
MANDATED BENEFIT REVIEW OF
HOUSE BILL 2169
SUBMITTED TO THE 191ST GENERAL COURT:

**AN ACT RELATIVE TO OSTEOPOROSIS
SCREENING AND TREATMENT
TO PREVENT FRACTURES AND REDUCE
HEALTH CARE COSTS**

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1.0 Benefit Mandate Overview: House Bill (H.B.) 2169: An Act Relative to Osteoporosis Screening and Treatment to Prevent Fractures and Reduce Health Care Costs

1.1 History of the Bill

The Financial Services Committee referred House Bill (H.B.) 2169, “An Act relative to osteoporosis screening and treatment to prevent fractures and reduce health care costs,” to the Center for Health Information and Analysis (CHIA) for review. Massachusetts General Laws (MGL), Chapter 3, Section 38C, requires CHIA to review and evaluate the potential fiscal impact of each mandated benefit bill referred to the agency by a legislative committee.

This report is not intended to determine whether H.B. 2169 would constitute a health insurance benefit mandate for purposes of Commonwealth defrayal under the Affordable Care Act (ACA), nor is it intended to assist with Commonwealth defrayal calculations if it is determined to be a health insurance benefit mandate requiring Commonwealth defrayal.

1.2 What Does the Bill Propose?

The bill requires coverage for Bone Mineral Density (BMD) testing consistent with the American Association of Clinical Endocrinologists (AACE) American College of Endocrinology (ACE) and Endocrine Society guidelinesⁱ to diagnose and determine the degree of osteoporosis in:

- Postmenopausal women age 65 years and older;
- Men age 70 and older; and
- Younger postmenopausal women and high-risk men age 50 years and older at increased risk for bone loss and fracture, based on fracture risk analysis.

The bill requires coverage for treatment of postmenopausal women diagnosed with osteoporosis in accordance with recommendations of the AACE, including but not limited to pharmacologic anabolic intervention. The bill provides that the benefits shall not be subject to any greater deductible, coinsurance, copayments (copays), or out-of-pocket limits than any other benefit provided by the health insurance carrier (carrier).ⁱⁱ

In response to a request for clarification, sponsors indicated that the bill’s intent is to:

ⁱ AACE/ACE 2016 Postmenopausal Osteoporosis Treatment Algorithm. Accessed 9 October 2018. <https://www.aace.com/files/final-algorithm.pdf>.

ⁱⁱ Sponsors confirmed BerryDunn’s interpretation that the bill intends to prevent a carrier (carrier) from creating a new cost-sharing structure for osteoporosis treatment, including anabolic interventions, and that these must fit within a carrier’s existing cost-sharing formulary structure. This would not prevent a carrier from placing an osteoporosis drug in the highest (most expensive) tier of the formulary, but would prevent the carrier from creating a new and even higher tier for the drug.

1. Include coverage of treatment for men diagnosed with osteoporosis in addition to postmenopausal women;
2. Cover BMD testing without cost sharing as a preventive service, consistent with preventive services under the ACA, for postmenopausal women under the age of 65 or high-risk men who screen positive for osteoporosis and fracture risk; and
3. Require coverage of the following medications:
 - Teriparatide
 - Romosozumab (if approved by the Food and Drug Administration [FDA])
 - Alendronate
 - Denosumab
 - Risedronate
 - Zoledronic acid
 - Ibandronate
 - Raloxifene
 - Vitamin D
 - Calcium

1.3 Medical Efficacy of H.B. 2169

The National Institutes of Health estimate that more than 53 million people in the United States already have osteoporosis or are at a high risk of developing it due to low bone mass.¹ The *Journal of the American Osteopathic Association* has called osteoporosis a “major cause of morbidity in the United States, resulting in approximately 2 million fractures and contributing to 65,000 deaths annually.”² Age, sex, body size, ethnicity, family history, hormones, and lifestyle factors all play a role in determining one’s risk for osteoporosis. Postmenopausal women, older people of both sexes, small-framed women, and people whose parents had fractures are at the highest risk for developing osteoporosis. Smoking, physical inactivity, and inadequate calcium intake also increase risk.³ Several screening tools and treatments are available for osteoporosis and have been shown to be effective in reducing related fractures. These are described in Section 2.0.

1.4 Current Coverage

BerryDunn surveyed 10 carriers in the Commonwealth, and seven carriers responded. All of the responding carriers cover osteoporosis screening. There was one exception, in which a carrier indicated that it did not cover screening for men; however, the Massachusetts All-Payer Claims Database (APCD) showed claims for all carriers. In some cases, carriers impose member cost sharing, depending upon the age and gender of the member. The responding carriers also indicated they cover osteoporosis treatment with the exception of calcium, an over-the-counter (OTC) medication.

The U.S. Preventive Services Task Force (USPSTF), an independent panel of clinical experts, rates BMD screening a Grade B for women over 65 and postmenopausal women under 65 who are at increased risk of osteoporosis, meaning that the panel agrees that the net benefit of screening for this group is “moderate to substantial.”⁴ Preventive

services rated Grade B or higher by USPSTF must be covered without cost sharing under the ACA.⁵ As a result, many but not all of the bill's requirements are already included in current coverage.

1.5 Cost of Implementing the Bill

Requiring coverage for this benefit by fully insured health plans would result in an average annual increase, over five years, to the typical member's monthly health insurance premium of between \$0.01 and \$0.02 per member per month (PMPM) or between 0.002% and 0.003% of premium. The impact on premiums is driven by the provisions of H.B. 2169 that require carriers to cover calcium treatment of postmenopausal women and men with osteoporosis.

1.6 Plans Affected by the Proposed Benefit Mandate

The bill applies to commercial fully insured health insurance plans, hospital service corporations, medical service corporations, HMOs, and to both fully and self-insured plans operated by the Group Insurance Commission (GIC) for the benefit of public employees. The proposed mandate as drafted affects Medicaid/MassHealth; however, CHIA's analysis does not estimate the potential effect of the mandate on Medicaid expenditures.

1.7 Plans Not Affected by the Proposed Benefit Mandate

Self-insured plans (i.e., where the employer or policyholder retains the risk for medical expenses and uses a third-party administrator or insurer to provide only administrative functions), except for those provided by the GIC, are not subject to state-level health insurance mandates. State mandates do not apply to Medicare and Medicare Advantage plans or other federally funded plans, including TRICARE (covering military personnel and dependents), the Veterans Administration, and the Federal Employees Health Benefit Plan, the benefits for which are determined by or under rules set by the federal government.

2.0 Medical Efficacy Assessment

Osteoporosis is a disease that causes deterioration of the density and quality of bone, making it more porous, fragile, and susceptible to fracture.^{6,7} Bone is made mostly of collagen, which provides a soft structure, and calcium phosphate, which hardens the structure. Bone mass peaks around age 30. In normal functioning, the body regularly removes old bone and replaces it with new bone, a process called remodeling. In people with osteoporosis, bone loss outpaces new bone growth. The hips, spine, and wrists are particularly at risk of fracture in those affected.⁸

The USPSTF estimates that as many as half of postmenopausal women and 20% of older men are at risk for an osteoporosis-related fracture.⁹ According to research using the FRAX fracture risk assessment tool (described in Section 2.1.2), the 10-year fracture risk for a 65-year-old woman with no other risk factors is 9.3%.¹⁰ A study of the economic impacts of osteoporosis found that there were over two million osteoporosis-related fractures in the United States in 2005, and estimated the total economic burden of these at nearly \$17 billion in one year.¹¹

Osteoporotic fractures have significant morbidities for sufferers. Hip and vertebral fractures in particular are associated with limitations in mobility, chronic pain, and disability. Research shows that 21% to 30% of patients who experience a hip fracture die within one year of the injury.¹² As more people live past the age of 65, osteoporosis and associated fractures are expected to increase, as will the personal and economic burdens of these injuries.¹³

Studies using the FRAX risk assessment tool in adults age 50 or older have found that 19% are at elevated risk for hip fracture, and 8% are at elevated risk for other major osteoporotic fractures.¹⁴

This report proceeds in the following sections:

2.0 Medical Efficacy

- Section 2.1 describes the types of osteoporosis screening tests and efficacy of each.
- Section 2.2 describes the different types of treatment and the efficacy of each.
- Section 2.3 describes how the different types of screening and treatment fit within the AACE/ACE guidelines.
- Section 2.4 provides a conclusion regarding the above.

2.1 Screening Efficacy

2.1.1 Risk Assessment Tools

The FRAX tool, developed by the World Health Organization with the Centre for Metabolic Bone Diseases at the University of Sheffield, United Kingdom, is an algorithm that uses risk factors such as age, sex, weight, previous fractures, smoking, and alcohol consumption to predict the 10-year likelihood of either a major osteoporotic fracture (MOF) or hip fracture (HF). The tool is easily accessible to both patients and clinicians online. In a systematic review and meta-analysis of the performance of the FRAX in predicting 10-year risk of fracture, the instrument was found to be a better predictor of patients who would not have a MOF or HF within 10 years than those who would. Seven studies (n=57,027) were analyzed to assess diagnostic accuracy of the FRAX in predicting MOF, using 20% as the 10-year fracture risk threshold for intervention. The mean sensitivity, specificity, and diagnostic odds ratio (DOR)—

along with the confidence intervals (CIs)—were 10.25% (3.76%–25.06%), 97.02% (91.17%–99.03%), and 3.71% (2.73%–5.05%), respectively. For HF prediction, using 3% as the 10-year fracture risk threshold, six studies (n=50,944 were analyzed). The mean sensitivity, specificity, and DOR—along with their 95% CI—were 45.70% (24.88%–68.13%), 84.70% (76.41%–90.44%), and 4.66% (2.39%–9.08%), respectively.

Other calculators are also available, such as the Garvan Institute’s Fracture Risk Calculator (Australia)¹⁵ and the American Bone Health’s 10-Year Fracture Risk Calculator.¹⁶ These tools use similar input variables to FRAX to calculate fracture risk.

2.1.2 BMD Testing

A BMD test measures the levels of calcium and other minerals in bone. Most commonly, this is performed with a dual-energy X-ray absorptiometry (DEXA) scan, which uses low-dose X-rays.¹⁷ The Central DEXA passes the scanner over the lower spine and hip, and it is the best method to assess fracture risk. The Peripheral DEXA (p-DEXA) uses a smaller machine to measure bone density in the wrist, fingers, leg, or heel. These smaller scanners may be found in doctors’ offices and pharmacies.¹⁸

The results of the DEXA testing are called T-scores. The T-score is the number of standard deviations above or below the bone density that would be expected in a healthy 30-year-old of the same sex.¹⁹ A T-score of -1 and above is considered normal. A T-score between -1 and -2.5 is an indication of below-normal bone density that may lead to osteoporosis. A T-score of -2.5 or below indicates osteoporosis.²⁰ The risk of fracture doubles with every standard deviation below the mean for a young adult, making BMD an excellent predictor of future fracture risk.²¹

The USPSTF, an independent panel of national experts, recommends screening for osteoporosis with bone measurement testing for all women age 65 and older, and for postmenopausal women under 65 when a clinical risk assessment tool finds them to be at increased risk of osteoporosis.²² Currently, the USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for osteoporosis to prevent osteoporotic fractures in men, but rather leaves the decision to the discretion of the provider.²³

2.2 Treatment Efficacy

2.2.1 Medication

Two types of drugs are used to treat osteoporosis: those that slow the loss of bone density that happens in the normal remodeling process (anti-resorptive agents), and those that stimulate new bone growth (anabolic agents). Many patients may use a combination of both.

2.2.1.1 Anti-Resorptive Agents

Bisphosphonates are drugs that inhibit osteoclasts, a type of cell that breaks down bone as part of normal bone remodeling, thus slowing the bone resorption process.^{24,25} These drugs have been in use for the treatment of osteoporosis since 1995, when the FDA approved alendronate (Fosamax) for the treatment of osteoporosis.²⁶ Bisphosphonates include Fosamax, alendronate plus D (Fosamax Plus D), risedronate (Actonel), ibandronate (Boniva), and zoledronic acid (Reclast). All of these drugs are currently included in the Massachusetts benchmark plan for the treatment of osteoporosis.²⁷

The side effects of bisphosphonates, although rare, include gastroesophageal irritation, fever, myalgia, hypocalcemia, esophageal cancer, ulcers, and ocular inflammation. Experts recommend that patients taking bisphosphonates also take adequate calcium and Vitamin D to mitigate side effects. For these reasons, bisphosphonates are contraindicated in patients with esophageal restrictions, hypocalcemia, or chronic kidney disease.²⁸

In a response to BerryDunn's request for clarification, sponsors indicated that the bill's intent is to include one more drug currently being considered for approval by the FDA, called romosozumab. This drug is administered by injection and unlike the above anti-resorption agents, is believed to both increase bone formation and decrease resorption.²⁹ A 2017 study of 4,000 postmenopausal women with osteoporosis and a past fragility fracture compared treatment courses of one year of romosozumab followed by one year of alendronate to two years of treatment with only alendronate, and found a 48% lower risk of vertebral fracture in patients receiving the combination therapy.³⁰

Hormone replacement therapy (HRT) is also an anti-resorptive treatment. Estrogen was the earliest treatment available for osteoporosis, having been in use since the 1940s.³¹ Estrogen may also be combined with progestin. Raloxifene (Evista) is not a hormone, but enhances the function of estrogen in the body.³² Studies show that HRT decreases fracture risk by 20%–35%.³³

Denosumab (Prolia) is an anti-resorptive agent administered by injection. Especially in combination with calcium and Vitamin D, denosumab has been shown to significantly increase BMD, improving hip outcomes.^{34,35} Further, a study of over 10,000 women diagnosed with osteoporosis found this drug to have the highest one-year persistence rate (68.3%), meaning that study participants taking this drug were the most likely to still be taking it after one year compared to participants taking other osteoporosis treatments.³⁶ Denosumab is included in the Massachusetts benchmark formulary.³⁷

2.2.1.2 Anabolic Agents

Teriparatide (Forteo) is an injection that improves the function of parathyroid, a gland that regulates calcium levels, to encourage bone growth. When the parathyroid is overactive, it releases too much hormone, causing the bones to release calcium continuously into the blood stream.³⁸ This drug is the only anabolic agent currently included in the Massachusetts benchmark formulary. Research has shown that this drug reduces the risk of vertebral fracture by 65% in Caucasian women aged 70 and above.³⁹ It also demonstrated a persistence rate second only to denosumab, with 59.1% of participants still taking teriparatide after one year.⁴⁰ Similar to bisphosphonates, teriparatide is contraindicated in those with hypercalcemia, hyperparathyroidism, and renal disease.⁴¹

2.2.2 Prevention and Other Treatments

Supplementation with calcium and Vitamin D has been long considered essential for the prevention of osteoporosis. Recently, however, the USPSTF reviewed scientific literature and concluded that there is insufficient evidence to recommend supplementation of more than 400 IU of Vitamin D daily or 1000 mg of calcium daily for asymptomatic men and premenopausal women, and actually recommends against these for asymptomatic postmenopausal women due to the lack of evidence of benefit.⁴² As noted above, research does show supplementation to be beneficial when combined with certain medications in those who have been previously diagnosed with osteoporosis or suffered a fragility fracture.

Experts also recommend several non-medication approaches. Weight-bearing exercise, quitting smoking, and avoiding heavy drinking are all helpful in minimizing fragility fracture risk, according to the National Institutes of Health.⁴³

2.3 AACE/ACE/Endocrine Society Guidelines

The AACE/ACE treatment algorithm (see Appendix A), released in 2016, recommends the following treatment path for postmenopausal patients with a spine or neck BMD T-score less than or equal to -2.5 (two and a half standard deviations below normal BMD for a healthy young adult of the same sex), a history of fracture due to bone fragility, or a high FRAX fracture probability.

Patients should first be evaluated for any possible causes of secondary osteoporosis (e.g., certain medications or the presence of an underlying disease) and have calcium and Vitamin D deficiencies addressed. Providers should then recommend medication, and educate patients on the benefits and risks of the medication. Providers should provide education on lifestyle changes and fall prevention.

Osteoporosis treatment recommendations then follow two paths. Patients with no prior fractures or a moderate risk score on the FRAX assessment may be encouraged to take alendronate (Fosamax), alendronate plus D (Fosamax Plus D), denosumab (Prolia), risedronate (Actonel), or zoledronic acid (Reclast). Alternately, AACE/ACE approves of a therapy course of ibandronate (Boniva) or raloxifene (Evista). Patients should then be reassessed yearly. Those with increasing or stable BMD for 5 years can then take a drug holiday. If, however, bone loss begins or fractures occur, the patient should be re-evaluated for secondary osteoporosis and put on an anti-resorptive or teriparatide.

Patients who have already had fragility fractures or have scored higher on risk assessment tools should take denosumab (Prolia), teriparatide (Forteo), or zoledronic acid (Reclast). The AACE/ACE recommendations also approve of an alternate therapy of alendronate (Fosamax), alendronate plus D (Fosamax Plus D), or risedronate (Actonel) in this population. Response to therapy and fracture risk are again reassessed yearly. Those taking denosumab should continue taking it or add teriparatide if bone is lost or they experience a fracture. Patients using teriparatide should stay on it for two years and then add an anti-resorptive agent. Those using zoledronic acid can stay on it for up to six years, but if bone loss occurs or they experience a fracture, teriparatide is recommended.

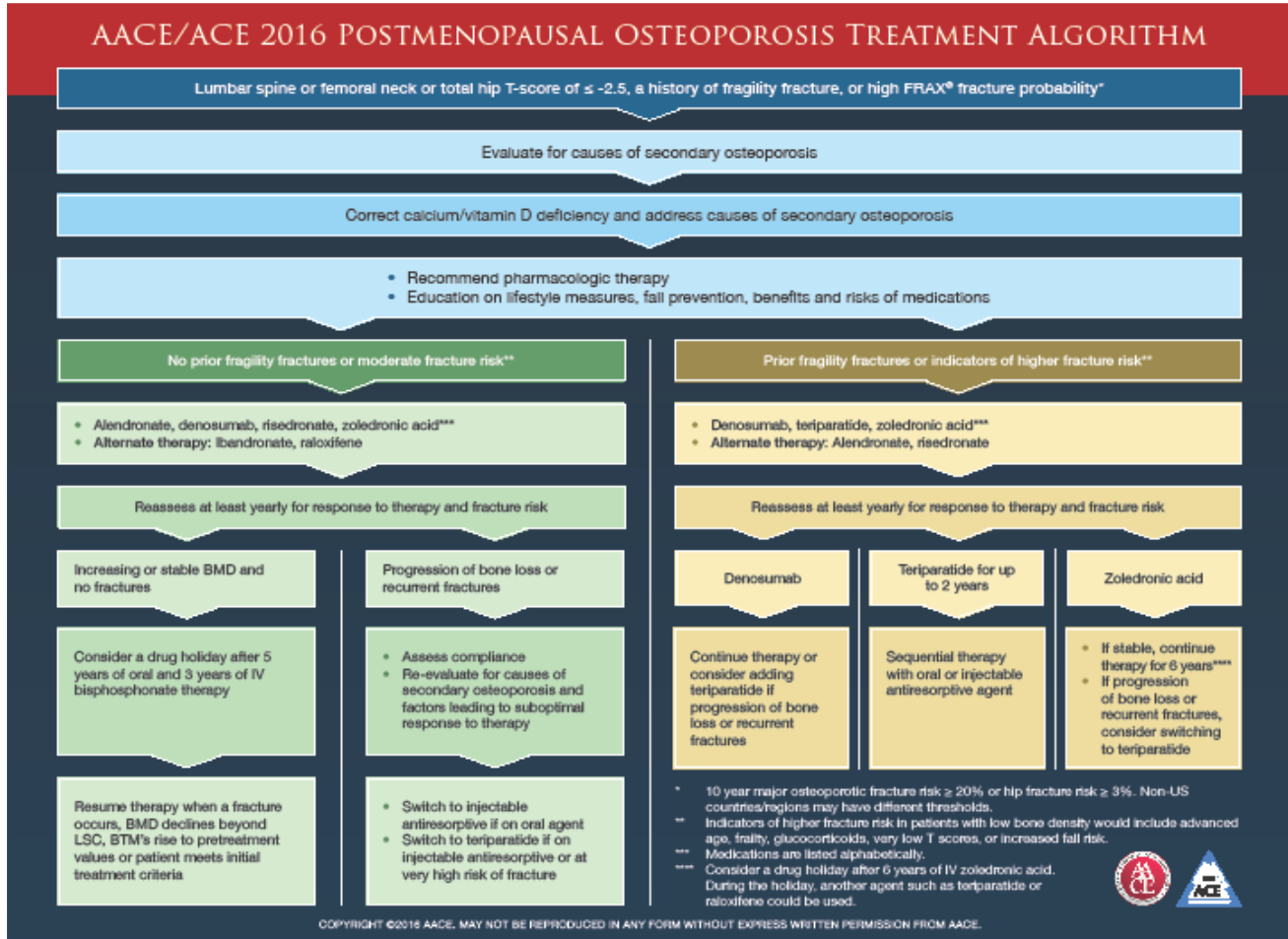
The Endocrine Society published clinical practice guidelines specifically for male patients in 2012.⁴⁴ These provide for testing of male patients at age 70 or younger if risk factors are present. While there is no specific algorithm to follow similar to AACE/ACE's, the guidelines provide detailed recommendations for men with a variety of other comorbidities, imaging results, and laboratory findings. At the time the guidelines were published, alendronate, risedronate, zoledronic acid, teriparatide, and denosumab were on the market.

2.4 Conclusion

Successful treatments for osteoporosis have been available and studied extensively since the 1940s, beginning with HRT. Later developments in anti-resorptive agents and more recently, anabolic agents, continue to provide efficacious treatment avenues for those at risk of osteoporosis or who have experienced bone fragility fractures. Romosozumab, if approved by the FDA, will offer an additional type of drug that both increases bone formation and decreases resorption. Statistically valid risk assessment tools have further enhanced management of osteoporosis

and provided for more widespread screening. Given the high morbidity and mortality associated with MOFs and HFAs, increased access to efficacious treatments would be expected to increase the health of the population this bill is intended to reach.

Appendix A: AACE/ACE Algorithm⁴⁵



Endnotes

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**AN ACT RELATIVE TO OSTEOPOROSIS
SCREENING AND TREATMENT
TO PREVENT FRACTURES AND REDUCE
HEALTH CARE COSTS**

COST REPORT

This report was prepared by Larry Hart; Valerie Hamilton, RN, MHA, JD; Andrea Clark, MS; and Jennifer Elwood, FSA, MAAA.

1.0 Executive Summary

The Financial Services Committee referred House Bill (H.B.) 2169, “An Act relative to osteoporosis screening and treatment to prevent fractures and reduce health care costs,” in the 190th General Court, to the Massachusetts Center for Health Information and Analysis (CHIA) for review. The bill requires coverage for Bone Mineral Density (BMD) testing consistent with the American Association of Clinical Endocrinologists/American College of Endocrinology and Endocrine (AACE/ACE) guidelinesⁱⁱⁱ to diagnose and determine the degree of osteoporosis in:

- Postmenopausal women age 65 years and older;
- Men age 70 and older; and
- Younger postmenopausal women and high-risk men age 50 years and older at increased risk for bone loss and fracture, based on fracture risk analysis.

The bill requires coverage for treatment of postmenopausal women diagnosed with osteoporosis in accordance with recommendations of the AACE, including but not limited to, pharmacologic anabolic intervention. The bill provides that the benefits shall not be subject to any greater deductible, coinsurance, copayments (copays), or out-of-pocket limits than any other benefit provided by health insurance carrier (carrier).^{iv}

In response to a request for clarification, sponsors indicated that the bill’s intent is to:

1. Include coverage of treatment for men diagnosed with osteoporosis in addition to postmenopausal women;
2. Cover BMD testing without cost sharing as a preventive service, consistent with preventive services under the Affordable Care Act (ACA), for high-risk men who screen positive for osteoporosis and fracture risk; and
3. Require coverage of certain medications (listed in Section 2.0) used in osteoporosis treatment.

Massachusetts General Laws (MGL) chapter 3, section 38C charges CHIA with, among other duties, reviewing the potential impact of proposed mandated healthcare insurance benefits on the premiums paid by businesses and consumers. CHIA has engaged BerryDunn^v to provide an actuarial estimate of the effect enactment of the bill would have on the cost of health insurance in the Commonwealth. The report is required to include the effects on the cost of healthcare, including the premium and administrative expenses, of the proposed mandate.

This report is not intended to determine whether H.B. 2169 would constitute a health insurance benefit mandate for purposes of state defrayal under the ACA, nor is it intended to assist with state defrayal calculations if it is determined to be a health insurance benefit mandate requiring state defrayal.

Section 3.0 of this analysis outlines the provisions and interpretations of the bill. Section 4.0 summarizes the methodology used for the estimate. Section 5.0 discusses important considerations in translating the bill’s language

iii AACE/ACE 2016 Postmenopausal Osteoporosis Treatment Algorithm. Accessed 9 October 2018 <https://www.aace.com/files/final-algorithm.pdf>.

iv Sponsors confirmed BerryDunn’s interpretation that the bill intends to prevent a carrier from creating a new cost-sharing structure for osteoporosis treatment, including anabolic interventions, and that these must fit within a carrier’s existing cost-sharing formulary structure. This would not prevent a carrier from placing an osteoporosis drug in the highest (most expensive) tier of the formulary, but would prevent the carrier from creating a new and even higher tier for the drug.

v Formerly Compass Health Analytics, Inc.

into estimates of its incremental impact on healthcare costs and steps through the calculations. Section 6.0 discusses results.

1.1 Current Insurance Coverage

BerryDunn surveyed 10 carriers in the Commonwealth, and seven carriers responded, representing approximately 89% of fully insured commercial covered lives. All of the responding carriers currently cover osteoporosis screening. There was one exception, in which a carrier indicated it did not cover screening for men; however, the Massachusetts All-Payer Claims Database (APCD) showed claims for all carriers. In some cases, the carriers impose member cost sharing, depending upon the age and gender of the member. The responding carriers also indicated they cover osteoporosis treatment with the exception of calcium, an over-the-counter (OTC) medication.

The U.S. Preventive Services Task Force (USPSTF), an independent panel of clinical experts, rates BMD screening a Grade B for women over 65 and postmenopausal women under 65 who are at increased risk of osteoporosis, meaning that the panel agrees that the net benefit of screening for this group is “moderate to substantial.”¹ Preventive services rated Grade B or higher by USPSTF must be covered without cost sharing under the ACA.² As discussed below, this means that there would be an immaterial cost impact as the result of a state mandate for the coverage of preventive BMD testing without cost sharing.

1.2 Analysis

BerryDunn estimated the impact of H.B. 2169 by assessing the incremental impacts of two components:

- Incremental cost due to treatment with calcium for postmenopausal women and men diagnosed with osteoporosis.
- Incremental cost due to elimination of cost sharing for BMD testing for postmenopausal women and high-risk men, age 50 to 64, who screen positive for osteoporosis and fracture risk. The bill's intent is that BMD testing would be covered as a preventive service without cost sharing, similar to coverage provided under the ACA.

The incremental cost of adding calcium treatment is estimated using claims data from the APCD and published osteoporosis prevalence statistics. Prevalence rates are used to determine the number of women with osteoporosis who would be eligible for, and use, calcium treatment (users). The APCD is used to determine annual cost of the treatment per user, which, when multiplied by the number of users, results in an estimated claims cost.

The incremental cost of removing cost sharing on preventative BMD testing only applies to the populations not subject to the requirement of no cost-sharing under the ACA: i) high-risk men age 50 to 64 and ii) postmenopausal women in a grandfathered insurance product. The combined member cost-sharing for preventive BMD testing in the APCD for men age 50 to 64 and women age 60 to 64 was only \$6,400. According to information supplied by 8 carriers, the percentage of fully insured commercial policy-holders in a grandfathered product is 2.1%. When applied to the number of women age 50 to 59 who had claims for BMD testing in APCD of 1.3% at a claim cost of \$111.23 the allowed amount, which is overstated by the presence of women not considered high-risk and no consideration for cost-sharing, is only \$6,900. As such, the incremental cost of removing cost sharing on preventive BMD testing is effectively zero.

BerryDunn projected the incremental cost of adding calcium treatment forward over the next five years (2020–2024) for the fully insured Commonwealth population, using the bill’s effective date of January 1, 2020. BerryDunn added insurer retention (administrative cost and profit) to arrive at an estimate of the bill’s effect on premiums. Note the estimates assume carriers will fully comply with the provisions of the bill if it becomes law.

1.3 Summary Results

Table ES-1, on the following page, summarizes the estimated effect of H.B. 2169 on premiums for fully insured plans over five years. This analysis estimates that the bill, if enacted, would increase fully insured premiums by as much as 0.003% on average over the next five years; a more likely increase is in the range of 0.002%, equivalent to an average annual expenditure of \$0.3 million over the period 2020–2024.

Table ES-1: Summary Results

	2020	2021	2022	2023	2024	WEIGHTED AVERAGE	FIVE-YEAR TOTAL
Members (000s)	2,144	2,137	2,130	2,123	2,115		
Medical Expense Low (\$000s)	\$142	\$209	\$219	\$230	\$242	\$221	\$1,041
Medical Expense Mid (\$000s)	\$189	\$278	\$292	\$307	\$322	\$295	\$1,388
Medical Expense High (\$000s)	\$236	\$348	\$365	\$383	\$403	\$368	\$1,735
Premium Low (\$000s)	\$164	\$241	\$253	\$266	\$279	\$255	\$1,203
Premium Mid (\$000s)	\$218	\$322	\$338	\$355	\$372	\$340	\$1,604
Premium High (\$000s)	\$273	\$402	\$422	\$443	\$465	\$426	\$2,005
Per Member Per Month (PMPM) Low	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01
PMPM Mid	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01
PMPM High	\$0.01	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02
Estimated Monthly Premium	\$516	\$531	\$547	\$563	\$580	\$548	\$548
Premium % Rise Low	0.002%	0.002%	0.002%	0.002%	0.002%	0.002%	0.002%
Premium % Rise Mid	0.002%	0.002%	0.002%	0.002%	0.003%	0.002%	0.002%
Premium % Rise High	0.003%	0.003%	0.003%	0.003%	0.003%	0.003%	0.003%

The impact on premiums is driven by the provisions of H.B. 2169 that require carriers to cover treatment of postmenopausal women and men with osteoporosis with calcium. The impact of the bill on any one individual, employer group, or carrier may vary from the overall results, depending on the current level of benefits each receives or provides, and on how those benefits would change under the proposed language of the bill.

Executive Summary Endnotes

¹ Osteoporosis to Prevent Fractures: Screening. US Preventive Services Task Force. Release date June 2018; Accessed 5 December 2018. <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/osteoporosis-screening1>.

² Appendix I. Congressional Mandate Establishing the U.S. Preventive Services Task Force. Last reviewed July 2017; Accessed 8 January 2019 <https://www.uspreventiveservicestaskforce.org/Page/Name/appendix-i-congressional-mandate-establishing-the-us-preventive-services-task-force>.

2.0 Introduction

The Financial Services Committee referred H.B. 2169, “An Act relative to osteoporosis screening and treatment to prevent fractures and reduce health care costs,” in the 190th General Court, to the Center for Health Information and Analysis (CHIA) for review. MGL, chapter 3, section 38C, requires CHIA to review and evaluate the potential fiscal impact of each mandated benefit bill referred to the agency by a legislative committee. The report is required to include the effects on the cost of healthcare, including the premium and administrative expenses, of the proposed mandate.

Assessing the impact of the proposed mandate on premiums entails analyzing its incremental effect on spending by insurance plans. This, in turn, requires comparing spending under the provisions of the bill to spending under current statutes and current benefit plans for the relevant services.

This report is not intended to determine whether H.B. 2169 would constitute a health insurance benefit mandate for purposes of state defrayal under the Affordable Care Act, nor is it intended to assist with state defrayal calculations if it is determined to be a health insurance benefit mandate requiring state defrayal.

The bill requires coverage for BMD testing consistent with the AACE/ACE guidelines^{vi} to diagnose and determine the degree of osteoporosis in:

- Postmenopausal women age 65 years and older;
- Men age 70 and older; and
- Younger postmenopausal women and high-risk men age 50 years and older at increased risk for bone loss and fracture, based on fracture risk analysis.

The bill requires coverage for treatment of postmenopausal women diagnosed with osteoporosis in accordance with recommendations of the AACE, including but not limited to pharmacologic anabolic intervention. The bill provides that the benefits shall not be subject to any greater deductible, coinsurance, copays, or out-of-pocket limits than any other benefit provided by health insurance carriers (carriers).^{vii}

In response to a request for clarification, sponsors indicated that the bill's intent is to:

1. Include coverage of treatment for men diagnosed with osteoporosis in addition to postmenopausal women;
2. Cover BMD testing without cost sharing as a preventive service, consistent with preventive services under the ACA, for high-risk men who screen positive for osteoporosis and fracture risk;^{viii} and
3. Require coverage of the following medications:

vi AACE/ACE 2016 Postmenopausal Osteoporosis Treatment Algorithm. Accessed 9 October 2018 <https://www.aace.com/files/final-algorithm.pdf>.

vii Sponsors confirmed BerryDunn's interpretation that the bill intends to prevent a carrier from creating a new cost-sharing structure for osteoporosis treatment, including anabolic interventions, and that these must fit within a carrier's existing cost-sharing formulary structure. This would not prevent a carrier from placing an osteoporosis drug in the highest (most expensive) tier of the formulary, but would prevent the carrier from creating a new and even higher tier for the drug.

viii This requirement is not in the bill as currently drafted, but it was included in the analysis to reflect the intent of the sponsors. The requirement's impact on incremental cost of the mandate is insignificant.

- Teriparatide
- Romosozumab (if approved by the Food and Drug Administration (FDA))
- Alendronate
- Denosumab
- Risedronate
- Zoledronic acid
- Ibandronate
- Raloxifene
- Vitamin D
- Calcium

This analysis assumes an effective date of January 1, 2020. Section 3.0 of this analysis outlines the provisions and interpretations of the bill. Section 4.0 summarizes the methodology used for the estimate. Section 5.0 discusses important considerations in translating the bill's language into estimates of its incremental impact on healthcare costs and steps through the calculations. Section 6.0 discusses results.

3.0 Interpretation of H.B. 2169

The USPSTF, an independent panel of clinical experts, rates BMD screening a Grade B for women over 65 and postmenopausal women under 65 who are at increased risk of osteoporosis, meaning that the panel agrees that the net benefit of screening for this group is “moderate to substantial.”¹ Preventive services rated Grade B or higher by USPSTF must be covered without cost sharing under the ACA.² As a result, many of the cost-sharing restrictions described in H.B. 2169 are already mandated in federal law.

The populations impacted by the additional coverage are postmenopausal women age 65 years and older, men age 70 and older, and younger postmenopausal women and high-risk men, age 50 years and older, who are at increased risk for bone loss and fracture, based on fracture risk analysis. Given that current insurance benefits provided by carriers cover most of the cost sharing and treatment provisions in the bill, this report only addresses the cost of adding coverage for calcium treatment for osteoporosis and removing member cost sharing for preventative BMD testing for high-risk men age 50 years and older and postmenopausal women with a grandfathered insurance product.

3.1 Plans Affected by the Proposed Mandate

The bill as drafted amends statutes that regulate health care carriers in the Commonwealth. The bill includes the following sections, each of which addresses statutes dealing with a particular type of health insurance policy:

- **Section 1: Chapter 32A** – Plans Operated by the Group Insurance Commission (GIC) for the Benefit of Public Employees
- **Section 2: Chapter 175** – Commercial Health Insurance Company Plans
- **Section 3: Chapter 176A** – Hospital Service Corporation Plans

- **Section 4: Chapter 176B** – Medical Service Corporation Plans
- **Section 5: Chapter 176G** – Health Maintenance Organization (HMO) Plans

Self-insured plans, except for those managed by the GIC, are not subject to state-level health insurance benefit mandates. State mandates do not apply to Medicare or Medicare Advantage plans, the benefits of which are qualified by Medicare; this analysis excludes members of fully insured commercial plans over 64 years of age and does not address any potential effect on Medicare supplement plans, even to the extent they are regulated by state law. This analysis does not apply to MassHealth.

3.2 Covered Services

BerryDunn surveyed 10 carriers in the Commonwealth, and seven carriers responded, representing approximately 89% of fully insured commercial covered lives. All of the responding carriers currently cover osteoporosis screening. There was one exception, in which a carrier indicated it did not cover screening for men; however, the APCD data includes claims covering screening for men for that carrier. In some cases, the carriers impose member cost sharing, depending upon the member age and gender. The responding carriers also cover osteoporosis treatment with the exception of calcium, which carriers do not cover.

3.3 Existing Laws Affecting the Cost of H.B. 2169

Osteoporosis screening for women over is required by the ACA for women 65 years and older and postmenopausal women younger than 65 at increased risk of developing osteoporosis.

4.0 Methodology

4.1 Overview

Estimating the impact of H.B. 2169 on premiums requires assessing the incremental impacts of two components:

- The incremental cost due to calcium treatment for postmenopausal women diagnosed with osteoporosis.
- Incremental cost due to the elimination of member cost sharing for BMD testing for postmenopausal women and high-risk men, age 50 to 64, who screen positive for osteoporosis and fracture risk. The bill's intent is that BMD testing would be covered as a preventive service without cost sharing, similar to coverage provided under the ACA.^{ix}

The incremental cost of adding calcium treatment is estimated using claims data from the APCD and published osteoporosis prevalence statistics. Prevalence rates are used to determine the number of women with osteoporosis who would be eligible for, and use, calcium treatment (users). The APCD is used to determine annual cost of the treatment per user, which, when multiplied by the number of users, results in an estimated claims cost.

The incremental cost of removing cost-sharing on preventative BMD testing only applies to the populations not subject to the requirement of no cost-sharing under the ACA: i) high-risk men age 50 to 64 and ii) postmenopausal

^{ix} This requirement is not in the bill as currently drafted, but it was included in the analysis to reflect the intent of the sponsors. The requirement's impact on incremental cost of the mandate is insignificant.

women in a grandfathered insurance product. The combined member cost-sharing for preventive BMD testing in the APCD for men age 50 to 64 and women age 60 to 64 was only \$6,400. According to information supplied by 8 carriers, the percentage of fully insured commercial policyholders in a grandfathered product is 2.1%. When applied to the number of women age 50 to 59 who had claims for BMD testing in APCD of 1.3% at a claim cost of \$111.23, the allowed amount, which is overstated by the presence of women not considered high-risk and no consideration for cost-sharing, is only \$6,900. As such, the incremental cost of removing cost sharing on preventive BMD testing is effectively zero.

Accounting for carrier retention on the incremental cost of adding calcium treatment results in a baseline estimate of the proposed mandate's incremental effect on premiums, which is projected over the five years following the assumed January 1, 2020, implementation date of the proposed law.

4.2 Data Sources

The primary data sources used in the analysis are:

- Information about the intended effect of the bill, gathered from sponsors
- Information, including descriptions of current coverage, from responses to a survey of commercial carriers in the Commonwealth
- The Massachusetts APCD
- Academic literature, published reports, and population data, cited as appropriate

4.3 Steps in the Analysis

1. To implement the analysis, BerryDunn performed the steps summarized in this section.

In order to estimate the impact of the cost of calcium, BerryDunn:

- A. Used population data and published osteoporosis prevalence rates to determine the number of users undergoing treatment of osteoporosis
- B. Using the APCD and publicly available cost data, determined the annual cost of calcium treatment per user
- C. Multiplied the number of users taking calcium by the annual cost per user to calculate incremental claims cost
- D. Divided aggregate incremental claims cost by the corresponding membership to calculate an incremental cost PMPM
- E. Projected the baseline cost forward over the five-year analysis period using an estimated increase in pharmacy service costs over the five-year analysis period

2. Calculated the impact on insurance premiums

To add the other components of health insurance premiums to the estimated claims costs, BerryDunn:

- A. Estimated the fully insured Commonwealth population under age 65, projected for the next five years (2020–2024)
- B. Multiplied the incremental paid PMPM cost of the mandate by the projected population estimate to calculate the total estimated marginal claims cost of H.B. 2169
- C. Estimated insurer retention (administrative costs, taxes, and profit) and applied the estimate to the final incremental claims cost calculated in Step B

4.4 Limitations

Carriers currently cover BMD testing. However, preventive screenings are only subject to no cost sharing for postmenopausal women age 50 to 59 years at increased risk for bone loss and fracture. As some BMD testing claims are subject to cost sharing it is unclear how many of the claims with cost sharing are for members with grandfathered policies. Given the low number of grandfathered policies, even with this uncertainty, the cost of this provision is effectively zero.

As claims for treatment for osteoporosis with OTC calcium are not available in the APCD due to lack of insurance coverage it is difficult to estimate how many individuals diagnosed with osteoporosis are currently being treated with calcium. BerryDunn conservatively assumed all individuals would be treated with calcium even though it is not indicated as a treatment in all cases.³

5.0 Analysis

This section describes the calculations outlined in the previous section in more detail. The analysis includes development of a best estimate middle-cost scenario, as well as a low-cost scenario using assumptions that produced a lower estimate and a high-cost scenario using more conservative assumptions that produced a higher estimated cost impact.

Section 5.1 describes the steps used to calculate the impact of adding calcium as a covered treatment for osteoporosis. Section 5.2 shows the fully insured population in the Commonwealth age 0 to 64 projected for the next five years. Section 5.3 aggregates the marginal PMPM costs. Section 5.4 projects the fully insured population age 0–64 in the Commonwealth over the 2020–2024 analysis period. Section 5.5 calculates the total estimated marginal cost of H.B. 2169, and Section 5.6 adjusts these projections for carrier retention to arrive at an estimate of the bill's effect on premiums for fully insured plans.

5.1 Increased Treatment Cost for Osteoporosis

H.B. 2169 requires carriers to cover postmenopausal women and men diagnosed with osteoporosis in accordance with recommendations of the AACE. Currently, carriers provide the aforementioned coverage, with the exception of covering calcium treatments. BerryDunn used population numbers and published prevalence rates to calculate the number of postmenopausal women and men with osteoporosis. According to a study in the U.S. Library of National

Medicine,⁴ 6.80% of women in the United States, age 50–59, have osteoporosis, and 12.30% of women age 60–64 have osteoporosis. The study also indicates that 3.40% of men in the United States, age 50–59, have osteoporosis, and 3.30% of men age 60–64 have osteoporosis. BerryDunn multiplied the number of commercially insured people in each age and gender category by the prevalence rates to determine the number of commercially insured people with osteoporosis. Results are displayed on the following page in Table 1.

Table 1: Estimated Postmenopausal Women With Osteoporosis

AGE AND GENDER	NUMBER OF INSURED PEOPLE	PREVALENCE RATE	PEOPLE WITH OSTEOPOROSIS
50 – 59 Women	229,100	6.80%	15,579
60 – 64 Women	95,855	12.30%	11,790
50 – 59 Men	217,771	3.40%	7,404
60 – 64 Men	88,777	3.30%	2,930
Total	631,502	5.97%	37,703

Using the APCD, BerryDunn determined the annual cost of calcium per user per year. Because the proposed mandate permits member cost sharing for osteoporosis treatment, BerryDunn measured the paid claim cost, after member cost sharing, for calcium. Paid costs are approximately 25% of allowed cost for calcium, likely due to the relatively low cost of the drug in comparison to the level of copays present in many of the benefit structures. BerryDunn divided the aggregate paid cost of calcium by the corresponding aggregate days' supply, and multiplied by 365 days to determine the average annual cost of calcium. Results are displayed in Table 2.

Table 2: Estimated Annual Cost of Calcium Per User

Paid Cost	\$1,112
Number of Days Supply	71,793
Annual Cost Per User	\$5.65

Next, conservatively assuming all people diagnosed with osteoporosis use calcium, BerryDunn multiplied the number of users by the annual paid claims cost of calcium per user, to calculate incremental claims cost. BerryDunn divided the aggregate incremental claims cost by the corresponding membership to calculate an incremental cost PMPM.

To develop a range of results, the cost of calcium was varied by plus or minus 25%, assuming that there may be differences in carrier contracting in the presence of the mandate. BerryDunn conservatively assumed that carriers would increase their cost sharing at the same rate as the increase in allowed claims cost over time, thereby increasing the paid claims cost at the same rate. BerryDunn based the allowed claims cost trend on the long-term average national projection in pharmacy service costs, 5.4% per year, over the five-year analysis period.⁵

Table 3: Estimated Marginal Cost of Calcium Treatment

	2016	2020	2021	2022	2023	2024
Low Scenario	\$159,831	\$196,972	\$207,534	\$218,664	\$230,389	\$242,744
Mid Scenario	\$213,107	\$262,629	\$276,713	\$291,551	\$307,186	\$323,659
High Scenario	\$266,384	\$328,286	\$345,891	\$364,439	\$383,982	\$404,573

Table 4: Estimated Marginal PMPM Cost of Calcium Treatment

	2016	2020	2021	2022	2023	2024
Low Scenario	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01
Mid Scenario	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01
High Scenario	\$0.01	\$0.01	\$0.02	\$0.02	\$0.02	\$0.02

5.2 Projected Fully Insured Population in the Commonwealth

Table 5 shows the fully insured population in the Commonwealth age 0 to 64 projected for the next five years. Appendix A describes the sources of these values.

Table 5: Projected Fully Insured Population in the Commonwealth, Age 0 – 64

YEAR	TOTAL (0 – 64)
2020	2,143,554
2021	2,137,204
2022	2,130,078
2023	2,122,832
2024	2,115,005

5.3 Total Marginal Medical Expense

Multiplying the total estimated PMPM cost by the projected fully insured membership over the analysis period results in the total cost (medical expense) associated with the proposed requirement, shown in Table 6. This analysis assumes the bill, if enacted, would be effective January 1, 2020.^x

^x The analysis assumes the mandate would be effective for policies issued and renewed on or after January 1, 2020. Based on an assumed renewal distribution by month, by market segment, and by the Commonwealth market segment composition, 71.3% of the member months exposed in 2020 will have the proposed mandate coverage in effect during calendar year 2020. The annual dollar impact of the mandate in 2020 was estimated using the estimated PMPM and applying it to 71.3% of the member months exposed.

Table 6: Estimated Marginal Cost of H.B. 2169

	2020	2021	2022	2023	2024
Low Scenario	\$141,618	\$208,655	\$219,111	\$230,075	\$241,519
Mid Scenario	\$188,825	\$278,206	\$292,148	\$306,767	\$322,026
High Scenario	\$236,031	\$347,758	\$365,184	\$383,459	\$402,532

5.4 Carrier Retention and Increase in Premium

Carriers include their retention expense in fully insured premiums. Retention expense includes general administration, commissions, taxes, fees, and contribution to surplus or profit. Assuming an average retention rate of 13.5% based on CHIA's analysis of fully insured premium retention in the Commonwealth,⁶ the increase in medical expense was adjusted upward to approximate the total impact on premiums. Table 7 shows the result.

Table 7: Estimate of Increase in Carrier Premium Expense

	2020	2021	2022	2023	2024
Low Scenario	\$163,660	\$241,129	\$253,213	\$265,884	\$279,109
Mid Scenario	\$218,213	\$321,506	\$337,617	\$354,512	\$372,145
High Scenario	\$272,766	\$401,882	\$422,021	\$443,139	\$465,181

6.0 Results

The estimated impact of the proposed requirement on medical expense and premiums appears below. The analysis includes development of a best estimate "mid-level" scenario, as well as a low-level scenario using assumptions that produced a lower estimate and a high-level scenario using more conservative assumptions that produced a higher estimated impact.

The impact on premiums is driven by the provisions of H.B. 2169 that require carriers to cover calcium as a treatment for osteoporosis in postmenopausal women. There was effectively no impact on the other provisions of H.B. 2169 given that carriers currently cover the majority of these services and that the ACA mandates no cost-sharing on preventive screenings.

Starting in 2021, the ACA will impose an excise tax, commonly known as the "Cadillac Tax," on expenditures on health insurance premiums and other relevant items (e.g., health savings account contributions) that exceed specified thresholds. To the extent that relevant expenditures exceed those thresholds (in 2021), H.B. 2169, by increasing premiums, has the potential of creating liability for additional amounts under the tax. Estimating the amount of potential tax liability requires information on the extent to which premiums, notwithstanding the effect of H.B. 2169, will exceed or approach the thresholds, and is beyond the scope of this analysis.

6.1 Five-Year Estimated Impact

For each year in the five-year analysis period, Table 8 (on the following page) displays the projected net impact of the proposed language on medical expense and premiums using a projection of Commonwealth fully insured membership. Note that the relevant provisions of H.B. 2169 are assumed effective January 1, 2020.⁷

The low scenario impact is \$0.3 million per year on average. This scenario assumes the cost of calcium is 25% lower than the cost calculated from the APCD. The high scenario impact is \$0.4 million, and is based on an assumption that the cost of calcium is 25% higher than the cost calculated from the APCD. The middle scenario assumes the cost of calcium from the APCD, and has average annual costs of \$0.3 million, or an average of 0.002% of premium.

Finally, the impact of the proposed law on any one individual, employer group, or carrier may vary from the overall results, depending on the current level of benefits each receives or provides, and on how the benefits will change under the proposed language.

Table 8: Summary Results

	2020	2021	2022	2023	2024	WEIGHTED AVERAGE	FIVE-YEAR TOTAL
Members (000s)	2,144	2,137	2,130	2,123	2,115		
Medical Expense Low (\$000s)	\$142	\$209	\$219	\$230	\$242	\$221	\$1,041
Medical Expense Mid (\$000s)	\$189	\$278	\$292	\$307	\$322	\$295	\$1,388
Medical Expense High (\$000s)	\$236	\$348	\$365	\$383	\$403	\$368	\$1,735
Premium Low (\$000s)	\$164	\$241	\$253	\$266	\$279	\$255	\$1,203
Premium Mid (\$000s)	\$218	\$322	\$338	\$355	\$372	\$340	\$1,604
Premium High (\$000s)	\$273	\$402	\$422	\$443	\$465	\$426	\$2,005
PMPM Low	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01
PMPM Mid	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01
PMPM High	\$0.01	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02
Estimated Monthly Premium	\$516	\$531	\$547	\$563	\$580	\$548	\$548
Premium % Rise Low	0.002%	0.002%	0.002%	0.002%	0.002%	0.002%	0.002%
Premium % Rise Mid	0.002%	0.002%	0.002%	0.002%	0.003%	0.002%	0.002%
Premium % Rise High	0.003%	0.003%	0.003%	0.003%	0.003%	0.003%	0.003%

6.2 Impact on the GIC

The proposed legislative change is assumed to apply to both fully insured and self-insured plans operated for state and local employees by the GIC, with an effective date for all GIC policies on July 1, 2020.

Because the benefit offerings of GIC plans are similar to those of most other commercial plans in the Commonwealth, and based on BerryDunn carrier surveys that did not indicate GIC had different coverage, the estimated incremental PMPM of the proposed legislative language on GIC medical expense is assumed not to differ from that calculated for the other fully insured plans in the Commonwealth.

This is consistent with carrier survey responses that, in general, did not indicate differences in coverage for the GIC.

To estimate the medical expense separately for the GIC, the PMPM medical expense for the general fully insured population was applied to the GIC membership starting in July 2020.

Table 9 breaks out the GIC-only fully insured membership and the GIC self-insured membership, as well as the corresponding incremental medical expense and premium. Note that the total medical expense and premium values for the general fully insured membership displayed in Table 8 also include the GIC fully insured membership. Finally, the proposed legislative requirement is assumed to require the GIC to implement the provisions on July 1, 2020; therefore, the results in 2020 are approximately one-half of an annual value.

Table 9: GIC Summary Results

	2020	2021	2022	2023	2024	WEIGHTED AVERAGE	FIVE-YEAR TOTAL
GIC Fully Insured							
Members (000s)	72	72	72	72	71		
Medical Expense Low (\$000s)	\$3	\$7	\$7	\$8	\$8	\$7	\$34
Medical Expense Mid (\$000s)	\$4	\$9	\$10	\$10	\$11	\$10	\$45
Medical Expense High (\$000s)	\$6	\$12	\$12	\$13	\$14	\$12	\$56
Premium Low (\$000s)	\$4	\$8	\$9	\$9	\$9	\$9	\$39
Premium Mid (\$000s)	\$5	\$11	\$11	\$12	\$13	\$12	\$52
Premium High (\$000s)	\$6	\$14	\$14	\$15	\$16	\$14	\$65
GIC Self-Insured							
Members (000s)	270	270	269	269	268		
Medical Expense Low (\$000s)	\$13	\$26	\$28	\$29	\$31	\$28	\$126
Medical Expense Mid (\$000s)	\$17	\$35	\$37	\$39	\$41	\$37	\$168
Medical Expense High (\$000s)	\$21	\$44	\$46	\$49	\$51	\$47	\$210

Endnotes

- 1 Osteoporosis to Prevent Fractures: Screening. US Preventive Services Task Force. Release date June 2018; Accessed 5 December 2018. <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/osteoporosis-screening1>.
- 2 Appendix I. Congressional Mandate Establishing the U.S. Preventive Services Task Force. Last reviewed July 2017; Accessed 8 January 2019. <https://www.uspreventiveservicestaskforce.org/Page/Name/appendix-i-congressional-mandate-establishing-the-us-preventive-services-task-force>.
- 3 Sunyecz, J. The use of calcium and vitamin D in the management of osteoporosis. Ther Clin Risk Manag. 2008 Aug; 4(4):827-836. Accessed 14 February 2019: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2621390/>
- 4 U.S. Library of National Medicine, The Recent Prevalence of Osteoporosis and Low Bone Mass in the United States Based on Bone Mineral Density at the Femoral Neck or Lumbar Spine. Accessed 8 February 2019: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4757905/>.
- 5 U.S. Centers for Medicare and Medicaid Services (CMS), Office of the Actuary. National Health Expenditure Projections. Table 11, Prescription Drug Expenditures; Aggregate and per Capita Amounts, Percent Distribution and Annual Percent Change by Source of Funds: Calendar Years 2010-2026; Private Insurance. Accessed 29 January 2019: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsProjected.html>.
- 6 Massachusetts Center for Health Information and Analysis. Annual Report on the Massachusetts Health Care System, September 2018. Accessed 05 December 2018: <http://www.chiamass.gov/annual-report>.
- 7 With an assumed start date of January 1, 2020, dollars were estimated at 71.3% of the annual cost, based upon an assumed renewal distribution by month (Jan through Dec) by market segment and the Massachusetts market segment composition.

Appendix A: Membership Affected by the Proposed Language

Membership potentially affected by a proposed mandated change to the use of medical necessity criteria may include Commonwealth residents with fully insured employer-sponsored health insurance issued by a Commonwealth-licensed company (including through the GIC); non-residents with fully insured employer-sponsored insurance issued in the Commonwealth; Commonwealth residents with individual (direct) health insurance coverage; and lives covered by GIC self-insured coverage. BerryDunn's 2020–2024 membership projections for these populations are derived from the following sources.

The 2016 MA APCD formed the base for the projections. The MA APCD provided fully insured and self-insured membership by carrier. The MA APCD was also used to estimate the number of non-residents covered by a Commonwealth policy. These are typically cases in which a non-resident works for a Commonwealth employer that offers employer-sponsored coverage. Adjustments were made to the data for membership not reported to the MA APCD, based on published membership reports available from CHIA and the Massachusetts Department of Insurance (DOI).

CHIA publishes a quarterly enrollment trends report and supporting databook (enrollment-trends-july-2016-databook¹), which provides enrollment data for Commonwealth residents by carrier for most carriers (some small carriers are excluded). CHIA uses supplemental information beyond the data in the MA APCD to develop its enrollment trends report and provided BerryDunn with details regarding the use of supplemental carrier information for its December 2016 reported enrollment. The supplemental data was used to adjust the resident totals from the MA APCD.

The DOI published reports titled Quarterly Report of HMO Membership in Closed Network Health Plans as of September 30, 2016² and Massachusetts Division of Insurance Annual Report Membership in MEDICAL Insured Preferred Provider Plans by County as of September 30, 2016.³ These reports provide fully insured covered members for licensed Commonwealth insurers where the member's primary residence is in the Commonwealth. The DOI reporting includes all carriers and was used to supplement the MA APCD membership for small carriers not reported to the MA APCD.

The distribution of members by age and gender was estimated using MA APCD population distribution ratios and was checked for reasonableness and validated against U.S. Census Bureau (Census Bureau) data.⁴ Membership was projected from 2016 through 2024 using Census Bureau population growth rate estimates by age and gender.⁵

Projections for the GIC self-insured lives were developed using the GIC base data for 2014⁶ and 2015,⁷ as well as the same projected growth rates from the Census Bureau that were used for the Commonwealth population. Breakdowns of the GIC self-insured lives by gender and age were based on the Census Bureau distributions.

Appendix A Endnotes

¹ Center for Health Information and Analysis. Estimates of fully insured and self-insured membership by insurance carrier. Accessed 22 September 2016. www.chiamass.gov/enrollment-in-health-insurance/.

² Massachusetts Department of Insurance. HMO Group Membership and HMO Individual Membership
<https://www.mass.gov/files/documents/2017/05/zm/4q16dist-group.pdf>,
<https://www.mass.gov/files/documents/2017/05/zm/4q16dist-individual.pdf>.

³ Massachusetts Department of Insurance. Membership 2014. Accessed 22 September 2016
<https://www.mass.gov/files/documents/2018/02/16/2016-prefprov2.pdf>.

⁴ U.S. Census Bureau. Annual Estimates of the Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2017. Accessed 6 December 2017: <http://www.census.gov/popest/data/state/totals/2017/index.html>.

⁵ U.S. Census Bureau. Annual Estimates of the Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2015. Accessed 28 April 2016: <http://www.census.gov/popest/data/state/totals/2015/index.html>.

⁶ Group Insurance Commission. GIC Health Plan Membership by Insured Status FY2016. Accessed 6 December 2018:
<http://www.mass.gov/anf/docs/gic/annual-report/fy2016annual-report.pdf>.

⁷ Group Insurance Commission, Group Insurance Commission Fiscal Year 2016 Annual Report. Accessed 6 December 2018:
https://www.mass.gov/files/documents/2018/10/12/GIC_Annual%20Report%20FY2016.pdf