 4.1%-point increase in any infertility treatment	State-level mandates are associated with a significant increase in utilization of infertility treatment, with the largest effects among older, more educated women.
Farley Ordovensky Staniec and Webb, 2007	NSGF (1995)	Private health insurance or military coverage	Private or military health insurance vs. public or no insurance • Increased odds of seeking medical help to get pregnant (OR=1.65, SE=0.348, p-value <0.05)	Insurance coverage was associated with seeking medical help to get pregnant.

Table C-2. Summary of Findings from Studies of the Effects of Health Insurance Coverage on the Use of and Outcomes Related to Infertility Treatments (Cont'd)

Citation	Data Source (Years)	Insurance Variable	Results	Conclusion
Outcome: Use of Specific Infertility Treatments				
Bitler and Schmidt, 2012	NSFG (1982; 1988; 1995; 2002)	Any mandate Mandate to cover Mandate to offer No mandate Mandate includes IVF Mandate without IVF	Any mandate vs. no mandate • No significant difference in utilization overall of specific treatments • Among women aged ≥30 with some college education: 2.0%-point increase in ovulation-inducing drugs. Cover mandate vs. no mandate • Among women aged ≥30 with some college education: 3.0%-point increase in ovulation-inducing drugs • Among women aged ≥30 with some college education: 1.2%-point increase in artificial insemination • Among women aged ≥30 with some college education: 3.4%-point increase in female infertility testing Offer mandate vs. no mandate • No significant difference in utilization of specific infertility treatments Mandate includes IVF vs. mandates without IVF • Among women aged ≥30 with some college education: 2.8%-point increase in ovulation-inducing drugs 44% of women in the sample are aged 30 or older with some college education.	State-level mandates are associated with a significant increase in utilization of infertility treatment specifically for ovulation-inducing drugs and artificial insemination, with the largest effects among older, more educated women.
Chandra and Stephen, 2010	NSFG (1995 and 2002)	Private health insurance coverage	Private health insurance coverage vs. public/no coverage: • No significant difference in use of fertility advice or testing • Increased odds of using ovulation or miscarriage services (OR=1.7, 95% CI=1.2–2.3) • Increased odds of using ART, insemination, or surgery services (OR=2.0, 95% CI=1.1–3.4)	Having health insurance was associated with higher rates of use of specific infertility treatments.

Table C-2. Summary of Findings from Studies of the Effects of Health Insurance Coverage on the Use of and Outcomes Related to Infertility Treatments (Cont'd)

Citation	Data Source (Years)	Insurance Variable	Results	Conclusion
Outcome: Use of Specific Infertility Treatments				
Farley Ordovensky Staniec and Webb, 2007	NSGF (1995)	Private or military health insurance coverage	Private or military health insurance vs. public/no insurance • Increased odds of using fertility medications (OR=3.39, SE=1.40, p-value <0.01) • Increased odds of having surgery to improve fertility (OR=2.97, SE=1.80, p-value <0.1)	Insurance coverage was associated with using medications and having surgery to improve fertility.
Greil et al., 2011	NSFB (2004–2006)	Private health insurance coverage	Private health insurance coverage vs. public or no coverage: • Increased utilization of doctor visits (OR=1.20, p-value <0.01) • Increased utilization of infertility tests (OR=1.17, p-value <0.05) • Increased utilization of infertility treatment (OR=1.28, p-value <0.01)	Having private insurance coverage was positively associated with seeing a doctor, receiving tests, and receiving treatment for infertility.
Henne and Bundorf, 2008	SART registry (1990–2001)	Comprehensive mandate Limited mandate[100] No coverage mandate	Comprehensive mandate vs. no mandate • Increased utilization of IVF (B = 1.30, SE = 0.26, p value ≤0.001) Limited mandate vs. no mandate • No significant difference in utilization of IVF Offer Mandate vs. No Mandate • Decreased utilization of IVF (B = -0.66, SE = 0.11, p-value = <0.001)	Compared to states without mandates, comprehensive mandates are associated with increased utilization of IVF, whereas mandates to offer are associated with decreased utilization of IVF.

[100] The classification of comprehensive and limited mandates are as used by Banks et al., 2010, and Henne and Bundorf, 2008: Comprehensive mandates: all insurers must provide coverage for the cost of diagnosis and treatment of infertility, including ART of at least four oocyte retrievals. Limited mandates: may not apply to all insurers, have greater limits to the amount of ART coverage, or exclude ART from the infertility services covered.

Table C-2. Summary of Findings from Studies of the Effects of Health Insurance Coverage on the Use of and Outcomes Related to Infertility Treatments (Cont'd)

Citation	Data Source (Years)	Insurance Variable	Results	Conclusion
Outcome: Use of Specific Infertility Treatments				
Jain et al., 2002	SART registry (1998); Census Data (2000)	Complete IVF coverage mandate Partial IVF coverage mandate[101] No IVF coverage mandate	Fresh-embryo cycles: Complete coverage = 3.35 ± 0.03 Partial coverage = 1.46 ± 0.02 No coverage = 1.21 ± 0.01 Frozen embryo cycles Complete coverage = 0.43 ± 0.01 Partial coverage = 0.30 ± 0.01 No coverage = 0.20 ± 0.003	Mandates are associated with increased utilization of IVF cycles.
Navarro et al., 2008	SART registry (2003); ESHRE registry data (2003)	Public, complete coverage Public, partial coverage Private, complete coverage Private, partial coverage No coverage[102]	Number of IVF cycles per 1 million population Public, complete coverage = 6,958 Public, partial coverage = 11,225 Private, complete coverage = 3,736 Private, partial coverage = 4,160 No coverage = 10,902 (p-value <0.05)	Utilization of IVF varies by type and level of insurance coverage
Outcome: Pregnancy Rates				
Farr et al., 2009	NSFG (2002)	Health insurance coverage for infertility treatments	Of women who had visited a doctor to talk about getting pregnant, having health insurance coverage for infertility services was associated with increased likelihood of getting pregnant (RR=1.3, 95% CI=1.0–1.5)	Having health insurance coverage was associated with higher rates of becoming pregnant for women receiving infertility treatments.
Jain et al., 2002	SART registry (1998); Census data (2000)	Complete IVF coverage mandate Partial IVF coverage mandate No IVF coverage mandate	Pregnancy (% of IVF cycles leading to pregnancy): Complete coverage = 27.8 ± 0.43 Partial coverage = 26.7 ± 0.63 No coverage = 31.5 ± 0.22 (p-value <0.001)	Mandates are associated with decreased pregnancy rates per IVF cycles.

[101] Complete coverage is defined as all insurers providing coverage for the costs of diagnosis and treatment of infertility including IVF. Partial coverage is defined as coverage that may not apply to all insurers, cost of IVF coverage not completely covered or maximum lifetime restrictions on benefit.
[102] Complete coverage is defined as access to diagnostic services and medical treatments for infertility without limits. Partial coverage includes limits to access or coverage for partial cost of treatment.

Table C-2. Summary of Findings from Studies of the Effects of Health Insurance Coverage on the Use of and Outcomes Related to Infertility Treatments (Cont'd)

Citation	Data Source (Years)	Insurance Variable	Results	Conclusion
Outcome: Pregnancy Rates				
Martin et al., 2011	SART registry (2006)	IVF coverage mandate No IVF coverage mandate	Pregnancy (% of IVF cycles leading to pregnancy): IVF coverage mandated = 35.0% IVF coverage not mandated = 38.8% (p-value <0.001)	Mandated IVF coverage is associated with lower pregnancy rates.
Navarro et al., 2008	SART registry (2003); ESHRE registry data (2003)	Public, complete coverage Public, partial coverage Private, complete coverage Private, partial coverage No coverage	% of live births that are ART births Public, complete coverage = 2.4% Public, partial coverage = 2.2% Private, complete coverage = 2.6% Private, partial coverage = 1.2% No coverage = 0.9% (p-value <0.05)	ART birth rates vary by type and level of insurance coverage
Outcome: Birth Rates				
Banks et al., 2010	SART registry (1997–2006)	Insurance mandate categories: Comprehensive Limited Offer only None (referent)	Births per embryo transferred: • Comprehensive vs. no mandate; regression coefficient significant for 2 of 4 age groups (<35: B=−3.17; 41–42: B=−2.35) • Limited vs. no mandate; regression coefficient significant for 1 of 4 age groups (<35: B=−3.05) • Offer only vs. no mandate not significant	Relationship between state mandates and birth rates varies by age group.
Griffin and Panak, 1998	Massachusetts Department of Insurance (1986–1993); SART registry (1993)	Massachusetts mandate to cover	Live delivery per ART cycle was lower in Massachusetts clinics compared to clinics outside of Massachusetts (14.3% vs. 17.8%, p-value ≤ 0.001)	Massachusetts mandate was associated with lower success rates of ART.
Henne and Bundorf, 2008	SART registry (1990–2001)	Comprehensive mandate Limited mandate No coverage mandate	Comprehensive mandate vs. no mandate • Decreased births per IVF cycle (B = −0.04, SE = 0.01, p-value ≤0.001) Limited mandate vs. no mandate • No significant difference in births per IVF cycle Offer mandate vs. no mandate • No significant difference in births per IVF cycle	Compared to states without mandates, comprehensive mandates are associated with decreased births per IVF cycle.

Table C-2. Summary of Findings from Studies of the Effects of Health Insurance Coverage on the Use of and Outcomes Related to Infertility Treatments (Cont'd)

Citation	Data Source (Years)	Insurance Variable	Results	Conclusion
Outcome: Birth Rates				
Jain et al., 2002	SART registry (1998) Census data (2000)	Complete IVF coverage mandate Partial IVF coverage mandate No IVF coverage mandate	Live Births (% of IVF cycles leading to live births): Complete coverage = 22.7 ± 0.40 Partial coverage = 22.2 ± 0.59 No coverage = 25.7 ± 0.20 (p-value <0.001)	Mandates are associated with decreased live births per IVF cycle.
Martin et al., 2011	SART registry (2006)	IVF coverage mandate No IVF coverage mandate	Live birth rate (% of IVF cycles): IVF coverage mandated = 29.1% IVF coverage not mandated = 32.2% (p-value <0.001)	Mandated IVF coverage is associated with lower live birth rates.
Navarro et al., 2008	SART registry (2003); ESHRE registry data (2003)	Public, complete coverage Public, partial coverage Private, complete coverage Private, partial coverage No coverage	% of live births that are ART births Public, complete coverage = 2.4% Public, partial coverage = 2.2% Private, complete coverage = 2.6% Private, partial coverage = 1.2% No coverage = 0.9% (p-value <0.05)	ART birth rates vary by type and level of insurance coverage
Reynolds et al., 2003	SART registry (1998)	Illinois mandate Massachusetts mandate Rhode island mandate Non-mandated states	Odds of live birth (compared to nonmandated states) Illinois = 0.7 (95% CI: 0.6–0.8) Massachusetts = 0.9 (95% CI: 0.7–0.99) Rhode Island = 0.6 (95% CI: 0.4–0.7)	Odds of a live birth was lower in mandated states
Schmidt, 2007	VSDND birth data (1981–1999); Census data (1981-1999)	Any mandate	First birth rates: Coefficient on any mandate = −0.054 (p-value <0.1) Coefficient on any mandate × age over 35 = 0.139 (p-value <0.01)	Mandates significantly increase birth rates for women over 35.
Outcome: Multiple Birth Rate				
Banks et al., 2010	SART registry (1997–2006)	Insurance mandate categories: Comprehensive Limited Offer only None (referent)	Multiples born per embryo transferred: • Comprehensive vs. no mandate; regression coefficient significant for 2 of 4 age groups (<35: B=−1.84; 38–40: B=−1.28) • Limited vs. no mandate; regression coefficient significant for 1 of 4 age groups (<35: B=−1.54) • Offer only vs. no mandate not significant	Relationship between state mandates and multiple birth rate varies by age group.

Table C-2. Summary of Findings from Studies of the Effects of Health Insurance Coverage on the Use of and Outcomes Related to Infertility Treatments (Cont'd)

Citation	Data Source (Years)	Insurance Variable	Results	Conclusion
Outcome: Multiple Birth Rate				
Henne and Bundorf, 2008	SART registry (1990–2001)	Comprehensive mandate Limited mandate No coverage mandate	Comprehensive mandate vs. no mandate • Decreased multiple births per IVF cycle (B = −0.02, SE=0.001, p-value=0.002) Limited mandate vs. no mandate • No significant difference in births per IVF cycle Offer mandate vs. no mandate • No significant difference in births per IVF cycle	Compared to states without mandates, comprehensive mandates are associated with decreased multiple births per IVF cycle.
Jain et al., 2002	SART registry (1998); Census data (2000)	Complete IVF coverage mandate Partial IVF coverage mandate No IVF coverage mandate	Births (% of live births that are multiples): Complete coverage = 36.0 ± 0.97 Partial coverage = 35.4 ± 1.40 No coverage = 38.2 ± 0.45 (p-value = 0.04)	Mandates are associated with a decrease in multiple births.
Martin et al., 2011	SART registry (2006)	IVF coverage mandate No IVF coverage mandate	Multiple birth rate (% of live births that are multiple babies): IVF coverage mandated = 27.3% IVF coverage not mandated = 29.8% (p-value <0.001)	Mandated IVF coverage is associated with lower rates of multiple births.
Reynolds et al., 2003	SART registry (1998)	Illinois mandate Massachusetts mandate Rhode island mandate Non-mandated states	Odds of multiple birth (compared to nonmandated states) Illinois = 0.9 (95% CI: 0.7–1.2) Massachusetts = 0.7 (95% CI: 0.6–0.95) Rhode Island = 1.3 (95% CI: 0.8–2.2)	No clear pattern of multiple birth rates in mandated states
Outcome: Embryo Transfer Rate				
Banks et al., 2010	SART registry (1997–2006)	Mandate categories: Comprehensive Limited Offer only None (referent)	Number of embryos transferred: • Comprehensive vs. no mandate regression coefficient range depending on age group −0.21 to −0.29 • Limited vs. no mandate; not significant • Offer only vs. no mandate regression coefficient range depending on age group −0.20 to −0.24	Clinics in states with comprehensive mandates transferred fewer embryos per cycle compared to states with no mandates.

Table C-2. Summary of Findings from Studies of the Effects of Health Insurance Coverage on the Use of and Outcomes Related to Infertility Treatments (Cont'd)

Citation	Data Source (Years)	Insurance Variable	Results	Conclusion
Outcome: Embryo Transfer Rate				
Jain et al., 2002	SART registry (1998); Census data (2000)	Complete IVF coverage mandate Partial IVF coverage mandate No IVF coverage mandate	Number of fresh embryos per transfer: Complete coverage = 3.25 ± 0.051 Partial coverage = 3.54 ± 0.075 No coverage = 3.59 ± 0.025 (p-value complete vs. partial = 0.001) (p-value complete vs. no ≤0.001)	Mandates are associated with decreased number of embryos transferred per IVF cycle.
Martin et al., 2011	SART registry (2006)	IVF coverage mandate No IVF coverage mandate	Number of embryos transferred per IVF cycle: IVF coverage mandated = 2.4 IVF coverage not mandated = 2.7 (p-value <0.001)	Mandated IVF coverage is associated with fewer embryos transferred per cycle.
Reynolds et al., 2003	SART registry (1998)	Illinois mandate Massachusetts mandate Rhode island mandate Non-mandated states	Odds of transferring ≥3 embryos (compared to nonmandated states) Illinois = 1.0 (95% CI: 0.8–1.2) Massachusetts = 0.4 (95% CI: 0.3–0.4) Rhode Island = 0.6 (95% CI: 0.4–0.8)	Odds of a transferring more than 3 embryos was lower in 2 of 3 mandated states

Source: California Health Benefits Review Program, 2013

Key: CI=confidence interval; ESHRE=European Society of Human Reproduction and Embryology; IVF=in vitro fertilization; NSFG=National Survey of Family Growth; OR = Odds Ratio; SART=Society for Assisted Reproductive Technologies; SE = Standard Error; VSDND=Vital Statistics Detail Natality Data.

Appendix D: Cost Impact Analysis: Data Sources, Caveats, and Assumptions

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

The cost analysis in this report was prepared by the members of the cost team, which consists of CHBRP task force members and contributors from the University of California, San Diego, the University of California, Los Angeles, the University of California, Davis, and University of California, Berkeley, as well as the contracted actuarial firm, Milliman, Inc. (Milliman).[103]

Data Sources

In preparing cost estimates, the cost team relies on a variety of data sources as described below.

Baseline model

1. The California Simulation of Insurance Markets (CalSIM) is used to project health insurance status of Californians aged 64 and under in 2014. CalSIM is a microsimulation model that projects the effects of the Affordable Care Act on firms and individuals.[104] CalSIM relies on national Medical Expenditure Panel Survey (MEPS) Household Component and Person Round Plan, California Health Interview Survey (CHIS) 2009, and California Employer Health Benefits Survey data.
2. California Health Interview Survey (2011) data is used to estimate the number of Californians aged 65 and older, and the number of Californians dually eligible for both Medi-Cal and Medicare coverage. CHIS 2011 is also used to determine the number of Californians with incomes below 400% of the federal poverty level. CHIS is a continuous survey that provides detailed information on demographics, health insurance coverage, health status, and access to care. CHIS 2011 surveyed approximately 23,000 households and is conducted in multiple languages by the UCLA Center for Health Policy Research. More information on CHIS is available at www.chis.ucla.edu.
3. The latest (2012) California Employer Health Benefits Survey is used to estimate:
    a. Size of firm
    b. Percentage of firms that are purchased/underwritten (versus self-insured)
    c. Premiums for health care service plans regulated by the Department of Managed Health Care (DMHC) (primarily health maintenance organizations [HMOs] and point of service [POS] plans)

[103] CHBRP's authorizing legislation requires that CHBRP use a certified actuary or "other person with relevant knowledge and expertise" to determine financial impact (www.chbrp.org/docs/authorizing_statute.pdf).
[104] UC Berkeley Center for Labor Research and Education and UC Los Angeles Center for Health Policy Research. *Methodology & Assumptions, California Simulation of Insurance Markets (CalSIM) Version 1.7*, June 2012. Available at www.healthpolicy.ucla.edu/pubs/files/calsim_methods.pdf. Accessed October 19, 2012.

d. Premiums for health insurance policies regulated by the California Department of Insurance (CDI) (primarily preferred provider organizations [PPOs] and fee-for-service [FFS] plans)

This annual survey is currently released by the California Health Care Foundation/National Opinion Research Center (CHCF/NORC) and is similar to the national employer survey released annually by the Kaiser Family Foundation and the Health Research and Educational Trust. Information on the CHCF/NORC data is available at: www.chcf.org/publications/2010/12/california-employer-health-benefits-survey.

4. Milliman data sources are relied on to estimate the premium impact of mandates. Milliman's projections derive from the Milliman Health Cost Guidelines (HCGs). The HCGs are a health care pricing tool used by many of the major health plans in the United States. See www.milliman.com/expertise/healthcare/products-tools/milliman-care-guidelines/index.php. Most of the data sources underlying the HCGs are claims databases from commercial health insurance plans. The data are supplied by health insurance companies, HMOs, self-funded employers, and private data vendors. The data are mostly from loosely managed health care plans, generally those characterized as preferred provider organization (PPO) plans. The HCGs currently include claims drawn from plans covering 37 million members. In addition to the Milliman HCGs, CHBRP's utilization and cost estimates draw on other data, including the following:

    a. The MarketScan databases, which reflects the healthcare claims experience of employees and dependents covered by the health benefit programs of large employers. These claims data are collected from approximately 100 different insurance companies, Blue Cross Blue Shield plans, and third party administrators. These data represent the medical experience of insured employees and their dependents for active employees, early retirees, individuals with COBRA continuation coverage, and Medicare-eligible retirees with employer-provided Medicare Supplemental plans. No Medicaid or Workers Compensation data are included.

    b. An annual survey of HMO and PPO pricing and claim experience. The most recent survey (2010 Group Health Insurance Survey) contains data from seven major California health plans regarding their 2010 experience.

    c. Ingenix MDR Charge Payment System, which includes information about professional fees paid for healthcare services, based upon approximately 800 million claims from commercial insurance companies, HMOs, and self-insured health plans.

    d. These data are reviewed for applicability by an extended group of experts within Milliman but are not audited internally.

5. Premiums and enrollment in DMHC-regulated health plans and CDI-regulated policies by self-insured status and firm size are obtained annually from California Public Employees' Retirement System (CalPERS) for active state and local government public employees and their dependents who receive their benefits through CalPERS. Enrollment information is provided for DMHC-regulated health care service plans covering non-

Medicare beneficiaries—about 74% of CalPERS total enrollment. CalPERS self-funded plans—approximately 26% of enrollment—are not subject to state mandates. In addition, CHBRP obtains information on current scope of benefits from evidence of coverage (EOC) documents publicly available at www.calpers.ca.gov. For the 2013 model, CHBRP assumes CalPERS's enrollment in 2014 will not be affected by the ACA.

6. Enrollment in Medi-Cal Managed Care (beneficiaries enrolled in Two-Plan Model, Geographic Managed Care, and County Operated Health System plans) is estimated based on data maintained by the Department of Health Care Services (DHCS). CHBRP assesses enrollment information online at: www.dhcs.ca.gov/dataandstats/statistics/Pages/RASB_Medi-Cal_Enrollment_Trends.aspx. Starting with the 2013 model, the most recent Medi-Cal enrollment data from DHCS is projected to 2014 based on CalSIM's estimate of the impact of the Medi-Cal expansion in 2014.

Estimate of Premium Impact of Mandates

7. CHBRP's Annual Enrollment and Premium Survey collects information from the seven largest providers of health insurance in California (Aetna, Anthem Blue Cross of California, Blue Shield of California, CIGNA, Health Net, Kaiser Foundation Health Plan, and United Healthcare/PacifiCare) to obtain estimates of baseline enrollment by purchaser (i.e., large and small group and individual), type of plan (i.e., DMHC-regulated or CDI-regulated), grandfathered and nongrandfathered status, and average premiums. Enrollment in plans or policies offered by these seven insurers represent an estimated 97.5% of the persons with health insurance subject to state mandates. This figure represents an estimated 97.9% of enrollees in full-service (nonspecialty) DMHC-regulated health plans and an estimated 96.1% of enrollees in full-service (nonspecialty) CDI-regulated policies.

   For CHBRP reports analyzing specific benefit mandates, CHBRP surveys the seven major carriers on current coverage relevant to the benefit mandate. CHBRP reports the share of enrollees—statewide and by market segment—reflected in CHBRP's bill-specific coverage survey responses. The proportions are derived from data provided by CDI and DMHC. CDI provides data by market segment (large, small, and individual) based on "CDI Licenses With HMSR Covered Lives Greater Than 100,000" as part of the Accident and Health Covered Lives Data Call September 30, 2011, by the California Department of Insurance, Statistical Analysis Division. The Department of Managed Health Care's interactive website "Health Plan Financial Summary Report," July–September 2012, provides data on DMHC-regulated plans by segment.[105]

The following table describes the data sources mentioned above, and the data items that they inform.

[105] CHBRP assumes DMHC-regulated PPO group enrollees and POS enrollees are in the large-group segment. http://wpso.dmhc.ca.gov/flash/.

Table D-1. Population and Cost Model Data Sources and Data Items

Data Source	Items
California Simulation of Insurance Markets (CalSIM)	Uninsured, age: 0–17; 18–64 Medi-Cal (non-Medicare) (a), age: 0–17; 18–64 Other public (b), age: 0–64 Individual market, age: 0–17; 18–64 Small group, age: 0–17; 18–64 Large group, age: 0–17; 18–64
California Health Interview Survey, 2011 (CHIS 2011)	Uninsured, age: 65+ Medi-Cal (non-Medicare), age: 65+ Other public, age: 65+ Employer-sponsored insurance, age: 65+
CalPERS data, annually, enrollment as of September 30	CalPERS HMO and PPO enrollment • Age: 0–17; 18–64; 65+ HMO premiums
California Employer Survey, conducted annually by NORC and funded by CHCF	Enrollment by HMO/POS, PPO/indemnity self-insured, fully insured, Premiums (not self-insured) by: • Size of firm (3–25 as small group and 25+ as large group) • Family vs. single • HMO/POS vs. PPO/indemnity vs. HDHP employer vs. employer premium share
DHCS administrative data for the Medi-Cal program, annually, 11-month lag from the end of November	Distribution of enrollees by managed care or FFS distribution by age: 0–17; 18–64; 65+ Medi-Cal Managed Care premiums
CMS administrative data for the Medicare program, annually (if available) as of end of September	HMO vs. FFS distribution for those 65+ (noninstitutionalized)
CHBRP enrollment survey of the seven largest health plans in California, annually as of end of September	Enrollment by: • Size of firm (2–50 as small group and 51+ as large group), • DHMC vs. CDI regulated • Grandfathered vs. nongrandfathered Premiums for individual policies by: • DMHC vs. CDI regulated • Grandfathered vs. nongrandfathered
Department of Finance population projections, for intermediate CHIS years	Projected civilian, noninstitutionalized CA population by age: 0–17; 18–64; 65+
Medical trend influencing annual premium increases	Milliman estimate

Notes: (a) Includes children previously enrolled in Healthy Families, California's CHIP. By January 1, 2014, children enrolled in Healthy Families will be transitioned into Medi-Cal as required in the 2012–2013 state budget agreement.
(b) Includes individuals dually eligible for Medi-Cal and Medicare.
Key: CDI=California Department of Insurance; CHCF=California HealthCare Foundation; CHIS=California Health Interview Survey; CMS=Centers for Medicare & Medicaid Services; DHCS=Department of Health Care Services; DMHC=Department of Managed Health Care; FFS=fee-for-service; HMO=health maintenance organization; NORC=National Opinion Research Center; PPO=preferred provider organization.

Projecting the Effects of the Affordable Care Act in 2014

This subsection discusses adjustments made to CHBRP's Cost and Coverage Model to account for the potential impacts of the ACA effective January 2014. It is important to emphasize that CHBRP's analysis of specific mandate bills typically addresses the marginal effects of the mandate bill—specifically, how the proposed mandate would impact benefit coverage, utilization, costs, and public health, *holding all other factors constant*. CHBRP's estimates of these marginal effects are presented in the *Benefit Coverage, Utilization, and Cost Impacts* section of this report.

Baseline premium rate development methodology—2014 post-ACA

Mandate bills introduced during 2013 would, if passed, become effective in 2014. Many significant provisions of the Affordable Care Act also become effective in 2014. In many cases, provisions required in the ACA would become effective on the same date as a mandate proposed to California law.

CHBRP's analyses of mandates effective in 2014 assume that carriers implement the new ACA provisions first. The baseline premiums reflect the estimated 2014 premium levels costs *after* carriers have implemented the 2014 ACA provisions. The estimated cost impact of a proposed mandate is then calculated relative to this post-ACA baseline.

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

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

For each plan type, we first obtained an estimate of the insurance premium PMPM by taking the 2012 reported premium from the above-mentioned data sources and trending that value to 2014. CHBRP uses trend rates published in the Milliman Health Cost Guidelines to estimate the health care costs for each plan segment in 2014.

In 2014, 4 plan segments in the previous CHBRP model[106] were split into 12 segments. Each of the two small-group segments (CDI-regulated and DMHC-regulated), and individual segments (CDI-regulated and DMHC-regulated) were split into: grandfathered non-exchange, nongrandfathered non-exchange, and exchange groups in order to separately calculate the impact of ACA and specific mandates that may apply differently to these three subgroups. The premium rate information received from NORC did not split the premiums based on grandfathered or exchange status. The 2012 CHBRP Annual Enrollment and Premium Survey asked the seven

[106] In the past, CHBRP's model has reflected large-group, small-group, and individual-market segments. These market segments were further subdivided by regulator: DMHC-regulated and CDI-regulated. The four plan segments refer to the small and individual market subdivisions by regulator.

largest insurance carriers in California to provide their average premium rates separately for grandfathered and nongrandfathered plans. The ratios from the carrier survey data are then applied to the NORC aggregate premium rates, to estimate premium rates for grandfathered and nongrandfathered plans that were consistent with the NORC results.

The marginal impact of ACA on 2014 premiums was established as follows:

- For nongrandfathered small-group and individual market segments, a 3% increase in medical costs is applied to reflect the total cost of requiring each plan to cover the essential health benefits.
- For nongrandfathered small-group plans, a 5% increase in medical costs is applied to reflect the other additional costs of ACA (e.g., age rating, health status, increased premium taxes and fees, change in actuarial value, etc.).
- For DMHC-regulated individual plans and CDI-regulated individual policies, an increase of 20% and 31%, respectively, in medical costs is applied to reflect the other additional costs of ACA.

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

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

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

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

Medi-Cal Managed Care

Given that:

- California has not yet decided on Medi-Cal's EHBs for Californians newly eligible for Medi-Cal Managed Care; and,

- The ACA does not require coverage of EHBs for individuals currently eligible for Medicaid,

CHBRP has estimated that the PMPM cost for Medi-Cal's newly eligible population—in the absence of further guidance on EHBs for the newly eligible population—will equal the projected cost of Medi-Cal's currently eligible family population, excluding maternity costs.

General Caveats and Assumptions

The projected cost estimates are estimates of the costs that would result if a certain set of assumptions were exactly realized. Actual costs will differ from these estimates for a wide variety of reasons, including:

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

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

- Cost impacts are shown only for plans and policies subject to state benefit mandate laws.
- Cost impacts are only for the first year after enactment of the proposed mandate.
- Employers and employees will share proportionately (on a percentage basis) in premium rate increases resulting from the mandate. In other words, the distribution of the premium paid by the subscriber (or employee) and the employer will be unaffected by the mandate.
- For state-sponsored programs for the uninsured, the state share will continue to be equal to the absolute dollar amount of funds dedicated to the program.
- When cost savings are estimated, they reflect savings realized for 1 year. Potential long-term cost savings or impacts are estimated if existing data and literature sources are available and provide adequate detail for estimating long-term impacts. For more information on CHBRP's criteria for estimating long-term impacts, please see: http://chbrp.org/documents/longterm_impacts08.pdf.
- Several studies have examined the effect of private insurance premium increases on the number of uninsured (Chernew et al., 2005; Glied and Jack, 2003; Hadley, 2006). Chernew et al. (2005) estimate that a 10% increase in private premiums results in a 0.74 to 0.92 percentage point decrease in the number of insured, whereas Hadley (2006) and Glied and Jack (2003) estimate that a 10% increase in private premiums produces a 0.88 and a 0.84 percentage point decrease in the number of insured, respectively. Because each of these studies reported results for the large-group, small-group, and individual insurance markets combined, CHBRP employs the simplifying assumption that the

elasticity is the same across different types of markets. For more information on CHBRP's criteria for estimating impacts on the uninsured, please see: http://chbrp.org/documents/uninsured_010109.pdf.

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

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

Bill Analysis—Specific Caveats and Assumptions

The MarketScan dataset does not include data on coverage for infertility. In order to estimate utilization for enrollees with coverage for infertility, CHBRP assumed a coverage rate of 70% based on the coverage rate from the carrier surveys (CHBRP surveys the largest major health plans and insurers regarding coverage), and adjusted the utilization estimates derived from the claims data. The carriers reported that an estimated 70% of their group-market enrollees were covered for at least one type of treatment, including diagnosis, diagnostic tests, surgeries, artificial insemination, gamete intrafallopian transfers (GIFT), or medication.

CHBRP adjusted utilization as illustrated in the following example. In the MarketScan claims data, 0.78% (or 7.8 enrollees per 1,000) enrollees used an outpatient procedure for infertility. Based on the carrier surveys, CHBRP assumed 70% of MarketScan enrollees were covered for infertility. Therefore, the rate of 7.8 per 1,000 enrollees would transform to a rate of 7.8 per 700 *covered* enrollees, assuming 700 out of 1,000 enrollees are covered for infertility. The 7.8 per 700 enrollee rate is equivalent to 1.12%, which is reported in Table 3. The same method was used to estimate these percentages for inpatient and prescription drug utilization. Furthermore, the same method was used to estimate the number of treatments per 1,000 *covered* enrollees in Table 4, including outpatient procedures, inpatient days, and prescriptions.

CHBRP estimated that the 4.0 million enrollees aged 19–44 with coverage for at least one type of treatment for infertility have $117 million in annual healthcare expenditures to treat infertility.

Appendix E: Information Submitted by Outside Parties

In accordance with the California Health Benefits Review Program (CHBRP) policy to analyze information submitted by outside parties during the first 2 weeks of the CHBRP review, the following parties chose to submit information.

The following information was submitted by Assembly Member Ammiano's Office in March 2013.

Gay IVF. *Insurance Coverage for LGBTQ Patients*. 2013. Available at: www.gayivf.com/affording-treatment/insurance.cfm. Accessed March 12, 2013.

It's Conceivable. *Cost of Clinical Insemination*. 2011. Available at: itsconceivablenow.com/2011/06/02/cost-of-clinical-insemination/. Accessed March 12, 2013.

Wildman S. *Not Married? Your Insurance Might Not Cover Fertility Treatments*. Slate; 2010. Available at: www.slate.com/articles/double_x/doublex_health/2010/03/not_married_your_insurance_might_not_cover_fertility_treatments.html. Accessed March 12, 2013.

Transgender Law Center. *The State of Transgender California Report. Results from the 2008 California Transgender Economic Health Survey*. 2009. Available at: transgenderlawcenter.org/pubs/the-state-of-transgender-california. Accessed March 12, 2013.

Fertility Institute of New Jersey and New York. *Frequently Asked Questions*. 2008. Available at: www.gayandlesbianfertility.com/faqs. Accessed March 12, 2013.

Mommies Here! *Two Brides, One Adoption Story. The Elusive Lesbian Infertile*. 2008. Available at: www.eggdroppost.com/2008/09/25/the-elusive-lesbian-infertile/. Accessed March 12, 2013.

Swan, K. *Lesbian Parents and Insurance for Fertility Treatments*. The Rainbow Babies. 2008. Available at: www.therainbowbabies.com/Insurance.html. Accessed March 12, 2013.

The following information was submitted by the National Center for Lesbian Rights in March 2013.

Gates G. *LGBT Parenting in the United States*. Los Angeles, CA: The Williams Institute, UCLA School of Law; 2013. Available at: williamsinstitute.law.ucla.edu/wp-content/uploads/LGBT-Parenting.pdf. Accessed March 5, 2013.

Bagdett MV, Herman J. *Patterns by Relationship Recognition of Same-Sex Couples in the United States*. Los Angeles, CA: The Williams Institute, UCLA School of Law; 2011. Available at: williamsinstitute.law.ucla.edu/wp-content/uploads/Badgett-Herman-Marriage-Dissolution-Nov-2011.pdf. Accessed March 5, 2013.

Gates G, Ramos C. *California Lesbian, Gay, and Bisexual Population*. Los Angeles, CA: The Williams Institute, UCLA School of Law; 2008. Census Snapshot. Available at: williamsinstitute.law.ucla.edu/wp-content/uploads/Gates-Ramos-CA-Snapshot-Oct-2008.pdf. Accessed March 5, 2013.

Submitted information is available upon request.

For information on the processes for submitting information to CHBRP for review and consideration please visit: www.chbrp.org/requests.html.

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California Health Benefits Review Program Committees and Staff

A group of faculty and staff undertakes most of the analysis that informs reports by the California Health Benefits Review Program (CHBRP). The CHBRP **Faculty Task Force** comprises rotating representatives from six University of California (UC) campuses. In addition to these representatives, there are other ongoing contributors to CHBRP from UC. This larger group provides advice to the CHBRP staff on the overall administration of the program and conducts much of the analysis. The **CHBRP staff** coordinates the efforts of the Faculty Task Force, works with Task Force members in preparing parts of the analysis, and coordinates all external communications, including those with the California Legislature. The level of involvement of members of the CHBRP Faculty Task Force and staff varies on each report, with individual participants more closely involved in the preparation of some reports and less involved in others. As required by CHBRP's authorizing legislation, UC contracts with a certified actuary, Milliman Inc., to assist in assessing the financial impact of each legislative proposal mandating or repealing a health insurance benefit. Milliman also helped with the initial development of CHBRP methods for assessing that impact.

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 and thoughtful critiques provided by the members of the National Advisory Council. However, the Council does not necessarily approve or disapprove of or endorse this report. CHBRP assumes full responsibility for the report and the accuracy of its contents.

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