MILLIMAN REPORT

Healthcare cost and utilization for women in menopause

Commissioned by Gennev

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Milliman

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Introduction

BACKGROUND

Gennev commissioned Milliman, Inc. (Milliman) to conduct an analysis to quantify the medical and pharmacy costs and utilization of women aged 45 to 54 with employer-sponsored health insurance in the United States (US) who have been diagnosed with or are being treated for menopause or perimenopause. The report is intended to identify the healthcare economic profiles of women in menopause who have used specific types of therapy, including hormone replacement therapy (HRT), nonhormonal therapy, or no therapy at all for their menopause diagnoses. It may not be appropriate for other purposes.

MENOPAUSE AND PERIMENOPAUSE OVERVIEW

Menopause is defined retrospectively as the cessation of spontaneous menses for 12 months. Prior to menopause, women experience a transitional period called perimenopause that lasts several years. During this period, a woman's ovaries produce fluctuating and erratic levels of estrogen and progesterone, which may lead to irregular periods. Perimenopause is associated with a variety of physiological and vasomotor symptoms that continue into menopause and may persist for years after menopause.[1]

An estimated 6,000 US women reach menopause each day and, with increasing life expectancy, will spend approximately 40% of their lives in the post-menopause phase.[2] According to the US Census Bureau (2021), 20 million women are between the age of 45 and 54, which makes up 12% of the female population.[3] As the typical duration of menopause symptoms is approximately seven years,[4] this implies that over 80%[*] of women between the age of 45 and 54 could be experiencing symptoms of menopause at a given time. This contrasts with only 21% of the US female population aged 45 to 54 being diagnosed or treated for symptoms of menopause within one calendar year as reported in the healthcare claims used in this analysis.

The most common vasomotor symptom associated with menopause is hot flashes. Hot flashes are defined as a spontaneous feeling of heat in the upper part of the body, often accompanied by sweating, chills, or palpitations.[5] Approximately 75% of women experience these vasomotor symptoms during menopause,[6] and approximately 10% of women will continue reporting symptoms as late as 11 to 12 years after the start of menopause.[7] These hot flashes impact quality of life during daytime but can also greatly hinder the quality of sleep, with 40% to 60% of menopausal women reporting sleep disruption.[8] Mood disorders, anxiety, and depression are also associated with the menopausal period[2] and may be another cause for declining sleep quality.[8] These symptoms may also lead to a higher need for behavioral healthcare and services for women in menopause.[9]

Outside of the symptoms above, all of which are associated with the central nervous system, other menopausal symptoms can include vaginal dryness, urogenital atrophy, weight gain, declining bone health, and increased risk of cardiovascular adverse events due to changes in volumes of heart fat,[8] as well as several other symptoms and disorders that can have implications for the long-term health of women that have transitioned through menopause.

Studies have found that HRT is an effective intervention for hot flashes and improves vaginal and urogenital atrophic symptoms.[10] One study found oral estrogen to decrease hot flash frequency by approximately 75% relative to a placebo.[11] There is also research related to the impact on menopause-specific quality of life of HRT for women with other conditions, like osteoporosis, type 2 diabetes, myocardial infarction, heart failure, and stroke.[12] The decline in estrogen levels also has effects on blood pressure, including higher sympathetic activity, higher salt sensitivity, and increase in weight.[13] Nonhormonal therapies, like prescription treatments for paroxetine and fluoxetine, have also been found to have some degree of efficacy, although less effective than estrogen.[10]

[*] Calculated by taking 6,000 women per day for 365 days per year for 7.4 years compared to the 20 million US women in the age range.

Results

OVERALL MEDICAL AND PHARMACY COSTS

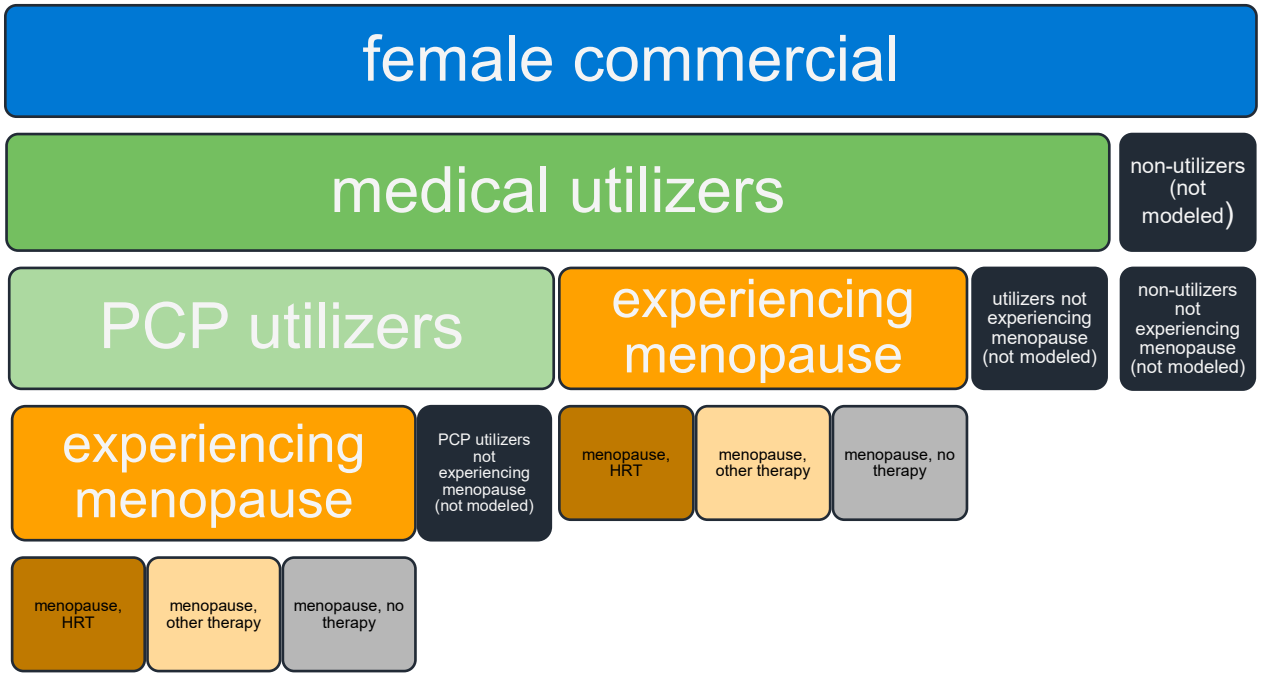
Administrative healthcare claims data was summarized from Milliman's nationwide[†] calendar year (CY) 2021 commercial data set across seven populations:

1. Women aged 45 to 54 with a commercial health plan during CY 2021. This population is referred to as "female commercial." All of the remaining populations are subsets of this population.
2. Women aged 45 to 54 with any medical utilization during CY 2021, including women with medical utilization from the third and fourth cohorts defined below. This population is referred to as "medical utilizers" and represents 89% of female commercial membership.
3. Women aged 45 to 54 with any primary care provider (PCP) utilization during CY 2021. This population is referred to as "PCP utilizers" and represents 43% of female commercial membership. Women may use gynecologists as their PCP but this situation would not be reflected in the PCP utilization in this analysis.
4. Women aged 45 to 54 with a menopause or perimenopause diagnosis, HRT, or nonhormonal menopause or perimenopause therapy[‡] during CY 2021, including women from the fifth, sixth, and seventh cohorts defined below. For simplicity, this population is referred to as "experiencing menopause" and represents 21% of female commercial membership, 24% of medical utilizers, and 27% of PCP utilizers.
5. Women aged 45 to 54 with HRT during CY 2021. This population is referred to as "menopause, HRT" and represents 6% of female commercial membership.
6. Women aged 45 to 54 with nonhormonal menopause or perimenopause therapy during CY 2021. This population is referred to as "menopause, other therapy" and represents 9% of female commercial membership.
7. Women aged 45 to 54 with a menopause or perimenopause diagnosis, but no therapy during CY 2021. This population is referred to as "menopause, no therapy" and represents 6% of female commercial membership.

The chart in Figure 1 demonstrates the relationships between the seven populations of women aged 45 to 54. Some populations are not explicitly modeled.

[†] Some geographic areas may be overrepresented or underrepresented based on Milliman's data contributors.
[‡] Nonhormonal therapies include anticonvulsants, selective serotonin reuptake inhibitors, and serotonin-norepinephrine reuptake inhibitors.

FIGURE 1: RELATIONSHIPS OF SEVEN POPULATIONS



The average allowed[§] per member per month (PMPM) by major service category for the group aged 45 to 54 is summarized in Figure 2 and Figure 3 for these seven populations. No adjustments have been made to age, risk, or geographic mix between the populations and comparison results are indicative of association but not necessarily causation. Compared to female commercial, medical utilizers, and PCP utilizers, those experiencing menopause have a higher average allowed PMPM across all major service categories, with the difference most pronounced within the outpatient category. Compared to menopause, HRT and menopause, no therapy, the population of menopause, other therapy has a higher average allowed PMPM across all major service categories, with the difference most pronounced within the inpatient category.

[§] Allowed cost basis includes plan payments, patient cost sharing, and third-party payments. It is the payer-specific negotiated charge, discounted from the billed charges from a facility or provider.

FIGURE 2: AVERAGE ALLOWED PMPM BY MAJOR SERVICE CATEGORY

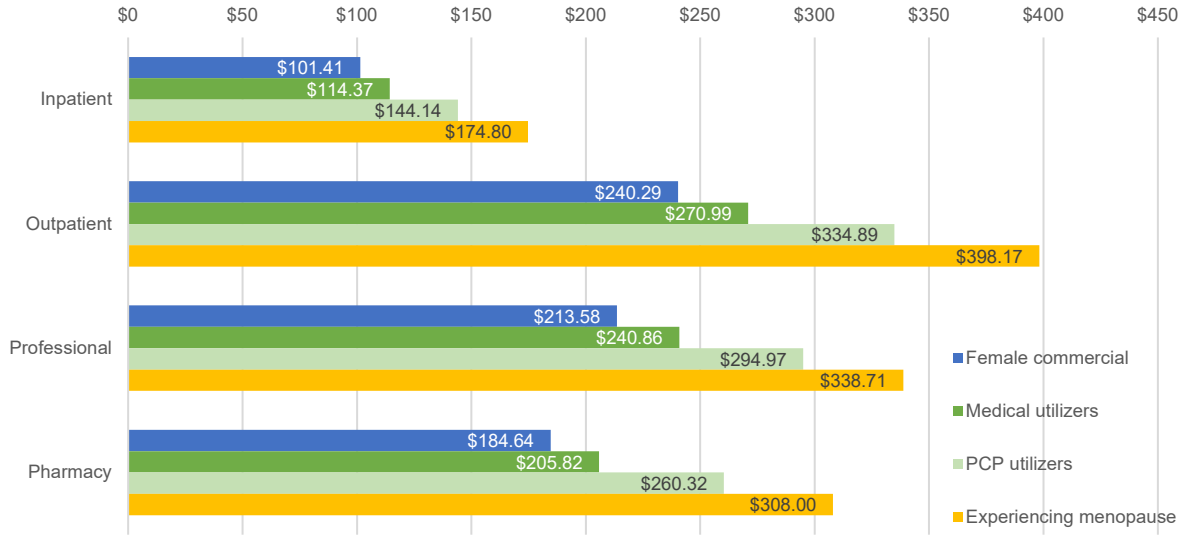
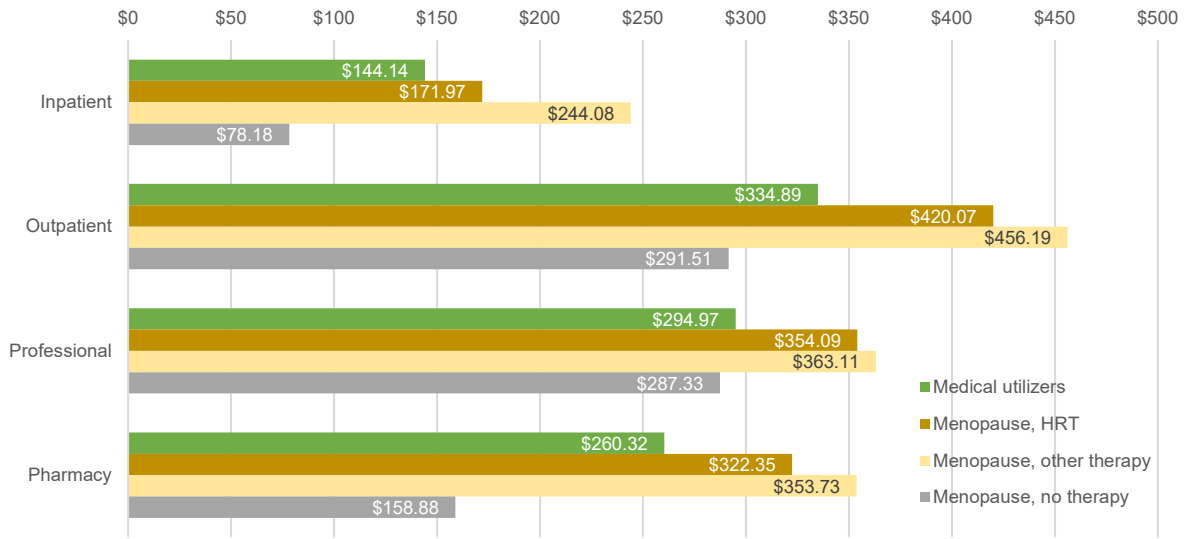


FIGURE 3: AVERAGE ALLOWED PMPM BY MAJOR SERVICE CATEGORY (CONTINUED)



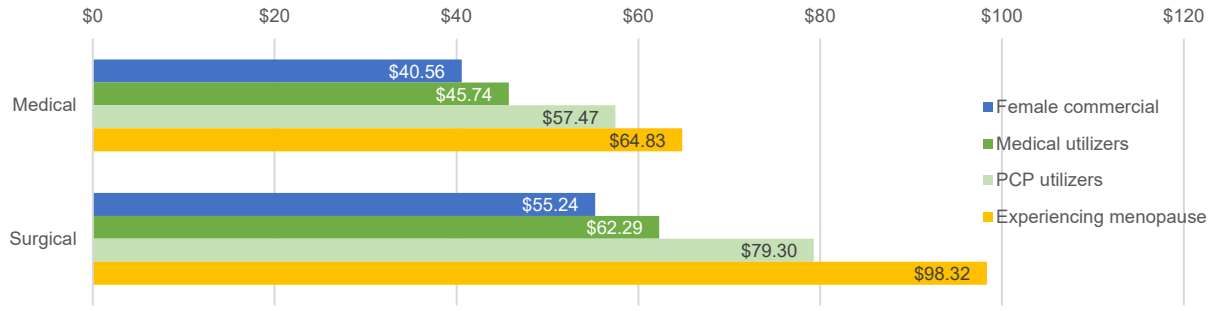
Total medical and pharmacy allowed PMPM for women experiencing menopause is 47% higher than the entire medical utilizer population: $1,243 compared to $848. This difference is relatively consistent across all service categories, with 53% higher inpatient, 47% higher outpatient, 41% higher professional, and 50% higher pharmacy allowed PMPM. Total medical and pharmacy allowed PMPM for menopause, other therapy is 12% higher than menopause, HRT ($1,447 compared to $1,292) and 74% higher than menopause, no therapy ($1,447 compared to $831).

To further explore the areas where these populations of women aged 45 to 54 utilize care differently, the following sections split out select service categories within inpatient, outpatient, professional, and pharmacy categories.

INPATIENT COST AND UTILIZATION

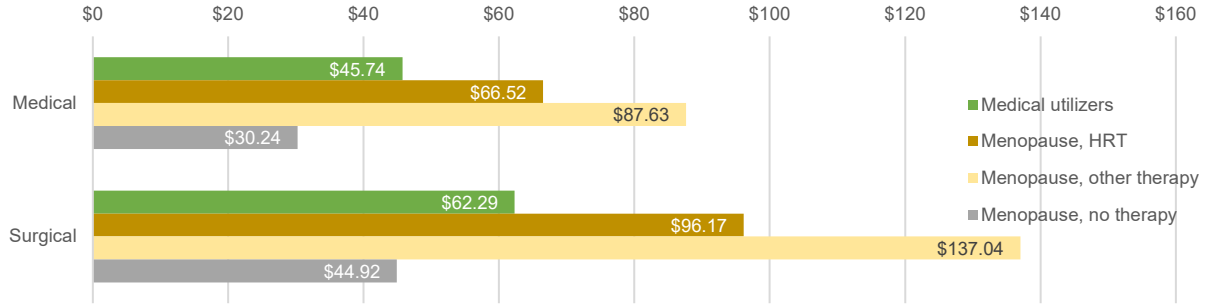
While the 53% differential in overall inpatient allowed PMPM between medical utilizers and those experiencing menopause is consistent with the total combined medical and pharmacy percentage differential, drilling into inpatient service categories reveals some variation in the diverging costs. The largest inpatient allowed PMPM differential is found in the surgical category ($36 increase) followed by the medical category ($19 increase), shown in Figure 4.

FIGURE 4: AVERAGE ALLOWED PMPM BY SELECT INPATIENT SERVICE CATEGORY



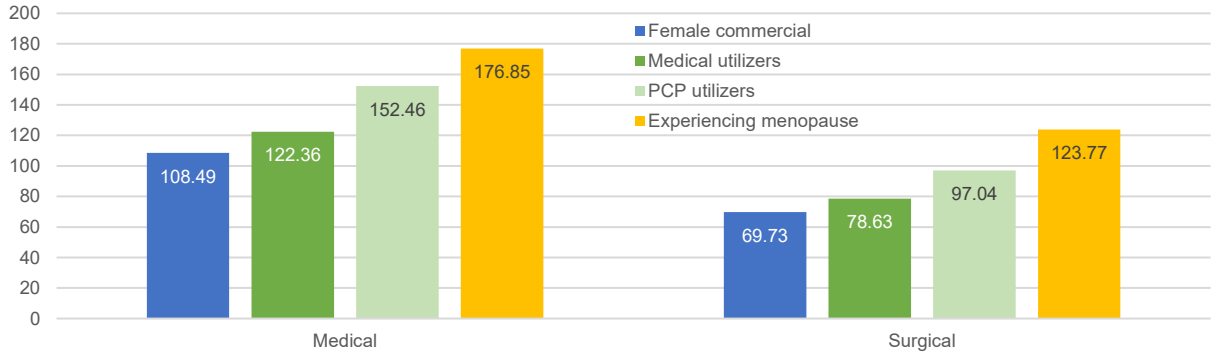
The largest inpatient allowed PMPM differential is also found in the surgical category ($41 increase) followed by the medical category ($21 increase) when comparing menopause, other therapy to menopause, HRT. The differential rises to $92 in the surgical category and $57 in the medical category when it comes to comparing menopause, other therapy to menopause, no therapy. These comparisons can be found in Figure 5.

FIGURE 5: AVERAGE ALLOWED PMPM BY SELECT INPATIENT SERVICE CATEGORY (CONTINUED)



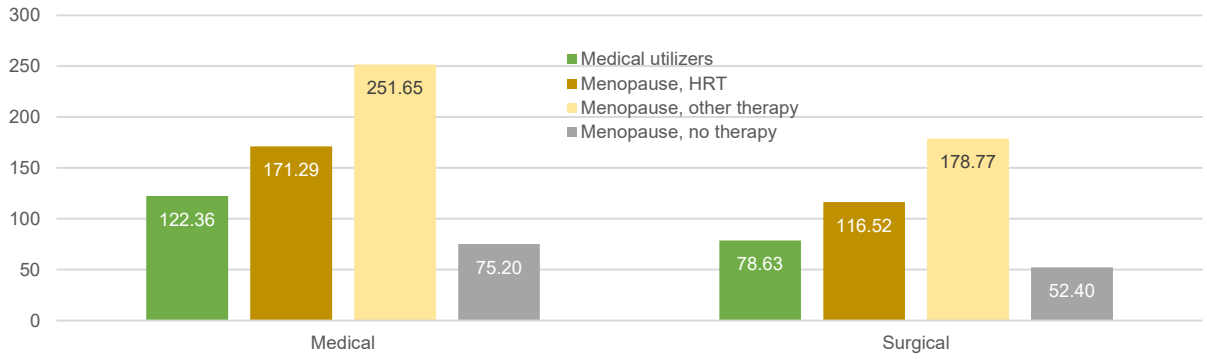
Among these two inpatient service categories, days per 1,000 diverges more in the medical category (54 days per 1,000 increase) than the surgical category (45 days per 1,000 increase). However, the surgical differential is larger on a percentage basis (57% versus 45%) between medical utilizers and those experiencing menopause. These comparisons are shown in Figure 6.

FIGURE 6: AVERAGE DAYS PER 1,000 BY SELECT INPATIENT SERVICE CATEGORY



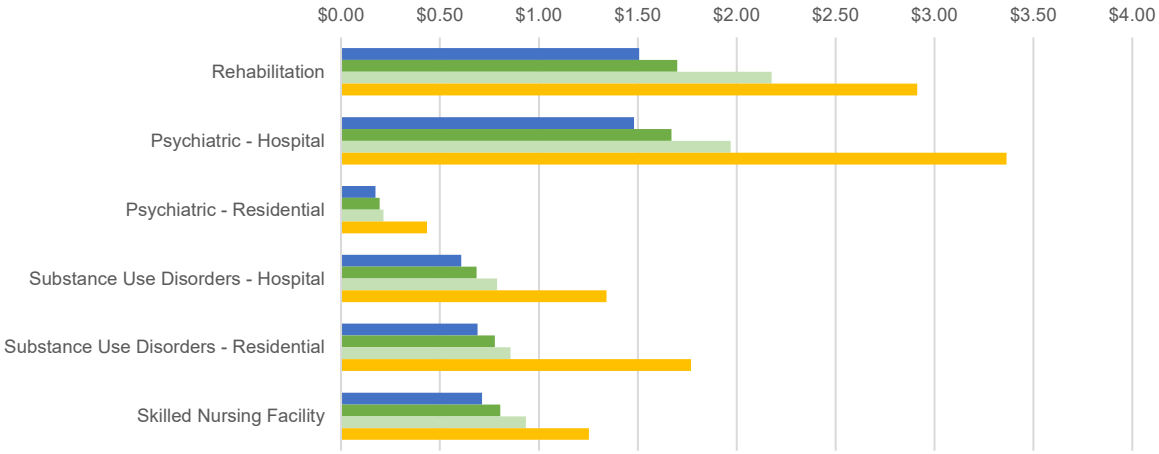
Between menopause, HRT and menopause, other therapy, days per 1,000 diverges more in the medical category (80 days per 1,000 increase) than the surgical category (62 days per 1,000 increase). However, the surgical differential is larger on a percentage basis (53% versus 47%). These comparisons are shown in Figure 7.

FIGURE 7: AVERAGE DAYS PER 1,000 BY SELECT INPATIENT SERVICE CATEGORY (CONTINUED)



Between medical utilizers and those experiencing menopause, allowed PMPM differences are much more pronounced (56% to 128%) in the remaining inpatient service categories on a percentage basis, but the differentials are less significant on an absolute basis. As shown in Figure 8, substance use disorders residential stays represent the largest percentage difference at 128% while psychiatric hospital stays represent the largest absolute allowed PMPM difference.

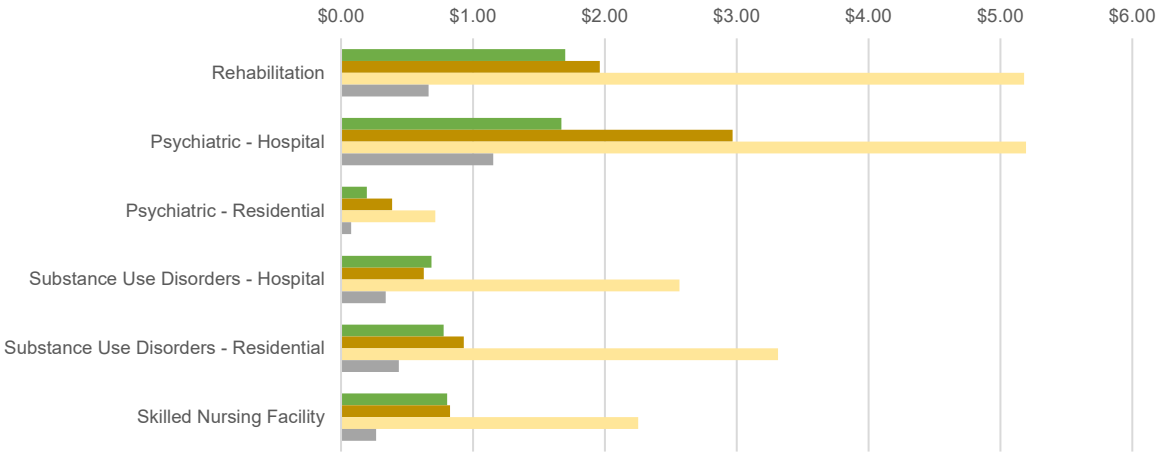
FIGURE 8: AVERAGE ALLOWED PMPM BY SELECT INPATIENT SERVICE CATEGORY



	Skilled Nursing Facility	Substance Use Disorders - Residential	Substance Use Disorders - Hospital	Psychiatric - Residential	Psychiatric - Hospital	Rehabilitation
Female commercial	$0.71	$0.69	$0.61	$0.17	$1.48	$1.51
Medical utilizers	$0.80	$0.78	$0.69	$0.20	$1.67	$1.70
PCP utilizers	$0.93	$0.86	$0.79	$0.21	$1.97	$2.18
Experiencing menopause	$1.25	$1.77	$1.34	$0.43	$3.36	$2.91

Between menopause, HRT and menopause, other therapy, inpatient allowed PMPM differences range from 85% to 308% and $0.30 to $3.20 in the remaining service categories shown in Figure 9.

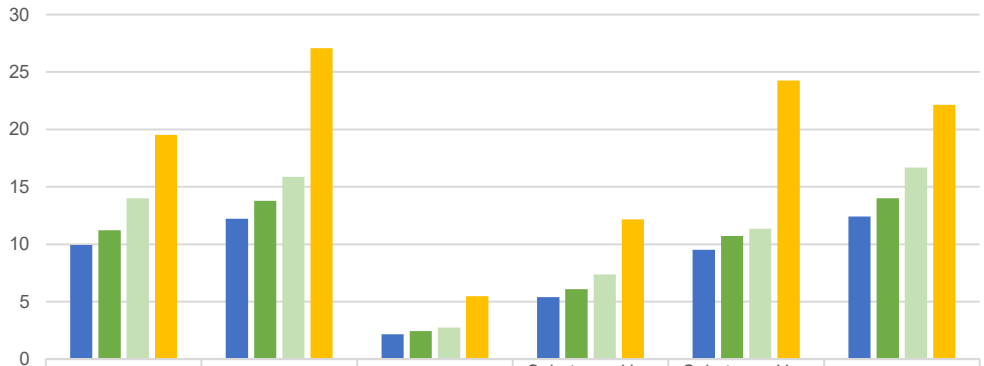
FIGURE 9: AVERAGE ALLOWED PMPM BY SELECT INPATIENT SERVICE CATEGORY (CONTINUED)



	Skilled Nursing Facility	Substance Use Disorders - Residential	Substance Use Disorders - Hospital	Psychiatric - Residential	Psychiatric - Hospital	Rehabilitation
Medical utilizers	$0.80	$0.78	$0.69	$0.20	$1.67	$1.70
Menopause, HRT	$0.83	$0.93	$0.63	$0.39	$2.97	$1.96
Menopause, other therapy	$2.25	$3.31	$2.57	$0.72	$5.20	$5.18
Menopause, no therapy	$0.27	$0.44	$0.34	$0.08	$1.15	$0.66

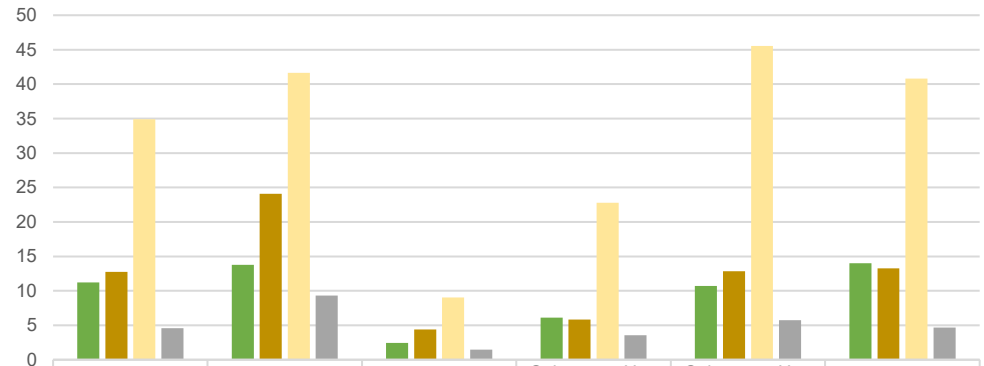
Increases in days per 1,000 follow a similar pattern as the allowed PMPM increases for these select inpatient service categories, as shown in Figure 10 and Figure 11.

FIGURE 10: AVERAGE DAYS PER 1,000 BY SELECT INPATIENT SERVICE CATEGORY



	Rehabilitation	Psychiatric - Hospital	Psychiatric - Residential	Substance Use Disorders - Hospital	Substance Use Disorders - Residential	Skilled Nursing Facility
Female commercial	9.94	12.23	2.16	5.40	9.51	12.42
Medical utilizers	11.20	13.79	2.44	6.09	10.72	14.01
PCP utilizers	14.00	15.87	2.75	7.37	11.34	16.67
Experiencing menopause	19.52	27.08	5.47	12.16	24.27	22.13

FIGURE 11: AVERAGE DAYS PER 1,000 BY SELECT INPATIENT SERVICE CATEGORY (CONTINUED)

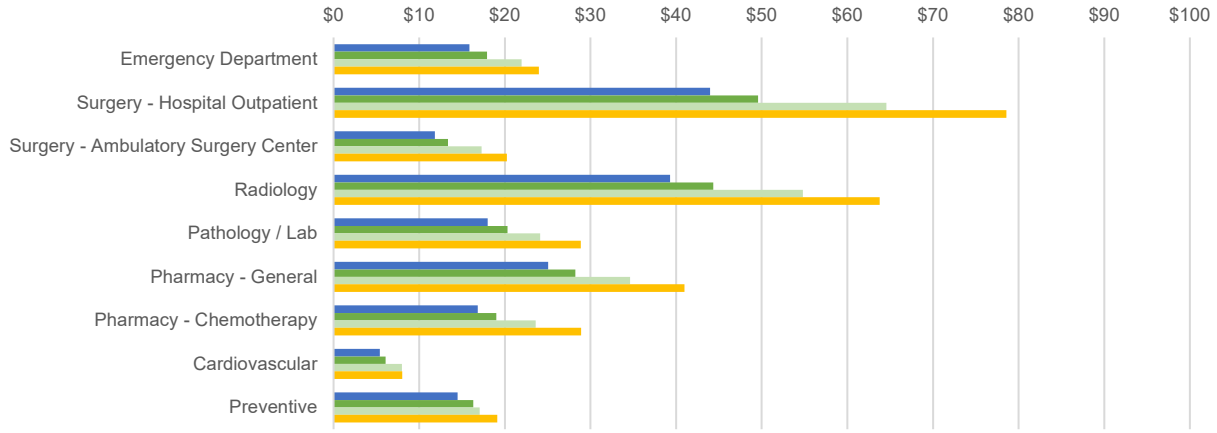


	Rehabilitation	Psychiatric - Hospital	Psychiatric - Residential	Substance Use Disorders - Hospital	Substance Use Disorders - Residential	Skilled Nursing Facility
Medical utilizers	11.20	13.79	2.44	6.09	10.72	14.01
Menopause, HRT	12.74	24.09	4.38	5.85	12.86	13.27
Menopause, other therapy	34.92	41.66	9.05	22.79	45.56	40.81
Menopause, no therapy	4.57	9.31	1.46	3.56	5.75	4.68

OUTPATIENT COST AND UTILIZATION

Compared to the 47% differential in overall outpatient allowed PMPM, the allowed differential in nonbehavioral health outpatient service categories ranges from 17% to 58% between medical utilizers and those experiencing menopause. The largest outpatient allowed PMPM differential is found in the hospital outpatient surgery category ($29 increase) followed by the radiology category ($19 increase). The allowed differentials from other nonbehavioral health outpatient service categories are between $2 to $13, shown in Figure 12.

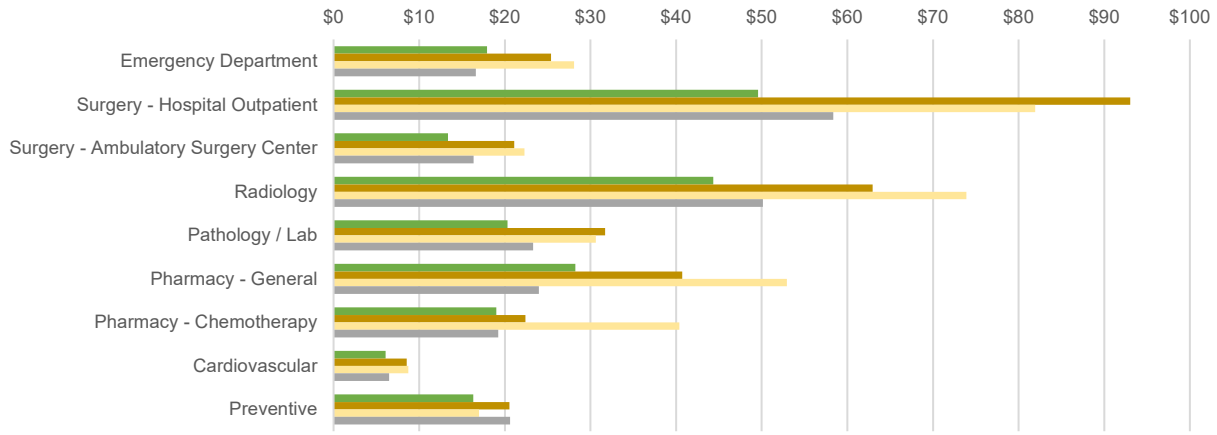
FIGURE 12: AVERAGE ALLOWED PMPM BY SELECT OUTPATIENT SERVICE CATEGORY



	Preventive	Cardiovascular	Pharmacy - Chemotherapy	Pharmacy - General	Pathology / Lab	Radiology	Surgery - Ambulatory Surgery Center	Surgery - Hospital Outpatient	Emergency Department
Female commercial	$14.47	$5.39	$16.84	$25.05	$18.00	$39.30	$11.84	$43.96	$15.89
Medical utilizers	$16.32	$6.08	$19.00	$28.25	$20.30	$44.32	$13.35	$49.58	$17.92
PCP utilizers	$17.08	$7.98	$23.61	$34.63	$24.13	$54.79	$17.30	$64.55	$21.96
Experiencing menopause	$19.10	$8.03	$28.89	$40.96	$28.86	$63.79	$20.24	$78.56	$23.98

Menopause, HRT has higher costs in hospital outpatient surgery, pathology/lab, and preventive service categories than menopause, other therapy, but lower costs in other outpatient service categories. The comparisons can be found in Figure 13.

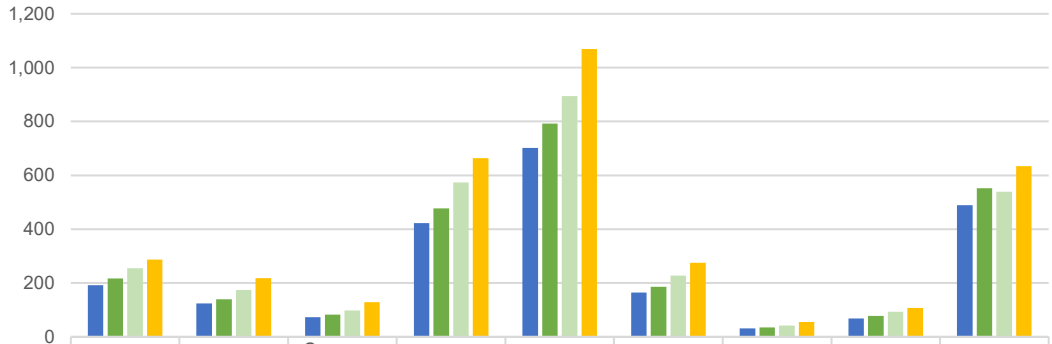
FIGURE 13: AVERAGE ALLOWED PMPM BY SELECT OUTPATIENT SERVICE CATEGORY (CONTINUED)



	Preventive	Cardiovascular	Pharmacy - Chemotherapy	Pharmacy - General	Pathology / Lab	Radiology	Surgery - Ambulatory Surgery Center	Surgery - Hospital Outpatient	Emergency Department
Medical utilizers	$16.32	$6.08	$19.00	$28.25	$20.30	$44.32	$13.35	$49.58	$17.92
Menopause, HRT	$20.54	$8.53	$22.42	$40.71	$31.73	$62.95	$21.10	$93.02	$25.38
Menopause, other therapy	$16.99	$8.73	$40.38	$52.95	$30.61	$73.91	$22.31	$81.95	$28.07
Menopause, no therapy	$20.61	$6.48	$19.24	$23.99	$23.30	$50.13	$16.35	$58.36	$16.61

For these select outpatient service categories, their differentials in average visits per 1,000 resemble the same pattern as the allowed PMPM differentials among female commercial, medical utilizers, PCP utilizers, and those experiencing menopause, as shown in Figure 14.

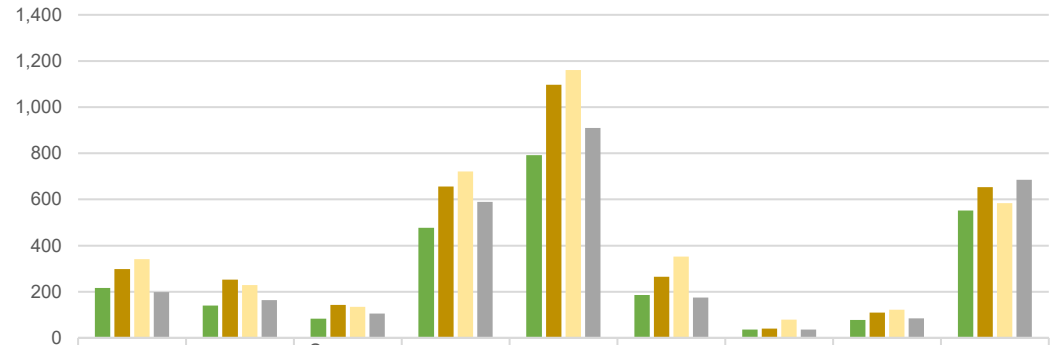
FIGURE 14: AVERAGE VISITS PER 1,000 BY SELECT OUTPATIENT SERVICE CATEGORY



	Emergency Department	Surgery - Hospital Outpatient	Surgery - Ambulatory Surgery Center	Radiology	Pathology / Lab	Pharmacy - General	Pharmacy - Chemotherapy	Cardiovascular	Preventive
Female commercial	192.12	124.09	73.24	422.99	702.19	164.86	31.53	68.45	489.10
Medical utilizers	216.67	139.94	82.60	477.04	791.90	185.93	35.56	77.19	551.60
PCP utilizers	254.43	174.36	97.88	573.58	895.00	226.99	42.54	93.39	538.79
Experiencing menopause	287.16	217.51	128.60	663.82	1,069.70	274.61	54.93	107.47	633.77

Using average visits per 1,000, menopause, HRT has higher utilization in outpatient hospital surgery, ambulatory surgery center surgery, and most prominently in the preventive service category than menopause, other therapy. Menopause, no therapy has the highest utilization of preventive services among all seven populations.

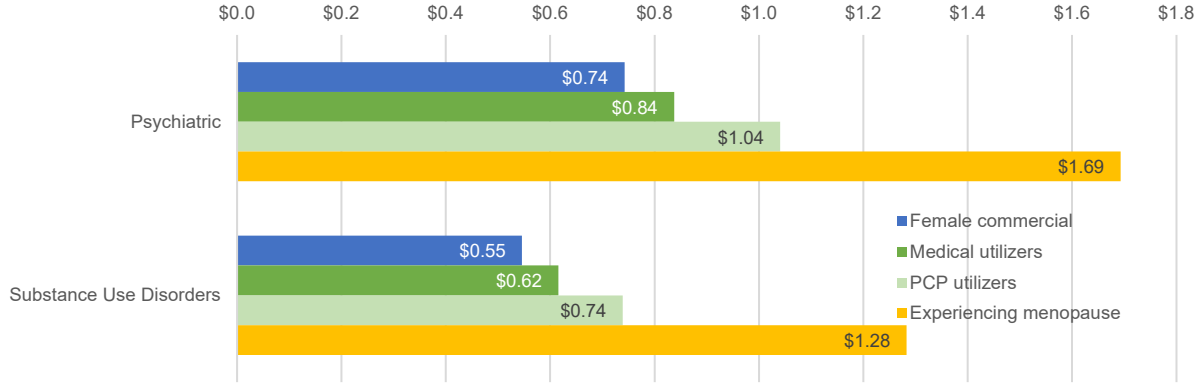
FIGURE 15: AVERAGE VISITS PER 1,000 BY SELECT OUTPATIENT SERVICE CATEGORY (CONTINUED)



	Emergency Department	Surgery - Hospital Outpatient	Surgery - Ambulatory Surgery Center	Radiology	Pathology / Lab	Pharmacy - General	Pharmacy - Chemotherapy	Cardiovascular	Preventive
Medical utilizers	216.67	139.94	82.60	477.04	791.90	185.93	35.56	77.19	551.60
Menopause, HRT	298.17	252.57	142.47	656.17	1,097.37	264.77	39.60	109.38	652.44
Menopause, other therapy	340.77	229.02	134.35	721.13	1,160.86	351.61	79.61	122.10	584.28
Menopause, no therapy	198.40	163.79	105.62	589.53	909.27	174.33	35.69	84.40	685.12

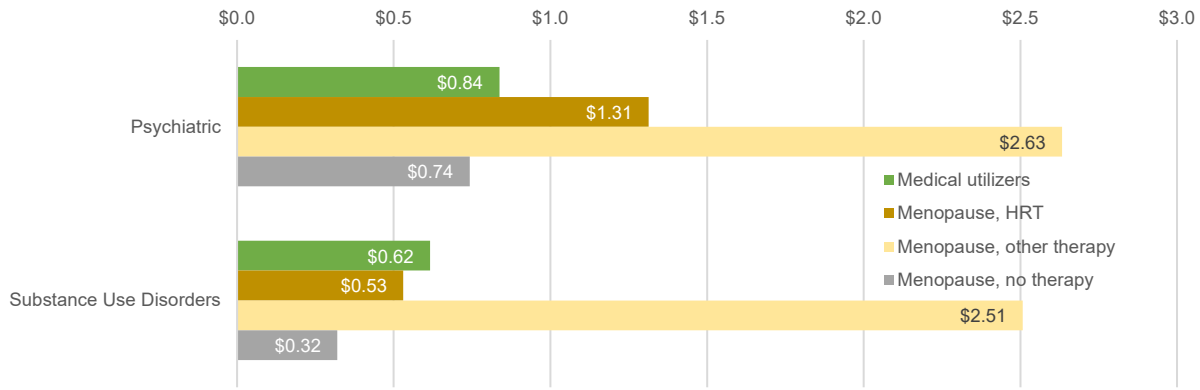
Even though psychiatric and substance use disorders service categories have small absolute differentials of $0.86 and $0.67 respectively in allowed PMPM between medical utilizers and those experiencing menopause, they represent the largest percentage difference, of 102% and 108% respectively, within the outpatient major service category. These comparisons are shown in Figure 16.

FIGURE 16: AVERAGE ALLOWED PMPM BY SELECT OUTPATIENT SERVICE CATEGORY



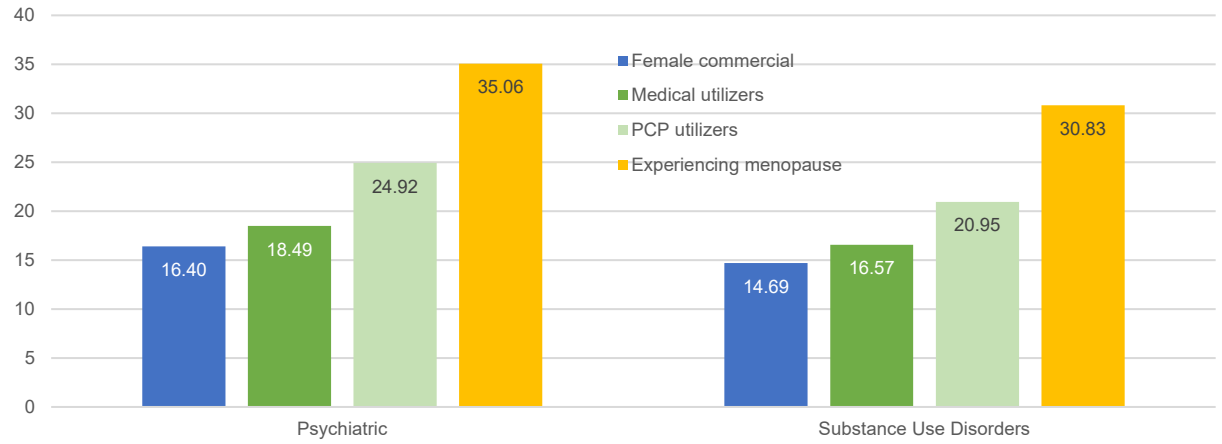
These large percentage differences from those experiencing menopause are mostly driven by menopause, other therapy. Menopause, HRT has a positive differential of $0.48 (57%) in psychiatric but a negative differential of $0.09 (14%) in substance use disorders when compared to medical utilizers.

FIGURE 17: AVERAGE ALLOWED PMPM BY SELECT OUTPATIENT SERVICE CATEGORY (CONTINUED)



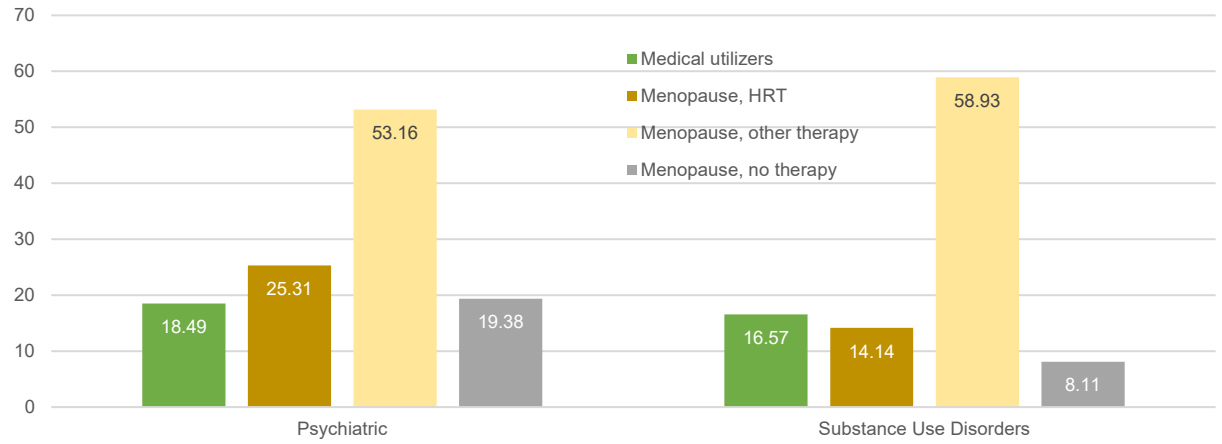
Among these two outpatient service categories, the percentage difference in average visits per 1,000 for psychiatric is 82%, which is slightly higher than substance use disorders, with an 80% difference between medical utilizers and those experiencing menopause.

FIGURE 18: AVERAGE VISITS PER 1,000 BY SELECT OUTPATIENT SERVICE CATEGORY



When it comes to utilization only, the population of menopause, HRT has a positive differential of 6.81 per 1,000 (37%) in psychiatric but a negative differential of 2.43 per 1,000 (15%) in substance use disorders when compared to medical utilizers.

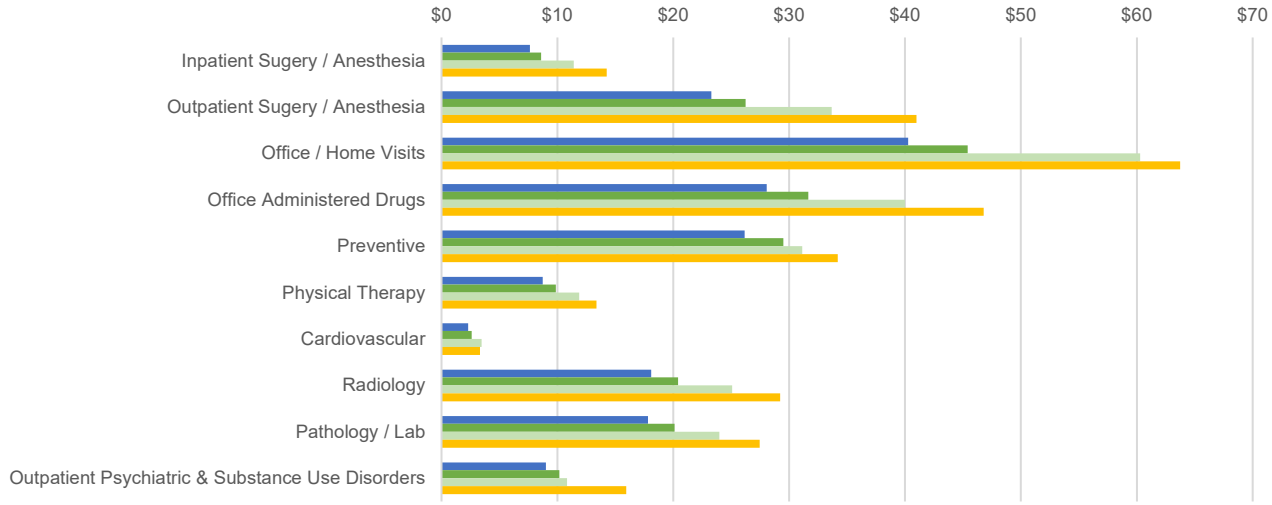
FIGURE 19: AVERAGE VISITS PER 1,000 BY SELECT OUTPATIENT SERVICE CATEGORY (CONTINUED)



PROFESSIONAL COST AND UTILIZATION

While the overall professional allowed PMPM diverges 41% between medical utilizers and those experiencing menopause, inpatient surgery/anesthesia has the highest differential of 66%, followed by outpatient surgery/anesthesia. However, office/home visits have the largest professional allowed PMPM differential of $18. The preventive category has both the lowest percentage difference (16%) and the smallest allowed PMPM difference ($5). These comparisons are shown in Figure 20.

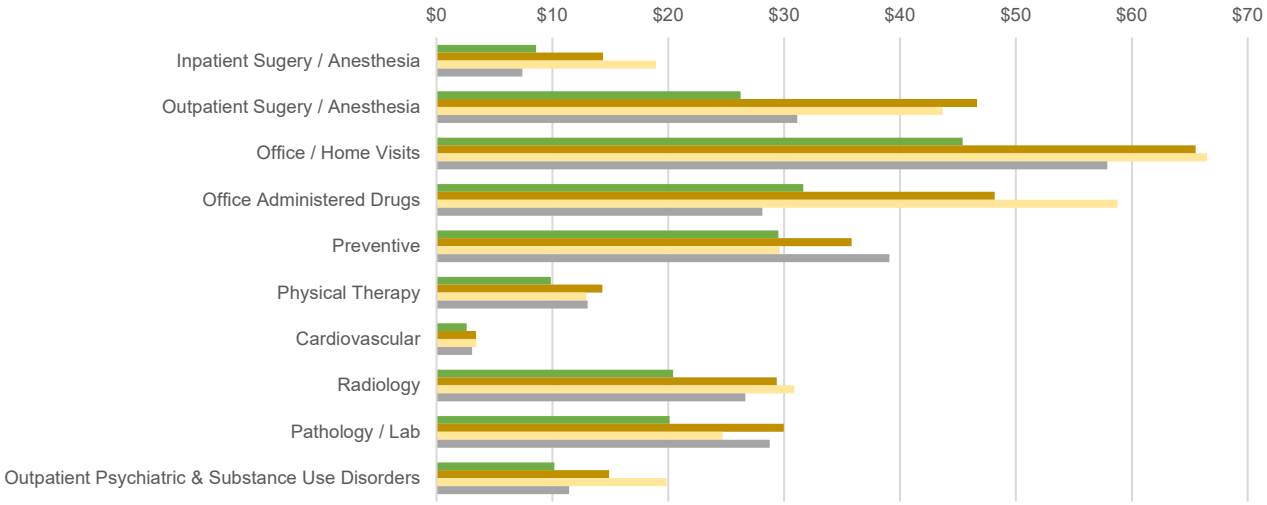
FIGURE 20: AVERAGE ALLOWED PMPM BY SELECT PROFESSIONAL SERVICE CATEGORY



	Outpatient Psychiatric & Substance Use Disorders	Pathology / Lab	Radiology	Cardiovascular	Physical Therapy	Preventive	Office Administered Drugs	Office / Home Visits	Outpatient Sugery / Anesthesia	Inpatient Sugery / Anesthesia
Female commercial	$9.02	$17.82	$18.10	$2.30	$8.74	$26.16	$28.07	$40.27	$23.28	$7.62
Medical utilizers	$10.17	$20.10	$20.41	$2.59	$9.86	$29.51	$31.66	$45.41	$26.25	$8.60
PCP utilizers	$10.83	$23.99	$25.07	$3.45	$11.89	$31.12	$39.99	$60.29	$33.66	$11.41
Experiencing menopause	$15.94	$27.46	$29.21	$3.32	$13.39	$34.21	$46.80	$63.74	$40.98	$14.26

Between medical utilizers and menopause, HRT, outpatient surgery/anesthesia has the highest allowed PMPM differential of 78%, followed by inpatient surgery/anesthesia, shown in Figure 21.

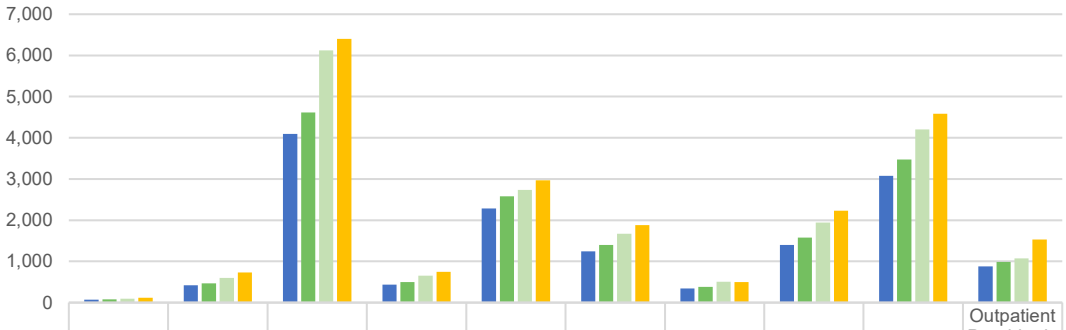
FIGURE 21: AVERAGE ALLOWED PMPM BY SELECT PROFESSIONAL SERVICE CATEGORY (CONTINUED)



	Outpatient Psychiatric & Substance Use Disorders	Pathology / Lab	Radiology	Cardiovascular	Physical Therapy	Preventive	Office Administered Drugs	Office / Home Visits	Outpatient Sugery / Anesthesia	Inpatient Sugery / Anesthesia
Medical utilizers	$10.17	$20.10	$20.41	$2.59	$9.86	$29.51	$31.66	$45.41	$26.25	$8.60
Menopause, HRT	$14.89	$29.97	$29.37	$3.41	$14.32	$35.83	$48.16	$65.52	$46.64	$14.36
Menopause, other therapy	$19.85	$24.71	$30.86	$3.43	$12.94	$29.61	$58.78	$66.50	$43.67	$18.95
Menopause, no therapy	$11.44	$28.74	$26.67	$3.08	$13.03	$39.08	$28.13	$57.89	$31.12	$7.41

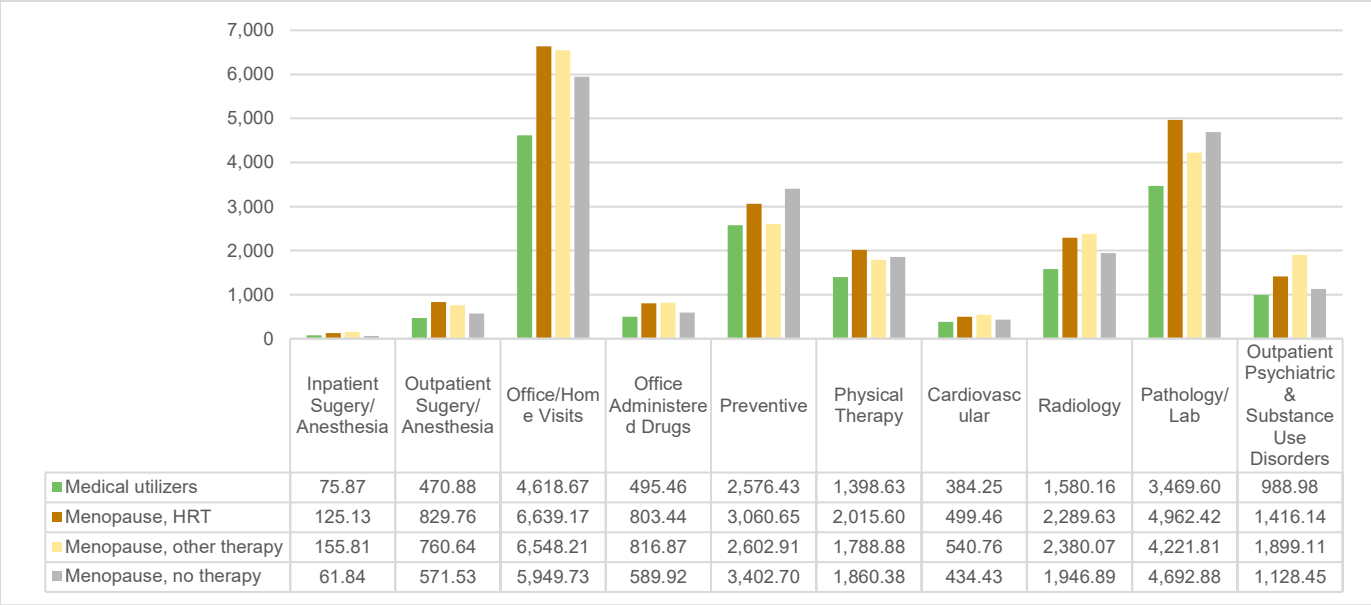
As shown in Figure 22 and Figure 23, the differences in average procedures per 1,000 of select professional service categories follow a similar pattern as the allowed PMPM differences.

FIGURE 22: AVERAGE PROCEDURES PER 1,000 BY SELECT PROFESSIONAL SERVICE CATEGORY



	Inpatient Sugery / Anesthesia	Outpatient Sugery / Anesthesia	Office / Home Visits	Office Administered Drugs	Preventive	Physical Therapy	Cardiovascular	Radiology	Pathology / Lab	Outpatient Psychiatric & Substance Use Disorders
Female commercial	67.27	417.54	4,095.40	439.32	2,284.53	1,240.18	340.72	1,401.14	3,076.52	876.93
Medical utilizers	75.87	470.88	4,618.67	495.46	2,576.43	1,398.63	384.25	1,580.16	3,469.60	988.98
PCP utilizers	96.89	598.67	6,124.47	656.23	2,737.47	1,672.02	506.00	1,939.76	4,204.66	1,072.26
Experiencing menopause	119.65	727.54	6,404.71	747.92	2,970.30	1,878.05	497.85	2,228.83	4,580.99	1,532.41

FIGURE 23: AVERAGE PROCEDURES PER 1,000 BY SELECT PROFESSIONAL SERVICE CATEGORY (CONTINUED)

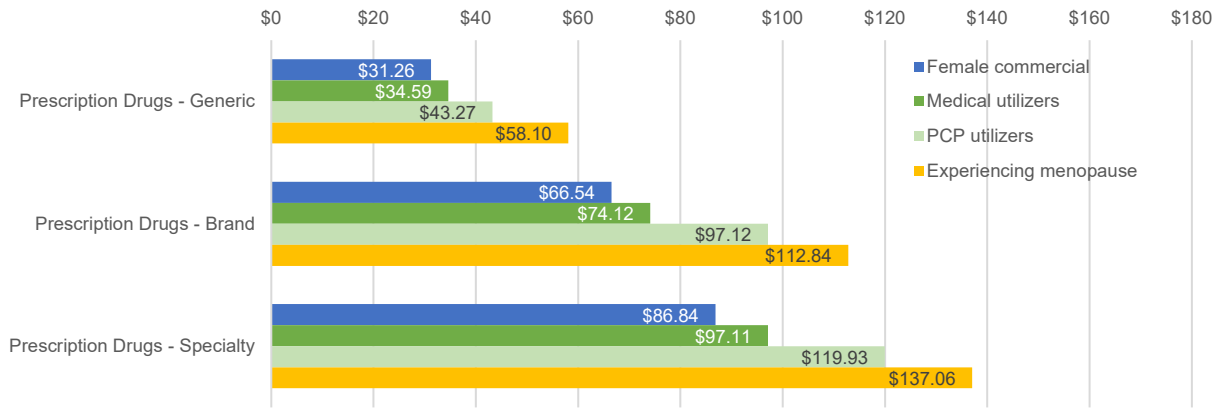


	Inpatient Sugery/ Anesthesia	Outpatient Sugery/ Anesthesia	Office/Home Visits	Office Administered Drugs	Preventive	Physical Therapy	Cardiovascular	Radiology	Pathology/ Lab	Outpatient Psychiatric & Substance Use Disorders
Medical utilizers	75.87	470.88	4,618.67	495.46	2,576.43	1,398.63	384.25	1,580.16	3,469.60	988.98
Menopause, HRT	125.13	829.76	6,639.17	803.44	3,060.65	2,015.60	499.46	2,289.63	4,962.42	1,416.14
Menopause, other therapy	155.81	760.64	6,548.21	816.87	2,602.91	1,788.88	540.76	2,380.07	4,221.81	1,899.11
Menopause, no therapy	61.84	571.53	5,949.73	589.92	3,402.70	1,860.38	434.43	1,946.89	4,692.88	1,128.45

PHARMACY COST AND UTILIZATION

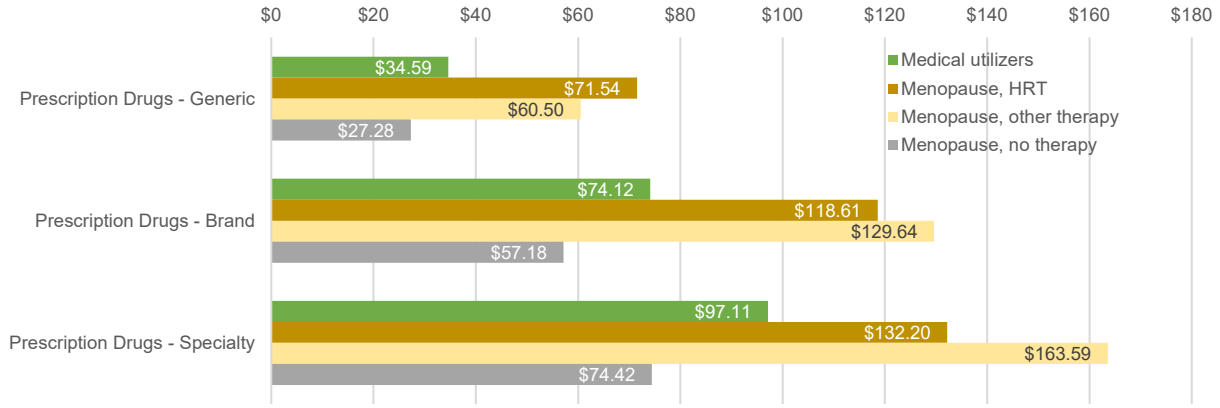
The allowed PMPM increase at the drug category level deviates from the 50% differential in overall pharmacy allowed PMPM between medical utilizers and those experiencing menopause, with higher percentage differences for generic and brand drugs and a lower percentage difference for specialty drugs, as shown in Figure 24.

FIGURE 24: AVERAGE ALLOWED PMPM BY PRESCRIPTION DRUG CATEGORY



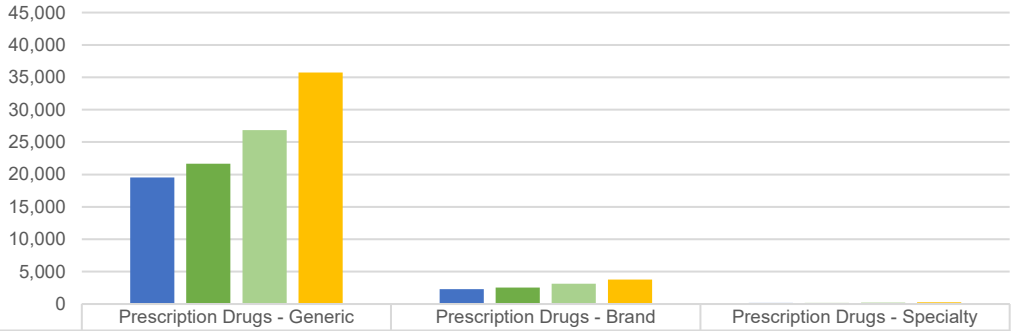
Compared to menopause, HRT, menopause, other therapy has an $11 (9%) differential in brand drugs and a positive differential of $31 (24%) in specialty drugs, but a negative differential of $11 (15%) in generic drugs.

FIGURE 25: AVERAGE ALLOWED PMPM BY PRESCRIPTION DRUG CATEGORY (CONTINUED)



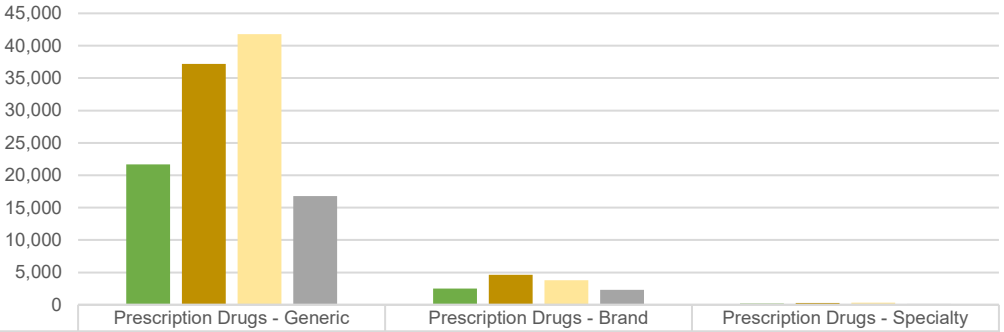
Using average 30-day supply per 1,000, the percentage differences in drug utilization show a consistent pattern with the percentage differences in allowed PMPM, as shown in Figure 26 and Figure 27.

FIGURE 26: AVERAGE 30-DAY SUPPLY PER 1,000 BY PRESCRIPTION DRUG CATEGORY



	Prescription Drugs - Generic	Prescription Drugs - Brand	Prescription Drugs - Specialty
Female commercial	19,552.75	2,272.43	170.98
Medical utilizers	21,659.92	2,524.28	190.99
PCP utilizers	26,828.39	3,155.57	234.43
Experiencing menopause	35,737.57	3,793.19	270.66

FIGURE 27: AVERAGE 30-DAY SUPPLY PER 1,000 BY PRESCRIPTION DRUG CATEGORY (CONTINUED)



	Prescription Drugs - Generic	Prescription Drugs - Brand	Prescription Drugs - Specialty
Medical utilizers	21,659.92	2,524.28	190.99
Menopause, HRT	37,177.67	4,627.19	272.08
Menopause, other therapy	41,801.88	3,782.62	313.64
Menopause, no therapy	16,801.38	2,309.51	152.36

COMPARISON TO 55-59 AGE GROUP

As a comparison to women who have likely transitioned through menopause, cost and utilization were also gathered for women in the 55-59 age group. The comparisons between this age group and the younger group (45-54) are shown in Figure 28, Figure 29, and Figure 30. For medical utilizers, the total medical and pharmacy allowed PMPM for women 55 to 59 is 13% higher than women 45 to 54: $958 compared to $848. The difference between the two age groups for menopause, other therapy follows a similar pattern as medical utilizers, with higher allowed PMPM for women 55 to 59 across inpatient, outpatient, professional, and pharmacy allowed PMPM. However, for menopause, HRT, women 45 to 54 have higher allowed PMPM in most major service categories except for pharmacy.

FIGURE 28: AVERAGE ALLOWED PMPM BY MAJOR SERVICE CATEGORY FOR MEDICAL UTILIZERS

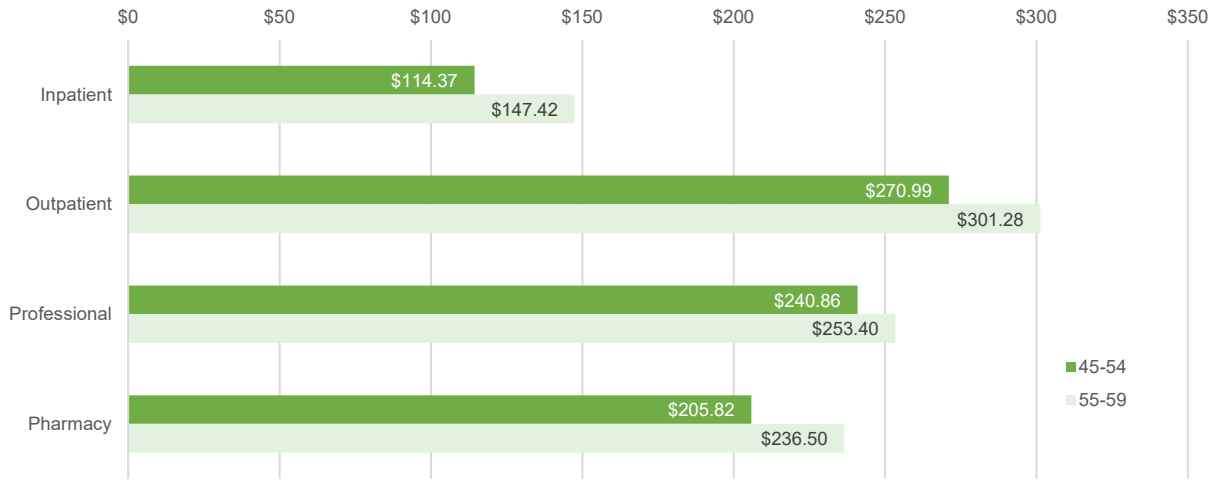


FIGURE 29: AVERAGE ALLOWED PMPM BY MAJOR SERVICE CATEGORY FOR MENOPAUSE, HRT

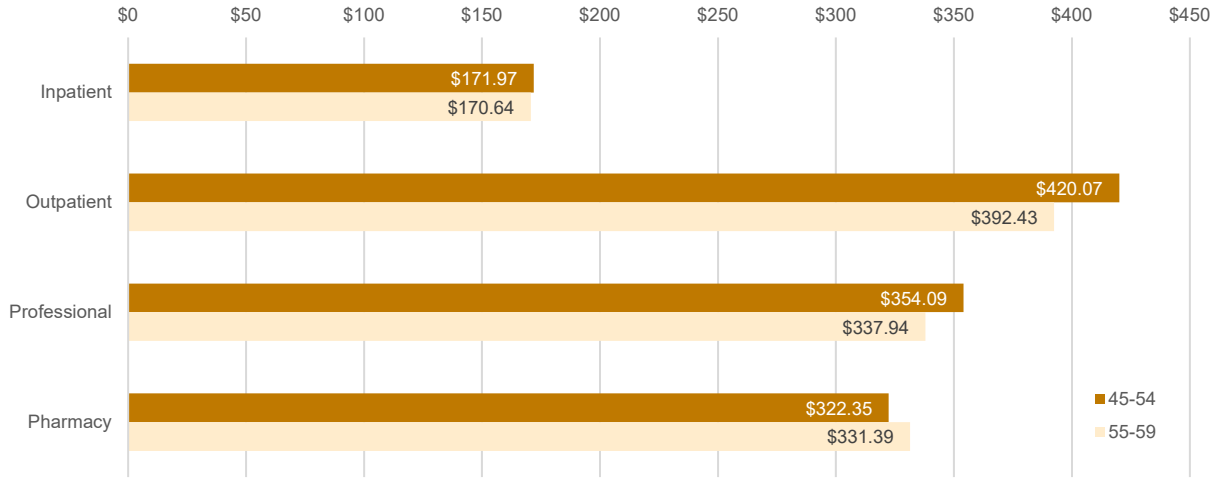
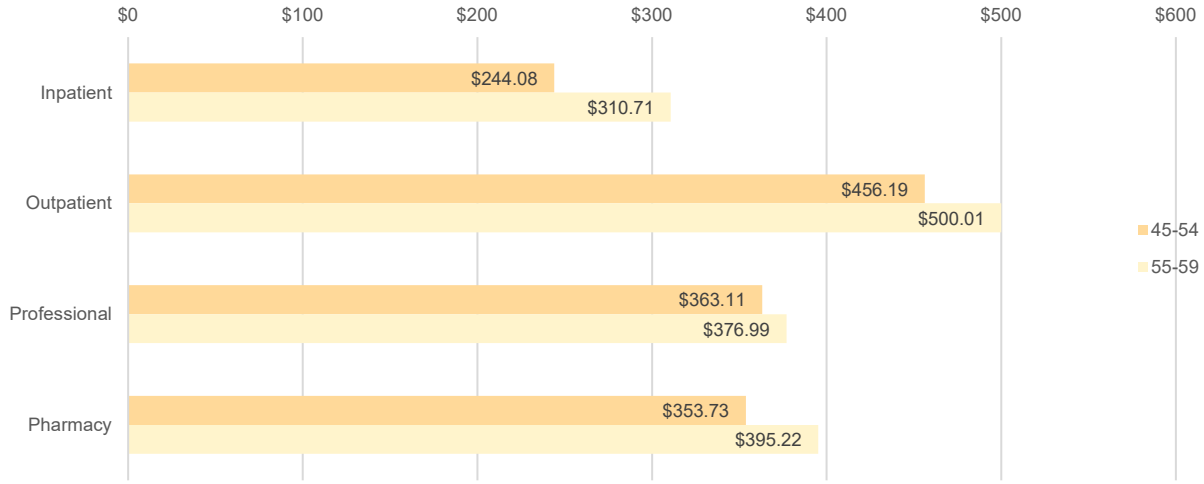


FIGURE 30: AVERAGE ALLOWED PMPM BY MAJOR SERVICE CATEGORY FOR MENOPAUSE, OTHER THERAPY



DISCUSSION

Women experiencing menopause were seen to have higher costs and utilization across most service categories relative to the medical utilizers population; the biggest percentage differences were in behavioral health service categories: psychiatric and substance use disorder services. In each of these categories, women experiencing menopause have approximately double the costs compared to the broader medical utilizer population. There is an analogous observation that menopause transition and early postmenopausal period are associated with a twofold to fourfold increased risk for clinically significant depressive symptoms.[11] It is notable that this same difference is not observed between medical utilizers and menopause, no therapy; the outpatient behavioral health cost and utilization is lower for the menopause, no therapy population. Cost and utilization are lower for menopause, no therapy than medical utilizers in all inpatient and several outpatient and professional service categories. These differences could be explained in part by the costs of menopause treatment.

Between menopause, HRT and menopause, other therapy, the latter has higher cost and utilization across the inpatient service categories, with both populations having greater inpatient cost and utilization than medical utilizers. Outpatient surgery PMPMs have a similarly large percentage difference between women experiencing menopause and medical utilizers, at 58%, with the difference between menopause, HRT and medical utilizers more pronounced at 88%. These differences are the largest on an absolute basis among all outpatient service categories at $29 and $43 PMPM, respectively. We observe that menopause, HRT and menopause, other therapy have higher pharmacy cost and utilization than medical utilizers, as expected.

While these higher cost and utilization metrics when compared to the broader medical utilizers population appear to be correlated with experiencing menopause, we did not study whether they are caused by the costs incurred by treating symptoms of menopause, complications arising from treatments, costs unrelated to menopause, or other factors. Higher costs may be associated with other confounding factors between these populations such as distribution of age, prevalence of comorbidities, lifestyle differences, and access to care.

Women experiencing menopause-related symptoms have several treatment options available to them, including HRT, nonhormonal therapies, lifestyle changes, and supplemental drug therapies. It is essential to discuss the risks and benefits of each treatment option with a healthcare provider to determine the most suitable course of action for each individual.

Due to these material differences in cost and utilization distribution across service categories, women experiencing menopause may benefit from care that is more specialized to their situation, prioritizing certain preventive services or behavioral health needs, which may lead to better management of their conditions. Support for prioritizing care during perimenopause and menopause is also suggested in literature—for example, women with a personal history of major depression are at risk of relapse between perimenopause and in the first two years after menopause, but not beyond, and the menopausal transition is potentially a critical time for women who are susceptible to anxiety disorders.[8] Therefore, adequate behavioral health treatment during this period may reduce the cost and utilization of these services needed post-menopause.

Methodology and assumptions

APPROACH

We limited our study to members enrolled in the US commercial large group line of business. Results are presented by service categories, grouped into hospital inpatient, hospital outpatient, professional, pharmacy, and other (e.g., home healthcare, ambulance, durable medical equipment and supplies, prosthetics). No filters for geography are applied in this report, so the results represent nationwide averages. This report details cost on an allowed basis, that is, including plan payments, patient cost sharing, and third-party payments.

Utilization per 1,000 members and average allowed cost PMPM are calculated for each service category. The underlying membership is limited to females[**] aged 45 to 54, with further filters for the status of menopause diagnosis or related therapies.

Allowed PMPM cost and utilization per 1,000 is calculated for medical and pharmacy costs separately, dependent on whether a member had medical or pharmacy coverage as indicated in enrollment data.

DATA

Data from the 2021 Milliman Consolidated Health Cost Guidelines™ Sources Database (CHSD), which reflects Milliman's assembly of longitudinal claims and enrollment, was used. The number of unique commercial lives represented in the 2021 research data exceeds 70 million members nationally. This data source was used for the commercial large group line of business. The averages presented may underrepresent or overrepresent true market averages for certain geographic areas based on the areas represented by Milliman's data contributors for this line of business.

[**] Identification of female sex for this analysis relies on reported sex or gender fields within enrollment data provided by Milliman's data contributors. There is currently no consistent use of this field to represent either gender or sex assigned at birth, which is a limitation of the data source used in this analysis.

Caveats, limitations, and qualifications

REPORT LIMITATIONS AND CONSIDERATIONS

The results shown are the population average in a distribution of possible results. Cost and utilization can be expected to vary from these averages due to many factors, including provider contracting, geography, differences in population health status, delivery system differences, variations in practice patterns by providers, benefit plan variations, and random fluctuations. The cost and utilization for infrequently performed services are also likely to be volatile. As administrative healthcare claims data incurred in CY 2021 during the COVID-19 public health emergency is used in this report, the cost and utilization may not be comparable to any data incurred before or after the public health emergency.

Our analysis relies in part on the lists of International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) diagnosis codes and drug categories provided by Gennev on November 14, 2022. Any omissions or errors in that list would affect our results. We have relied on administrative claims data for the contributors in our proprietary database. Our results could be affected by their practices, including coding or payment.

This report commissioned by Gennev was prepared by Milliman in accordance with the terms and conditions of the consulting services agreement dated October 28, 2022.

In performing our analysis, we relied on data and other information provided to us by Gennev, contributors to our proprietary database, Milliman research, and other publicly available data sources. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete. It is important that actual experience is monitored and that adjustments are made, as appropriate. Models used in the preparation of our analysis were applied consistently with their intended use. Where we relied on models developed by others, we have made a reasonable effort to understand the intended purpose, general operation, dependencies, and sensitivities of those models.

QUALIFICATIONS

Guidelines issued by the American Academy of Actuaries require actuaries to include their professional qualifications in all actuarial communications. Austin Barrington and Deana Bell are members of the American Academy of Actuaries and meet the qualification standards for performing the analyses in this report.

Appendix: Menopause HRT therapy and other therapy

MENOPAUSE, HRT THERAPY

- Estrogens
- Progestins
- Estrogen combinations

MENOPAUSE, OTHER THERAPY

- Gabapentin
- Serotonin-norepinephrine reuptake inhibitors (SNRIs)
- Selective serotonin reuptake inhibitors (SSRIs)

References

[1] Office on Women's Health in the U.S. Department of Health & Human Services (January 6, 2023). Menopause basics. Retrieved May 24, 2023, from: https://www.womenshealth.gov/menopause/menopause-basics

[2] Mulhall S., et al. (February 2018). Variation in symptoms of depression and anxiety in midlife women by menopausal status. Maturitas. Retrieved May 24, 2023, from: https://www.maturitas.org/article/S0378-5122(17)30889-7/fulltext

[3] U.S. Census Bureau (2021). S0101: Age and Sex. American Community Survey. Retrieved May 24, 2023, from: https://data.census.gov/table?tid=ACSST1Y2021.S0101

[4] Avis, N. E., et al. (April 2015). Duration of Menopausal Vasomotor Symptoms Over the Menopause Transition. JAMA Internal Medicine. Retrieved May 24, 2023, from: https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2110996

[5] Nelson, H. (March 1, 2008). Menopause. The Lancet. Retrieved May 24, 2023, from: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(08)60346-3/fulltext

[6] Woods, N. F., Mitchell, E. S. (December 2005). Symptoms during the perimenopause: prevalence, severity, trajectory, and significance in women's lives. The American Journal of Medicine. Retrieved May 24, 2023, from: https://www.amjmed.com/article/S0002-9343(05)00885-5/fulltext

[7] Freeman, E. W., et al. (May 2011). Duration of menopausal hot flushes and associated risk factors. Obstetrics & Gynecology. Retrieved May 24, 2023, from: https://journals.lww.com/greenjournal/Abstract/2011/05000/Duration_of_Menopausal_Hot_Flushes_and_Associated.11.aspx

[8] Monteleone, P., et al. Symptoms of menopause — global prevalence, physiology, and implications. Nature Reviews Endocrinology. Retrieved May 24, 2023, from: https://www.nature.com/articles/nrendo.2017.180

[9] The North American Menopause Society. Depression & Menopause. Retrieved May 24, 2023, from: https://www.menopause.org/for-women/menopauseflashes/mental-health-at-menopause/depression-menopause

[10] Takahashi T.A., Johnson K.M. (May 2015). Menopause. Medical Clinics of North America. Retrieved May 24, 2023, from: https://www.sciencedirect.com/science/article/abs/pii/S0025712515000218

[11] Maclennan, A.H., et al. (October 18, 2004). Oral oestrogen and combined oestrogen/progestogen therapy versus placebo for hot flushes. Cochrane Database of Systematic Reviews. Retrieved May 24, 2023, from: https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD002978.pub2/full

[12] The 2022 hormone therapy position statement of The North American Menopause Society. (July 2022) Menopause: The Journal of The North American Menopause Society. Retrieved May 24, 2023, from: https://journals.lww.com/menopausejournal/Abstract/2022/07000/The_2022_hormone_therapy_position_statement_of_The.4.aspx

[13] Maas, A.H.E.M., Franke, H.R. (February 2009). Women's health in menopause with a focus on hypertension. Netherlands Heart Journal. Retrieved May 24, 2023, from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2644382/

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