BETTER HEALTH FOR OREGONIANS:
Opportunities to Reduce Low-Value Care

JULY 2020

OREGON HEALTH LEADERSHIP COUNCIL

Oregon Health Authority

APAC ALL PAYER • ALL CLAIMS

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EXECUTIVE SUMMARY

Overview

The topic of appropriate use in health care has gained significant attention during the past decade. This attention is driven first and foremost by a commitment to provide the safest, most effective care to patients. There can be no doubt that health care services should be evidence-based, non-duplicative and truly necessary. Reducing the number of services that do not meet these criteria, services that are deemed "low-value," represents a significant opportunity to improve quality and reduce costs within the American health care system.

This report, **Better Health for Oregonians**, is based on the Milliman MedInsight Health Waste Calculator (Calculator). It builds upon efforts already underway in Oregon and Washington focused on overuse of health services, and offers an opportunity to begin examining where and how we can promote more effective, affordable care for our patients.

This report was developed and written by a team of health care providers and leaders, led by a partnership between Oregon Health Leadership Council (OHLC) and Oregon Health Authority (OHA). Together, OHLC and OHA look to explore low-value services provided in Oregon, identify areas of opportunity, and work with the health care community to implement strategies that will support providers in reducing the delivery of low-value care.

We ask that our colleagues throughout Oregon – providers, insurers, systems, employers and patients – join us in this effort. Collaborative and widespread action is essential as we work to improve the value and safety of care in our communities.

Key findings

Results within this report reflect an examination of 47 measures.[1] Each measure evaluates a common service (treatment, test or procedure that is highly used within the medical community). Analysis was performed over a three-year period (CY 2016, 2017, 2018)[2] for all lines of business (commercial, Medicaid and Medicare). Findings indicate that there is widespread delivery of low-value services across all measured populations.

- Findings across all lines of business (all years) include:
  - There were **9,561,646** services evaluated.
  - **40%** of evaluated services were found to be low value (3,796,638 services).
  - **$529,767,584** was spent on low-value care.
  - An average of **804,328** *distinct* individuals received *at least* one low-value service in each of the three years.
  - The top 15 most utilized services accounted for 97% of all low-value services identified, affecting 2.9 million people, with $293,561,410 spent.[3]
- Line of business comparison (all years):
  - The overall "low-value index" (the percentage of total services that are considered low-value) was highest in the commercially-insured population at 49%, compared to 45% for Medicaid patients and 31% for Medicare patients.
  - Medicare had the highest rate of low-value services per 1,000 members at 595.5, which is approximately 170% higher than the rate for the commercially insured population at 355.1. Medicaid has the lowest rate per 1,000 at 272.7.
  - Medicare had the highest low-value care per member per month (PMPM) at $8.74, which is a little more than twice that of the commercially-insured population at $4.05. Medicaid's low-value PMPM is significantly lower at $1.87.

- The measure with the greatest low-value spend was PICC placements in stage III-V CKD patients without consulting nephrology. The low-value spend was $144,607,305, representing **27% of all low-value spending** evaluated.
- The measure with the greatest low-value utilization was Opioids prescribed for acute low-back pain during the first four weeks. There were 772,094 services found to be low value, representing **20% of all low-value utilization** evaluated.

[1] See Appendix 3 for a full list of measures
[2] 2018 analysis based on preliminary data
[3] See Appendix 2 for key information about the top 15 measures of care

ABOUT THIS REPORT

Purpose

Oregon Health Leadership Council and Oregon Health Authority collaborated to commission this analysis as one strategy to help address the rate of increase in health care costs and premiums, with a goal of making health care and insurance more affordable to people and employers in Oregon. As we look to reduce spending, it is vitally important that we do this in a manner that also improves quality. Identifying and addressing drivers of low-value care will help us improve the effectiveness of care delivered, decrease the risks associated with possible adverse outcomes of inappropriate services, and reduce the amount collectively spent on health care.

Acknowledgements

OHA and OHLC contracted with the Washington Health Alliance (Alliance) to prepare a report on Oregon's frequently used health care services. These services were examined as being potentially low-value, based on evidence and research about their effectiveness. The Alliance used the Milliman MedInsight Health Waste Calculator and data from OHA's All Payer All Claims Database (APAC) for this report.

For more information about the Oregon Health Leadership Council and how it intends to use the results included in this report, please contact: Jill Leake: jill@orhealthleadershipcouncil.org

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We would like to thank the Milliman MedInsight team for its assistance in applying Oregon's data into the Health Waste Calculator. We also would like to acknowledge that much of the language used in this report to describe specific measures in the Health Waste Calculator is sourced from the Milliman MedInsight Health Waste Calculator Clinical Guides (Rev: February 2018).

About OHLC and OHA

- The Oregon Health Leadership Council is a collaborative organization working to develop practical solutions that reduce the rate of increase in health care costs and premiums, so that health care and insurance is more affordable to people and employers in the state. Formed in 2008, the council brings together health plans, hospitals and physicians to identify and act on cost-saving solutions that maximize efficiencies while delivering high-quality patient care.

  Please visit http://www.orhealthleadershipcouncil.org/ to learn more.

- The Oregon Health Authority is at the forefront of lowering and containing costs, improving quality and increasing access to health care in order to improve the lifelong health of Oregonians. OHA is overseen by the nine-member citizen Oregon Health Policy Board working toward comprehensive health reform in our state.

  Please visit https://www.oregon.gov/OHA/ to learn more.

Disclaimer

The Alliance is not affiliated with OHLC and does not represent the state of Oregon, and nor does the Alliance represent Milliman MedInsight.

The Alliance, Milliman, OHLC and OHA make no warranties with regard to the accuracy of the Calculator Intellectual Property or the results generated through the use of the Calculator. The Alliance, Milliman, OHLC and OHA will not be held liable for damages of any kind resulting from the use of results included in this report.

The Washington Health Alliance is a 501c3 in the state of Washington and is a multi-stakeholder health care improvement collaborative. The Alliance also runs a voluntary All Payer Claims Database for Washington state. The Alliance has published three reports using the Health Waste Calculator and was contracted to prepare this report based on its expertise in using the Health Waste Calculator.

INTRODUCTION

What is low-value care?

Throughout this report, the terms *low-value*, *overuse* and *waste* are used interchangeably. They refer to the same thing: medical treatments, tests and procedures that have been shown by the medical community, through evidence and research, to provide little benefit in specific clinical scenarios. Low-value care has the potential to result in poor physical, emotional and financial outcomes for patients, and it contributes to the high cost of health care.

It is important to remember that the cost of low-value care goes beyond the claims costs that are demonstrated in this report. In some cases, additional tests, procedures, treatments, inpatient or post-acute care subsequently result from low-value care – leading to a cascade of unwarranted services and spending. In addition, patients may be responsible for costs related to transportation, childcare or lost work time to receive low-value services. Health care providers and staff are spending time and energy delivering low-value care, when their attention could be focused elsewhere. Thus, reducing low-value care has the potential to reduce patient risk and a variety of health care related costs.

Attention on low-value care

In the U.S., we spend an estimated $3.5 trillion on health care annually. But higher spending does not equate to better health care outcomes. Instead, procedures, protocols, medications and health care models are most effective when provided appropriately, with the need for these services based on scientific evidence. Most experts agree there are significant opportunities to reduce low-value health care costs nationally, which are estimated to account for at least 25% of expenditures.[4] In 2008, the National Priorities Partnership identified eliminating overuse as a national priority, describing it as unscientific, redundant and excessive care.[5]

[4] JAMA. doi: 10.1001/jama 2019.13978, Published online October 7, 2019

[5] National Priorities Partnership. National Priorities and Goals: Aligning Our Efforts to Transform America's Healthcare. Washington, DC: National Quality Forum; 2008

Work in Oregon

In Oregon and across the nation health care costs are growing. We recognize that in addition to low-value care, there are other significant drivers to the continued rise of health care costs – increasing prices, administrative costs, emerging technologies, new medications and more – all of which contribute to an increasing financial burden being placed on patients and employers.

Health care providers and leaders in Oregon have identified the reduction of low-value care as a priority. Across the state, organizations are shifting from fee-for-service payment models to value-based systems that incentivize appropriate utilization. At OHA, the Health Evidence Review Commission (HERC) reviews clinical evidence to develop health care guidelines for providers, consumers and purchasers of health care in Oregon. This guidance assists OHA in ensuring Oregon Health Plan benefits align with evidence-based recommendations. At OHLC, the Best Practice Committee (BPC) convenes physician leaders from health systems and health plans to identify and implement collective strategies for reducing ineffective care.

> "As health care costs continue to unsustainably increase, we have to find ways to reallocate resources to the areas of care we know are effective. This report allows us to clearly identify and share areas of low-value care to collaboratively reduce these unnecessary services."
>
> Amit Shah, M.D.
> Chief Medical Officer, CareOregon

Our hope is that this report will bring attention to areas of low-value care in Oregon – areas that are actionable and that we as a health care community can address together. By doing so, we can help stem the rise of health care costs and improve the safety and effectiveness of the care we deliver.

METHODOLOGY

Milliman Waste Calculator

The Milliman MedInsight Health Waste Calculator™ (Calculator) is a software tool designed to analyze insurance claims data to identify and quantify low-value health care services as defined by initiatives such as the Choosing Wisely® national campaign and the U.S. Preventive Services Task Force.[6] In preparing this report, we included 47 of the Calculator's 48 measures of common tests, treatments and procedures known by the medical community to be overused. (Note: One measure was excluded because it is currently under review for possible revision.)[7]

The Calculator identifies potentially low-value services and takes into account specific clinical circumstances when services may or may not be appropriate. All services are analyzed and then placed into one of three categories that are used to describe the results:

- Necessary (not wasteful): The service was clinically appropriate.
- Likely wasteful: The appropriateness of the services should be questioned.
- Wasteful: The service was very likely unnecessary and should not have occurred.

In this report:

- **Services that were considered "wasteful" or "likely wasteful" by the Calculator are categorized as "low-value"**.
- Results are for the population included in the Oregon Health Authority's All Payer All Claims Database (APAC) for calendar years 2016, 2017 and 2018 (preliminary), including those who are insured through commercial, Medicaid and Medicare insurance.
- APAC includes about 3.8 million insured lives annually, reflecting about 94% of Oregonians. Since it does not include a small subset of people in Oregon, the results in this report do not reflect the experience of *all* individuals living and seeking health care in Oregon.[8]

[6] See Appendix 4 for additional information about the Calculator methodology
[7] See Appendix 3 for a complete list of measures by type
[8] See Appendix 4 for detail regarding what is *not* included in APAC

- Results that reflect spending on health care are based on allowed amounts, i.e., the actual negotiated rates between insurers and provider organizations.
- The spending associated with low-value care in this report is associated only with the particular service in question. Spending does not include tests, procedures, treatments, inpatient or post-acute care that may have subsequently resulted from the initial low-value care.

Data limitations

- **The results in this report should be viewed as directional rather than absolute**. They provide a strong estimate of low-value care rather than definitive answers based on a comprehensive analysis of all care delivered in Oregon.
- There are inherent limitations to using payer claims data to identify "sign and symptoms." For this reason, the Calculator tends to be conservative in its assessment since it is more likely to assign a service to the "Necessary" category if there is uncertainty.
- Extrapolations of these results to other populations or other areas of care (beyond the 47 measures included in this analysis) are not advised.

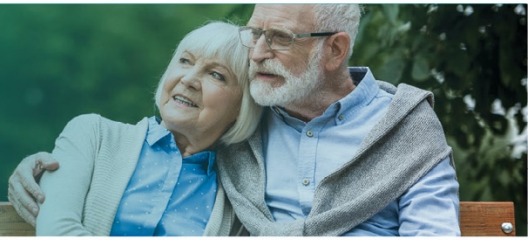
LOW-VALUE CARE RESULTS:

TOTAL POPULATION (ALL LINES OF BUSINESS)

COMMERCIALLY-INSURED POPULATION

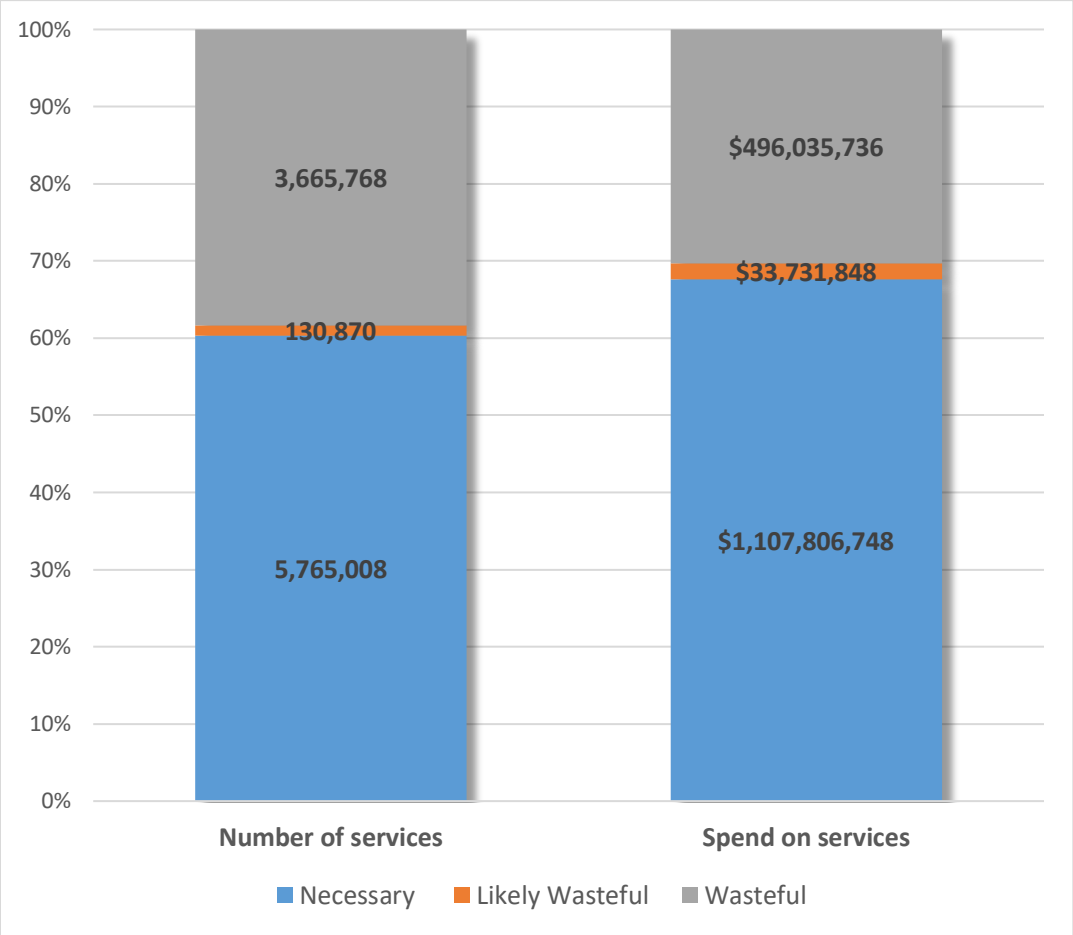
MEDICAID-INSURED POPULATION

MEDICARE-INSURED POPULATION



Better Health for Oregonians: Opportunities to Reduce Low-Value Care. July 2020

TOTAL POPULATION (ALL LINES OF BUSINESS)



Low-value care results

The Health Waste Calculator includes 47 measures. Results were conducted for a three-year period (2016-2018).[9]

There were **9.56 million total services** examined, provided to 12.56 million distinct members[10], with a total spend of **$1.64 billion**.

40% of services (3.80 million) **were found to be low-value**, with the vast majority (97%) of these deemed "wasteful" (versus "likely wasteful").

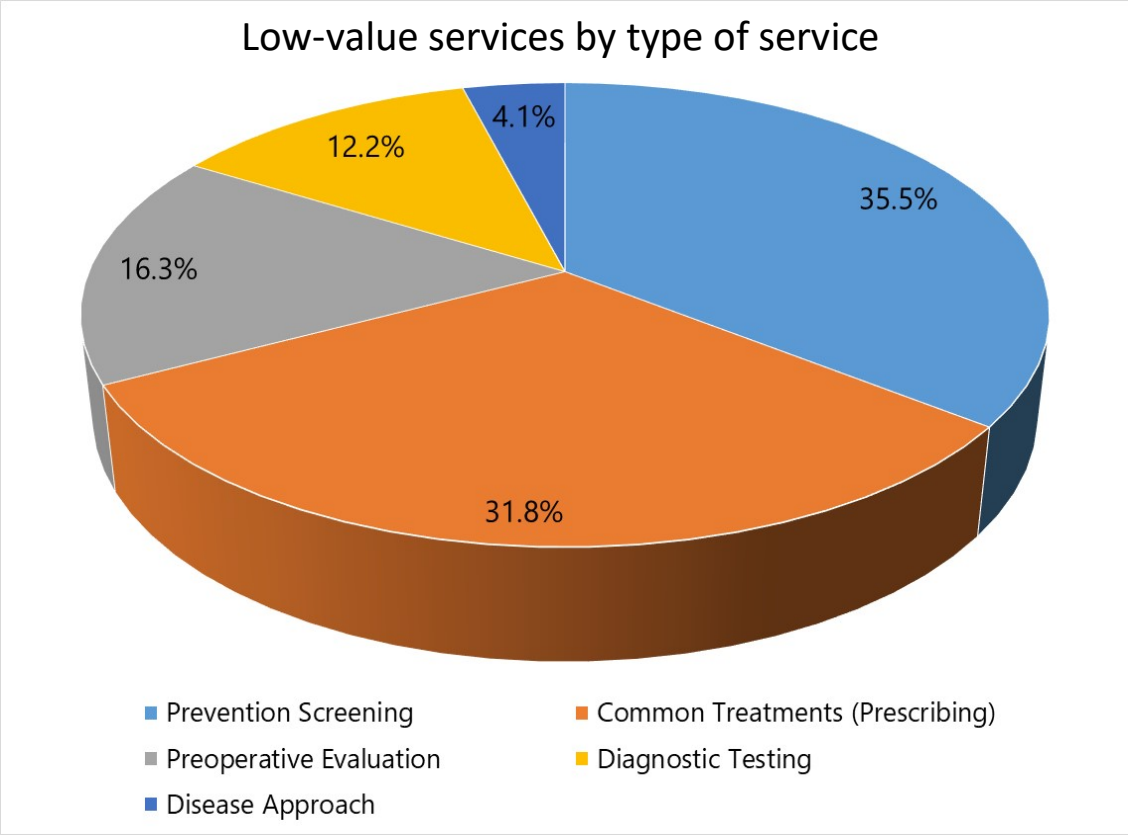
32% of spending ($529,767,584) was spent on low-value care.

The low-value per member per month **(PMPM) spend was $4.52**.

There was an average of **388.6 low-value services per 1000 people.**

[9] See Appendix 1 for data breakdown by year. 2018 analysis based on preliminary data.
[10] *Distinct* members counted annually and then summed for the three-year period

Low-value care results: Total population (over three-year period)



Two-thirds of the 3.80 million low-value services identified were in the **"prevention/screening" and "common treatments"** categories.[11]

This is perhaps because these types of services tend to be relatively less invasive and less costly when compared to other service types. However, they still account for 47% of all low-value spending.

Focusing improvement efforts on screenings and common treatments offers an opportunity to implement actionable, relatively low-barrier interventions that can result in significant progress.

Number of low-value services by category:

Screening	1,348,859
Common treatments	1,207,431
Pre-op evaluation	620,523
Diagnostic testing	464,734
Disease approach	154,894

[11] See Appendix 3 for a list of measures within each service category

Top 15 measures of low-value care: Total population (over three-year period)

Out of 47 measures in the Health Waste Calculator, the following 15 represent 97% of all low-value care found in this analysis for the total population. Results are shown in priority order, based on total number of low-value services. For these 15 measures, there were **3,694,766 low-value services, affecting 2,875,441 people, at a cost of $293,561,410**. These measures represent a very good place to start when selecting targeted interventions to reduce low-value care. The priority order of these (and other measures) differ when looking at results for different lines of business (commercial, Medicaid and Medicare).

Measures	Total # of services examined	Total # of low-value services[12]	Low-value index[13]	# of people affected by low-value care	Low-value spending[14]
1. Opioids prescribed for acute low back pain during the first four weeks	878,280	772,094	88%	357,438	$48,578,908
2. Pre-operative baseline lab studies for low-risk patients (ASA I or II) undergoing low-risk surgery	706,940	576,798	82%	459,992	$19,823,685
3. Annual cardiac screening (EKG or other testing including lab) in low-risk individuals without symptoms	2,661,215	463,617	17%	416,974	$19,516,681
4. Antibiotics prescribed for acute URI and ear infections	415,609	415,351	99.9%	368,817	$5,257,914
5. PSA-based testing for prostate cancer in men regardless of age	454,993	335,914	74%	308,760	$45,429,857
6. Eye imaging tests for patients without symptoms or signs of significant eye disease	1,096,275	317,201	29%	202,896	$23,455,021
7. Population-based screening for vitamin D deficiency	1,096,931	284,350	26%	271,024	$51,103,903

(continued)

[12] Includes "likely wasteful" and "wasteful" services as measured by the Health Waste Calculator
[13] Percentage of total services that are considered low-value
[14] Based on allowed amounts included in the OHA APAC

Measures	Total # of services examined	Total # of low-value services	Low-value index	# of people affected by low-value care	Low-value spending
8. Too frequent cervical cancer screening for women who have had adequate prior screening and are not otherwise at high risk for cervical cancer	628,111	142,332	23%	137,480	$10,823,481
9. NSAIDS prescribed for patients with hypertension, heart failure or chronic kidney disease	192,723	130,865	68%	105,745	$2,186,232
10. Too frequent colorectal cancer screening in adults 50 years and older	268,254	60,592	23%	58,024	$21,423,380
11. Routine general health checks performed for asymptomatic adults, ages 18-64	53,647	53,647	100%	52,818	$12,541,918
12. Imaging for acute low back pain within the first six weeks and no red flags present	134,411	52,329	39%	51,950	$8,892,230
13. Pre-operative EKG, chest X-ray and PFT for low-risk patients (ASA I or II) undergoing low-risk surgery	453,046	42,277	9%	37,643	$3,518,249
14. Imaging for uncomplicated headache	41,528	28,233	68%	27,281	$16,771,818
15. Immunoglobulin G/Immunoglobulin E testing in the evaluation of allergy	28,600	19,346	68%	18,599	$4,238,133

RESULTS BY LINE OF BUSINESS

Low-value care results: Line of business comparison (over three-year period)

There were distinct differences when comparing low-value care results among the commercial, Medicaid and Medicare populations over the three-year period.

	Commercial	Medicaid	Medicare
Total distinct members included in the analysis[15]	5,966,718	3,866,707	2,702,312
Total number of services examined (47 measures)	2,953,771	1,948,082	4,659,793
Total number of services deemed "low-value"[16]	1,459,744	872,581	1,464,313
Number of low-value services per 1,000 people[17]	355.1	272.7	595.5
Low-value index[18]	49%	45%	31%
Percent of distinct members with *at least* one low-value service	17%	15%	31%
Total spend on low-value care (47 measures)[19]	$199,930,291	$71,908,129	$257,929,163
PMPM spending on low-value care[20]	$4.05	$1.87	$8.74

[15] *Distinct* members counted annually and then summed for the three-year period
[16] Includes "likely wasteful" and "wasteful" services as measured by the Health Waste Calculator
[17] Based on covered lives included in the OHA APAC
[18] Percentage of total services that are considered low-value
[19] Based on allowed amounts included in the OHA APAC
[20] Total spend on low-value care divided by total member months

Low-value care results: Line of business comparison (over three-year period)

The priority order of measures, based on total number of low-value services, varied slightly among the commercial, Medicaid and Medicare populations.

Measures (Top 15 ranked based on lines of business combined)	Commercial	Medicaid	Medicare
1. Opioids prescribed for acute low back pain during the first four weeks	3	1	1
2. Pre-operative baseline lab studies for low-risk patients (ASA I or II) undergoing low-risk surgery	4	4	2
3. Annual cardiac screening (EKG or other testing including lab) in low-risk individuals without symptoms	1	3	5
4. Antibiotics prescribed for acute URI and ear infections	2	2	6
5. PSA-based testing for prostate cancer in men regardless of age	6	7	4
6. Eye imaging tests for patients without symptoms or signs of significant eye disease	8	9	3
7. Population-based screening for vitamin D deficiency	5	5	8
8. Too frequent cervical cancer screening for women	7	8	10
9. NSAIDS prescribed for patients with hypertension, heart failure or chronic kidney disease	11	6	7
10. Too frequent colorectal cancer screening in adults 50 years of age and older	13	NR	9
11. Routine general health checks performed for asymptomatic adults, ages 18-64	9	13	NR
12. Imaging for acute low back pain within the first six weeks and no red flags present	10	10	12
13. Pre-operative EKG, chest X-ray and PFT for low-risk patients (ASA I or II) undergoing low-risk surgery	12	15	11
14. Imaging for uncomplicated headache	14	12	13
15. Immunoglobulin G/Immunoglobulin E testing in the evaluation of allergy	15	NR	15
Other			
Cough and cold medicines prescribed for children under age 4	NR	11	NR
Computed tomography (CT) head imaging in children 1 month to 17 years of age	NR	14	NR
Stress cardiac imaging in the initial evaluation of patients without cardiac symptoms or high-risk markers	NR	NR	14

NR = Not ranked among the Top 15 for this line of business

Low-value care results: Commercially insured (breakdown by year)

Of the **2,953,771 services** examined for the three-year period for the commercially insured in the Oregon All Payer Claims Database, **1,459,744 were low-value** services, delivered at a **cost of $199,930,291**. The overall **low-value index was 49%** —meaning that nearly half of the services examined were found to be low-value.

	2016	2017	2018[21]	Total
Total distinct members included in the analysis	1,945,342	1,960,109	2,061,267	5,966,718
Total number of services examined (47 measures)	999,356	995,003	959,412	2,953,771
Total number of services deemed "necessary"	490,659	503,611	499,757	1,494,027
Total number of services deemed "low-value"	508,697	491,392	459,655	1,459,744
Low-value index	51%	49%	48%	49%
Number of low-value services per 1,000 members	372.9	356.3	336.1	355.1
Number of distinct members with *at least* one low-value service	340,898	334,501	318,112	993,511
Spending on low-value care (47 measures)	$69,611,457	$66,919,763	$63,399,071	$199,930,291
PMPM spending on low-value care	$4.25	$4.04	$3.86	$4.05

[21] Based on preliminary data

Top 15 measures of low-value care: Commercially insured (over three-year period)

Out of 47 measures in the Health Waste Calculator, the following 15 measures represent 98% of all low-value care found in this analysis for the commercially insured. Results are shown in priority order, based on the number of low-value services. For these 15 measures, there were **1,434,876 low-value services, affecting 1,207,519 people, at a cost of $149,851,867.** These measures represent a good place to start when selecting targeted interventions to reduce low-value care for the commercially-insured.

Measures	Total # of services examined	Total # of low-value services	Low-value index	# of people affected by low-value care	Low-value spending
1. Annual cardiac screening (EKG or other testing including lab) in low-risk individuals without symptoms	777,954	275,673	35%	248,379	$14,179,797
2. Antibiotics prescribed for acute URI and ear infections	209,296	209,210	99.9%	185,166	$2,624,934
3. Opioids prescribed for acute low back pain during the first four weeks	214,461	197,834	92%	101,249	$12,504,965
4. Pre-operative baseline lab studies for low-risk patients (ASA I or II) undergoing low-risk surgery	217,740	186,641	86%	149,366	$11,386,474
5. Population-based screening for Vitamin D deficiency	377,242	148,499	39%	140,278	$36,076,655
6. PSA-based testing for prostate cancer in men regardless of age	138,892	125,053	90%	116,984	$22,789,606
7. Too frequent cervical cancer screening for women who have had adequate prior screening and are not otherwise at high risk for cervical cancer	403,947	87,003	22%	83,492	$7,729,962
8. Eye imaging tests for patients without symptoms or signs of significant eye disease	182,395	65,858	36%	50,646	$7,733,812
9. Routine general health checks performed for asymptomatic adults, ages 18-64	44,300	44,300	100%	43,571	$11,556,519
10. Imaging for acute low back pain within the first six weeks and no red flags present	39,126	24,502	63%	24,176	$5,335,790

(continued)

Measures	Total # of services examined	Total # of low-value services	Low-value index	# of people affected by low value	Low-value spending
11. NSAIDS prescribed for patients with hypertension, heart failure or chronic kidney disease	30,610	23,339	76%	20,313	$447,239
12. Pre-operative EKG, chest X-ray and PFT for low-risk patients (ASA I or II) undergoing low-risk surgery	79,558	15,239	19%	13,218	$2,020,452
13. Too frequent colorectal cancer screening in adults other than 50 years of age	94,767	12,271	13%	11,996	$3,751,996
14. Imaging for uncomplicated headache	13,421	10,089	75%	9,652	$9,011,280
15. Immunoglobulin G/Immunoglobulin E testing in the evaluation of allergy	13,702	9,365	68%	9,033	$2,702,386

Low-value care results: Medicaid insured (breakdown by year)

Of the **1,948,082 services examined** for the three-year period for the Medicaid-insured in the Oregon All Payer Claims Database, **872,581 were low-value services**, delivered at a **cost of $71,908,129**. The overall **low-value index was 45%** —meaning that nearly half of the services examined were found to be low-value.

	2016	2017	2018[22]	Total
Total distinct members included in the analysis	1,354,311	1,289,187	1,223,209	3,866,707
Total number of services examined (47 measures)	669,040	646,529	632,513	1,948,082
Total number of services deemed "necessary"	355,277	357,379	362,845	1,075,501
Total number of services deemed "low-value"	313,763	289,150	269,668	872,581
Low-value index	47%	45%	43%	45%
Number of low-value services per 1,000 members	278.9	275.4	263.1	272.7
Number of distinct members with *at least* one low-value service	202,176	191,990	183,838	578,004
Spending on low-value care (47 measures)	$23,433,354	$23,882,339	$24,592,436	$71,908,129
PMPM spending on low-value care	$1.74	$1.90	$2.00	$1.87

[22] Based on preliminary data

Top 15 measures of low-value care: Medicaid insured (over three-year period)

Out of 47 measures in the Health Waste Calculator, the following 15 measures represent 98% of all low-value care found in this analysis for the Medicaid-insured. Results are shown in priority order, based on the number of low-value services. For these 15 measures, there were a total of **842,138 low-value services, affecting 665,347 people, at a cost of $33,611,756.** These measures represent a good place to start when selecting targeted interventions to reduce low-value care for the Medicaid-insured.

Measures	Total # of services examined	Total # of low-value services	Low-value index	# of people affected by low-value care	Low-value spending
1. Opioids prescribed for acute low back pain during the first four weeks	219,702	207,490	94%	102,137	$6,637,335
2. Antibiotics prescribed for acute URI and ear infections	141,092	140,997	99.9%	125,681	$1,752,820
3. Annual cardiac screening (EKG or other testing including lab) in low-risk individuals without symptoms	528,381	109,437	21%	99,173	$2,216,834
4. Pre-operative baseline lab studies for low-risk patients (ASA I or II) undergoing low-risk surgery	116,901	97,547	83%	80,928	$715,445
5. Population-based screening for Vitamin D deficiency	252,701	82,728	33%	79,740	$7,639,365
6. NSAIDS prescribed for patients with hypertension, heart failure or chronic kidney disease	71,858	44,020	61%	34,179	$377,101
7. PSA-based testing for prostate cancer in men regardless of age	36,903	32,703	89%	30,546	$2,351,169
8. Too frequent cervical cancer screening for women who have had adequate prior screening and are not otherwise at high risk for cervical cancer	171,058	29,957	18%	29,218	$1,352,109
9. Eye imaging tests for patients without symptoms or signs of significant eye disease	92,853	29,610	32%	22,105	$1,284,153

(continued)

Measures	Total # of services examined	Total # of low-value services	Low-value index	# of people affected by low-value care	Low-value spending
10. Imaging for acute low back pain within the first six weeks and no red flags present	32,241	18,163	56%	18,127	$1,849,301
11. Cough and cold medicines prescribed for children under age 4	14,601	14,601	100%	9,929	$88,667
12. Imaging for uncomplicated headache	15,255	10,556	69%	10,265	$3,824,124
13. Routine general health checks performed for asymptomatic adults, ages 18-64	8,523	8,523	100%	8,442	$861,981
14. Computed tomography (CT) head imaging in children 1 month to 17 years of age	8,770	8,424	96%	8,151	$2,344,373
15. Pre-operative EKGs, chest X-rays and pulmonary function testing for low-risk patients (ASA I or II) undergoing low-risk surgery	67,849	7,382	11%	6,726	$316,979

Low-value care results: Medicare insured (breakdown by year)

Of the **4,659,793 services examined** for the three-year period for the Medicare-insured population in the Oregon All Payer Claims Database, **1,464,313 were low-value services**, delivered at a **cost of $257,929,163**. The overall **low-value index was 31%** - meaning that about one-third of the services examined were found to be low value.

	2016	2017	2018[23]	Total
Total distinct members included in the analysis	875,113	899,685	927,514	2,702,312
Total number of services examined (47 measures)	1,516,817	1,551,853	1,591,123	4,659,793
Total number of services deemed "necessary"	1,027,983	1,060,952	1,106,545	3,195,480
Total number of services deemed "low-value"	488,834	490,901	484,578	1,464,313
Low-value index	32%	32%	30%	31%
Number of low-value services per 1,000 members	612.8	599.9	574.8	595.5
Number of distinct patients with *at least* one low-value service	280,524	280,429	280,516	841,469
Spending on low-value care (47 measures)	$83,186,599	$88,877,652	$85,864,912	$257,929,163
PMPM spending on low-value care	$8.69	$9.05	$8.49	$8.74

[23] Based on preliminary data

Top 15 measures of low-value care: Medicare insured (over three-year period)

Out of 47 measures in the Health Waste Calculator, the following 15 areas represent 98% of all low-value care found in this analysis for the Medicare-insured. Results are shown in priority order, based on the number of low-value services. For these 15 measures, there were **1,438,221 low-value services, affecting 1,017,923 people, at a cost of $116,423,213**. These measures represent a good place to start when selecting targeted interventions to reduce low-value care for the Medicare-insured population.*

Measures	Total # of services examined	Total # of low-value services	Low-value index	# of people affected by low-value care	Low-value spending
1. Opioids prescribed for acute low back pain during the first four weeks	444,117	366,770	83%	154,052	$29,436,608
2. Pre-operative baseline lab studies for low-risk patients (ASA I or II) undergoing low-risk surgery	372,299	292,610	79%	229,698	$7,721,766
3. Eye imaging tests for patients without symptoms or signs of significant eye disease	821,027	221,733	27%	130,145	$14,437,056
4. PSA-based testing for prostate cancer in men regardless of age	279,198	178,158	64%	161,230	$20,289,082
5. Annual cardiac screening (EKG or other testing including lab) in low-risk individuals without symptoms	1,355,240	78,507	6%	69,422	$3,120,049
6. Antibiotics prescribed for acute URI and ear infections	65,221	65,144	99.9%	57,970	$880,160
7. NSAIDS prescribed for patients with hypertension, heart failure or chronic kidney disease	90,255	63,326	70%	51,253	$1,361,892
8. Population-based screening for Vitamin D deficiency	466,988	53,123	11%	51,006	$7,387,883
9. Too frequent colorectal cancer screening in adults 50 years and older	130,959	44,307	34%	42,180	$16,429,300
10. Too frequent cervical cancer screening for women who have had adequate prior screening and are not otherwise at high risk for cervical cancer	53,106	25,372	48%	24,770	$1,741,410

(continued)

Measures	Total # of services examined	Total # of low-value services	Low-value index	# of people affected by low-value care	Low-value spending
11. Pre-operative EKGs, chest X-rays and pulmonary function testing for low-risk patients (ASA I or II) undergoing low-risk surgery	305,639	19,656	6%	17,699	$1,180,818
12. Imaging for acute low back pain within the first six weeks and no red flags present	63,044	9,664	15%	9,647	$1,707,139
13. Imaging for uncomplicated headache	12,852	7,588	59%	7,364	$3,936,414
14. Stress cardiac imaging or advanced non-invasive imaging in the initial evaluation of patients without cardiac symptoms or high-risk markers present	83,452	7,074	8%	6,556	$5,678,120
15. Immunoglobulin G/Immunoglobulin E testing in the evaluation of allergy	5,989	5,189	87%	4,931	$1,115,517

***Additional area of concern for the Medicare-insured population**

In the Medicare-insured population, there is a 16th item to add to the list of priorities of low-value care: *Peripherally-inserted central catheters (PICC) in stage III-V chronic kidney disease (CKD) patients without consulting nephrology.*

In this analysis, we examined 5,607 services and found **91% (5,078) to be low value**. There were 4,671 Medicare-insured individuals affected by low-value care, at a cost of **$100,682,083**. A summary of the evidence includes the following:[24]

"Peripherally-inserted central catheters (PICCs) have become an essential component of the management of an increasing number of patients, including patients who may require hemodialysis. According to the National Kidney Foundation and the AV Fistula First Breakthrough Initiative National Coalition, PICC lines are not recommended in patients with known mid-stage III CKD, stage IV and V CKD, or end-stage renal disease as they have the potential to injure the veins, causing phlebitis, sclerosis, stenosis or thrombosis and thereby rendering venous access difficult for future hemodialysis. It is also recommended that all patients with known stage III-V CKD should undergo an expert vascular access assessment prior to placement of any vascular access device. Early nephrology consultation will likely increase arteriovenous fistula use at hemodialysis initiation and may avoid unnecessary PICC lines or central/peripheral vein puncture."

[24] Source: MedInsight Health Waste Calculator Clinical Guides (Rev February 2018), PICC in Stage III-V CKD Patients (SNP01)

WHAT'S NEXT

Improving the quality and value of our health care system for all Oregonians is a team effort. The issues are complex, there are many voices at the table, and systematic change will take time and sustained leadership. Research indicates that it can take more than a decade for evidence-based recommendations to become implemented into clinical practice. The reasons for this long evidence-practice gap are multifactorial, as are the interventions needed to shorten it. Although there are varying ideas about how this important work should be done, one thing is clear – every person and organization involved in this work wants to provide high quality, cost-effective care that results in positive health outcomes.

Transparency about where and how certain health care services are low-value is a key first step in making transformational changes to Oregon's health care system and is the major focus of this report. OHLC and OHA encourage Oregon health care leaders across the continuum – including state health policy leaders, professional organizations, health plans, health care organizations, as well as individual providers – to use the information in this report as a catalyst for positive change.

Health plans, hospitals and clinics can use the data in this report as a foundation for further analytics. Focused reporting by provider or provider group will allow clinicians to better understand their own utilization patterns, as well as help organizations identify providers who may need additional support or targeted education. This report also can be used to create patient, staff and provider educational materials and campaigns, develop quality improvement initiatives, or be incorporated into provider performance incentives or value-based contract design.

> "As a primary care provider, it's important to have data such as in the current report to assist me in providing high-value, effective care to my patients. Having the data all in one place is really helpful in my practice. Continuing to share this data in the context of real-life ideas and tools on how to implement changes will be important in reducing the low-value care in the state and improving care for the citizens."
>
> Melinda Muller, M.D.
> VP Population Health, Legacy Health

Health plans can use the findings in this report to help inform benefit design and utilization management strategies, as well as update medical policies to better reflect evidence-based recommendations.

OHLC's Best Practice Committee will use this report to identify future focus areas of work – areas where statewide guidance, recommendations, or continued data collection can help support providers in reducing the delivery of low-value services.

Reducing statewide total cost of care is a top priority for OHA, who will use this report to inform the work of the Health Evidence Review Commission (HERC), PEBB/OEBB, and collaborate with Coordinated Care Organizations (CCOs) to ensure citizens using the Oregon Health Plan receive appropriate, cost-effective care. This report will also help inform efforts across the state in meeting the new health care cost growth target.

We encourage all members of the health care community to investigate utilization trends within their own organizations and to implement policies and procedures that will serve to promote evidence-based, high-value health care to all Oregonians.

Appendix 1: Additional data analysis

Results for all lines of business (over three-year period)

Low-value care results for Oregon: 2016-2018	All lines of business
Total distinct members	12,535,737
Total number of services examined (47 measures)	9,561,646
Total number of low-value services	3,796,638
Low-value services per 1,000 people	388.6
Low-value index	40%
Total number of distinct members having *at least* one low-value service	2,412,984
Total amount spent on low-value care (47 measures)	$529,767,584
Low-value per member per month (PMPM)	$4.52

Results for all lines of business (breakdown by year)

Low-value care results: All lines of business	2016	2017	2018[25]	Total
Total distinct members included in the analysis	4,174,766	4,148,981	4,211,990	12,535,737
Total number of services examined (47 measures)	3,185,213	3,193,385	3,183,048	9,561,646
Total number of services deemed "necessary"	1,873,919	1,921,942	1,969,147	5,765,008
Total number of services deemed "low value"	1,311,294	1,271,443	1,213,901	3,796,638
Low-value index	41%	40%	38%	40%
Number of low-value services per 1,000 members	398.9	391.5	375.1	388.6
Total number of services deemed "likely wasteful"	47,713	43,325	39,832	130,870
Total number of services deemed "wasteful"	1,263,581	1,228,118	1,174,069	3,665,768
Number of distinct patients with *at least* one low-value service	823,598	806,920	782,466	2,412,984
Spending on low-value care	$176,231,411	$179,679,754	$173,856,419	$529,767,584
PMPM spending on low-value care	$4.47	$4.61	$4.48	$4.52

[25] Based on preliminary data

Appendix 2: Key information about top 15 measures of low-value care

Measure name	Measure detail	Measure type
Opioids prescribed for acute low back pain in the first four weeks	This measure examines opiate prescriptions used in conjunction with a diagnosis of low back pain for people 18 years and older. In this measure, acute back pain is defined as back pain lasting less than four weeks. In this measure: • Opioid prescriptions for patients with low back pain who receive a prescribed opiate and who have a diagnosis of cancer or sickle cell anemia are considered n*ecessary*. • Prescriptions for patients with low back pain who receive a prescribed opiate and who have a prior prescription of anti-inflammatory drugs, tramadol or duloxetine are considered *not necessary*. Low back pain is one of the most common reasons for physician visits in the U.S. Most patients with acute back pain have self-limited episodes that resolve on their own. As per the American College of Physicians, non-pharmacologic treatment such as superficial heat, massage, acupuncture, etc., should be the first choice of treatment. When pharmacologic treatment is considered, nonsteroidal anti-inflammatory drugs are recommended. Early use of opiates for low back pain is associated with longer disability, increased surgical rates and a greater risk of opioid use later.	Common treatments (prescribing)

Measure name	Measure detail	Measure type

Pre-op baseline lab studies in patients without significant systemic disease undergoing low-risk surgery	This measure examines baseline laboratory studies for people two years of age or older without significant disease (ASA I or II) performed 30 days or fewer prior to undergoing an elective low-risk procedure.
	For this measure:
	• This measure considers urinalysis for urologic procedures or urinary symptoms or disorders as *necessary*.
	• A number of conditions are excluded, including:
	  • The low-risk procedure falls on or one day after an evaluation and management (E&M) visit for emergency care, observation or urgent care
	  • Diagnosis of endocrine, liver or renal disorders
	  • Diagnosis of coagulation disorders up to two years prior or on anticoagulants in the last three months
	  • Electrolyte testing occurs and there is a prescription of medication such as digoxin, diuretics, and angiotensin converting enzyme inhibitors or angiotensin receptor blockers
	  • CBC testing in those with a history of anemia or history suggestive of recent blood loss in the last six months
	All patients need preoperative evaluation, but a low-risk patient having a low-risk procedure does not need pre-op testing. Performing routine lab tests in patients who are otherwise healthy is of little value in detecting disease and does not make an important contribution to perioperative assessment and management. Unnecessary lab tests may result in delays in care and add to the cost of the procedure.
		Pre-operative evaluation

Measure name	Measure detail	Measure type
Annual cardiac screening (EKG or other testing including lab) in low-risk individuals without symptoms	This measure examines the use of annual cardiac screening (EKG or other testing including labs) for patients ages 18 and older who are at low risk and without symptoms. In this measure: • Screening for members with high-risk markers, risk factors suggestive of intermediate coronary heart disease (CHD) risk and two or more cardiovascular signs and symptoms have been identified as *necessary*. • The following have been excluded from this measure: ▪ Any EKG or other cardiac screening for inflammatory conditions such as arthritis, joint pains, myositis, etc. ▪ Any EKG or other cardiac screening as part of preoperative cardiovascular testing ▪ Any EKG or other cardiac screening during or within 30 days following an inpatient stay ▪ Any EKG or other cardiac screening with low-risk surgery within 30 days on or after the EKG or cardiac screening (EKGs prior to low-risk surgery are accounted for in a different Health Waste Calculator measure) Routine annual cardiac screening (EKG and other testing) is unlikely to provide additional information about coronary heart disease (CHD) beyond that obtained with conventional CHD risk factors (i.e., Framingham risk factors). False positive tests are likely to lead to patient harm through labeling, misdiagnosis, over treatment and unnecessary invasive procedures.	Prevention/ screening tests

Measure name	Measure detail	Measure type
Antibiotics prescribed for acute URI and ear infections	This measure examines antibiotic prescriptions for patients three months and older within seven days after the diagnosis of upper respiratory or ear infection, including viral respiratory illness (URI, sinusitis, pharyngitis, bronchitis) or acute otitis externa. In this measure: • Prescriptions for patients with persistent symptoms of complicated acute rhinosinusitis within 10 days prior to the diagnosis of URI are considered *necessary*. • Members with (a) malignant otitis externa or (b) acute otitis externa and underlying middle ear disease prior to the antibiotic prescription are considered n*ecessary*. • Antibiotic prescriptions for sinusitis, acute URI, viral respiratory illness, otitis media, tympanostomy tube placement, or acute otitis externa in the presence of co-morbid (e.g., immunocompromised, cancers, etc.) or competing conditions (e.g., cellulitis, tonsillitis, pneumonia, etc.) are excluded from the measure. The majority of upper respiratory and ear infections are viral, and the use of antibiotic treatment is ineffective and inappropriate. Unnecessary use of antibiotics for viral illnesses can lead to antibiotic resistance.	Common treatments (prescribing)

Measure name	Measure detail	Measure type
PSA-based testing for prostate cancer in all men regardless of age	This measure examines prostate specific antigen (PSA)-based screening for prostate cancer in men of any age that occurs within 30 days of an E&M claim. In this measure: • PSA-screening in men with prostate cancer or risk of recurrence of prostate cancer is considered *necessary* (5-year look-back period included). • PSA testing in men who have clinical presentations and risk factors for prostate cancer are considered *likely low value,* as some of the risk factors (such as two or more first-degree relatives with prostate cancer before age 65, black ancestry, etc.) cannot be determined through claims data. Presence of symptoms alone also does not warrant a PSA test since there is no convincing evidence that this is beneficial. In our examination (across all medical groups), less than 1% of services fell into the "likely low value" category and 85% of services fell into the "low value" category for this measure. The U.S. Preventive Services Task Force (USPTF) recommends against PSA-based screening for prostate cancer in men ages 70 and older, noting that the potential benefits do not outweigh the expected harms. For men ages 55-69, the USPTF indicates that the decision to undergo periodic PSA-based screening for prostate cancer should be an individual one and should include discussion of the potential benefits and harms of screening. Patients should be made aware that the PSA test is known for false-positive results that may require additional testing and possible prostate biopsy, over-diagnosis and overtreatment, and treatment complications such as incontinence and erectile dysfunction. Evidence from randomized clinical trials shows that approximately 1,000 symptom-free men need to be screened for prostate cancer in order to save one additional life. The risks associated with widespread and routine screening of asymptomatic men are believed to outweigh the benefits when many of these elevated PSAs are caused by enlarged prostates and infection, instead of cancer.	Prevention/ screening tests

Measure name	Measure detail	Measure type
Eye imaging tests for patients without symptoms or signs of significant eye disease	This measure examines the use of specific eye imaging tests (posterior and anterior optical coherence tomography, fundus photography, visual field testing, external or internal eye photographs) for all individuals without significant eye disease. In this measure: • Significant eye disease such as neoplasms of eye, choroidal detachment, optic atrophy, glaucoma, diabetes, macular degeneration etc., where imaging is considered medically necessary and appropriate, along with an ophthalmologist or optometrist visit within 30 days on or prior to the eye imaging, have been identified as *necessary*. • Patients with eye imaging who had a diagnosis that was not indicated for that imaging, or had an eye imaging and an appropriate diagnosis but did not have an ophthalmologist or optometrist visit within 30 days on or prior to the eye imaging, are considered low value. • Neuroimaging is not considered in this measure. Preferred practice guidelines recommend a comprehensive eye exam at different intervals on the basis of risk factors for eye disease (age, ethnicity, known diabetes). If patients don't have symptoms or signs of significant eye disease pathology, then clinical imaging tests are not generally needed because a comprehensive history and physical exam will reveal if eye disease is present or is getting worse.	Diagnostic testing
Population-based screening for vitamin D deficiency	This measure examines the use of 25-OH-vitamn D and 1, 25-dihydroxyvitamin D testing for vitamin D deficiency screening in the absence of risk factors. For this measure a number of conditions would constitute screening for vitamin D deficiency as *necessary*. For example: • Vitamin D (25-OH) screening in conjunction with chronic conditions (e.g., rickets, osteoporosis, chronic kidney disease, liver failure, malabsorption syndromes), risk factors for vitamin D deficiency (e.g., sarcoidosis, TB), high-risk medications, pregnancy, obesity, and history of falls and traumatic fractures in older adults, is considered *necessary*. • Measurement of 1,25 $(OH)_2$ vitamin D is considered *necessary* with acquired and inherited disorders of vitamin D and phosphate metabolism. There is no evidence demonstrating benefits of screening for vitamin D deficiency at a population level. Vitamin D measurement is reasonable in people at high risk for vitamin D deficiency.	Prevention/ screening tests

Measure name	Measure detail	Measure type
Too frequent cervical cancer screening for women who have had adequate prior screening and are not otherwise at high risk for cervical cancer	This measure examines cervical cancer screening (Pap smear and HPV test) in women ages 21 years and older who have had adequate prior screening and are not otherwise at high risk for cervical cancer. All women with HIV are excluded from this measure. For this measure: • Cervical cytology screening once in three years for women aged 21-64 with no prior hysterectomy is considered *necessary*. • Cervical cytology and HPV screening once in five years for women aged 30-64 with no prior hysterectomy is considered *necessary*. • More frequent cervical cancer screening for women aged 21 and older who are at high risk of cervical cancer (high-grade precancerous lesion or cervical cancer or women who are immunocompromised) or with abnormal Pap smear is considered *necessary*. According to national, evidence-based guidelines, annual screening should not be done. Women ages 21-29 should be tested with cervical cytology alone (Pap smear) every three years. For women ages 30-65, co-testing with cytology and HPV testing should be done every five years, or cytology alone every three years. In women who have had a total hysterectomy, routine cytology and HPV testing should be discontinued. It's important to screen all women at appropriate, evidence-based intervals.	Prevention/ screening tests
NSAIDs prescribed for patients with hypertension, heart failure or chronic kidney disease	This measure examines prescriptions* for nonsteroidal anti-inflammatory drugs (NSAIDs) for patients 18 years and older with hypertension, heart failure and/or chronic kidney disease (CKD) of all causes, including diabetes. For this measure: • Low-dose aspirin and topical NSAIDs are considered *necessary*. In the US, over-the-counter and prescribed NSAIDs are widely used to provide analgesic and anti-inflammatory benefits. Examples of commonly known NSAIDs include ibuprofen (Motrin, Advil), Celebrex and aspirin. However, these are associated with adverse effects for some people, such as: elevating blood pressure, making antihypertensive drugs less effective, causing fluid retention, and worsening kidney function in patients with hypertension, heart failure or CKD. NSAIDs also can interact with other prescribed medications, reducing their effectiveness and increasing the risk of renal impairment. **Note: NSAIDs are commonly purchased over the counter (without a prescription) and are outside traditional data capture through claims. These are not included in this measure.*	Disease approach

Measure name	Measure detail	Measure type
Too frequent colorectal cancer screening in adults	This measure identifies unnecessary (too frequent) screening for colorectal cancer in patients ages 50-75 years as wasteful. The recommended intervals for colorectal cancer screening for patients over the age of 50 are: • Fecal occult blood test every year • Immunochemical-based fecal occult blood test (FIT) every year • FIT-DNA every one or three years • Flexible sigmoidoscopy every five years • CT colonography every five years • Screening colonoscopy every 10 years The following has been excluded: colonoscopy at more regular intervals for patients with curative resection for colon or rectal cancer, diagnosis of colorectal cancer, family or personal history of colorectal cancer or colon adenoma, ulcerative colitis, Crohn disease or Lynch syndrome. *NOTE: This particular measure is challenging to implement because it requires a long look-back period. This should be taken into account when viewing the results.*	Prevention/ screening tests
Routine general health checks performed for asymptomatic adults ages 18-64	This measure identifies routine general health checks performed for asymptomatic adults (ages 18-64) as *low value*. Specifically, this measure looks at visits that include an evaluation and management claim with general health check in the primary diagnosis field and *no other diagnosis codes* included. Visit intervals should be based on specific concerns, chronic conditions, or prevention strategies based on the best available evidence, tailored to age and risk. It is recognized that a general health check may help to foster a trusting relationship between provider and patient; however, it is not always necessary to have a general health check every year. In contrast to visits for acute illness, specific evidence-based prevention strategies, or chronic care management, annual general health checks have not been shown to reduce morbidity, hospitalizations or mortality, and may increase the frequency of non-evidence-based testing which can lead to over-diagnosis and overtreatment.	Prevention/ screening tests

Measure name	Measure detail	Measure type
Imaging for acute low back pain within the first six weeks and no red flags present	This measure examines the use of imaging for acute low back pain within 42 days of initial diagnosis. All instances of imaging in patients 18 years and older with a diagnosis of acute low back pain *without specific indications* is considered "low value." For this measure, a number of conditions would deem the imaging as "necessary:" • MRI in patients with cancer, infection or immunosuppression, with neurological deficits or other serious underlying conditions. • X-ray or CT scan without contrast for osteoporosis and trauma. For this measure, the following are considered "likely low value:" • X-ray or CT scan in patients with cancer, infection or immunosuppression. • CT in patients with neurological deficits. The following are excluded from this measure: • Patients with a prior diagnosis of low back pain within 180 days • Patients with inpatient admission • Patients with a history of lumbar spine surgery Initial evaluation and management of acute low back pain includes a focused history and physical examination, reassurance, pain management (non-opioid) if necessary, and consideration of physical therapies without routine imaging. Routine imaging does not improve clinical outcomes and exposes patients to unnecessary harms and expenses.	Diagnostic testing

Measure name	Measure detail	Measure type
Pre-operative EKG, chest X-ray and PFT for low-risk patients (ASA I or II) undergoing low-risk surgery	This measure examines the use of EKGs, chest X-rays and pulmonary function testing (PFT) for people two years of age or older without significant disease (ASA I or II) performed 30 days or fewer prior to undergoing low-risk surgery in the absence of indications. For this measure if there are specific indications present, the testing is considered "Necessary:" • Cardiovascular risk factors and/or new signs or symptoms of cardiovascular disease; • Signs or symptoms suggesting new or unstable pulmonary disease All services are excluded from the analysis where the low-risk surgery falls on or one day after an evaluation & management (E&M) visit for emergency care, observation or urgent care. All patients need preoperative *evaluation*, but a low-risk patient having a low-risk procedure does not need a pre-op EKG, chest X-ray or PFT in the absence of specific indications. Performing routine testing in patients who are otherwise healthy is of little value in detecting disease and does not make an important contribution to perioperative assessment and management. Unnecessary testing may result in delays in care and add unnecessarily to the cost of the procedure.	Pre-operative evaluation

Measure name	Measure detail	Measure type
Imaging for uncomplicated headache	This measure examines head imaging in patients ages 18 years and older with a diagnosis of *uncomplicated* headache without any neurological symptoms. For this measure if there are specific indications present, the imaging is considered "necessary:" • MRI/MRA head imaging in elderly members aged 55 years and older with raised ESR or temporal arteritis. • CT/MRI/CTA/MRA in patients with complicated headache (Thunderclap/Horner syndrome/vertebral dissection). • MRI/CT without contrast in patients with underlying conditions (post traumatic headache, neurologic deficit, epilepsy, ataxia) or new headache in pregnancy. • MRI in patients with meningitis/encephalitis or chronic conditions (trigeminal headache, immunocompromised). • CT/MRI/MRA in patients with cerebrovascular event (TIA or subarachnoid hemorrhage). For this measure, the following are considered "likely low value:" • CT/CTA in elderly patients ages 55 years and older with raised ESR or temporal arteritis. • CT/MRA/CTA in patients with chronic conditions (trigeminal headache, immunocompromised). • MRA/CTA in patients with underlying conditions (post traumatic headache, neurologic deficit, epilepsy, ataxia). • CT in patients with meningitis/encephalitis • MRI in patients with chronic headache All patients with inpatient admissions, diagnosis of cancer, head trauma or complicated sinusitis/mastoiditis/middle ear disorder are excluded from this measure. Headache is a very common problem. A thorough history and physical examination should identify red flags signs or symptoms that can indicate the need for imaging; if they are not present upon examination, imaging is unnecessary as it may lead to incidental findings that could result in additional medical procedures and expenses that do not improve patient well-being.	Diagnostic testing

Measure name	Measure detail	Measure type
Immunoglobulin G (IgG)/ Immunoglobulin E (IgE) testing in the evaluation of allergy	This measure examines the use of IgG and IgE testing in the routine evaluation of allergy. For this measure if there are specific indications present, the testing is considered "necessary:" • IgE testing in patients with a diagnosis of eczema or dermatographism within 12 months prior to the IgE testing. • IgE testing in children ages 15 years or younger. For this measure, the following are considered "likely low value:" • IgE testing in patients with a diagnosis of atopic allergy. • IgG testing in patients with a diagnosis of migraine and food allergy.	Diagnostic testing
Cough and cold medicines prescribed for children under age 4	This measure examines the prescribing of cough and cold medicines in children less than four years of age. Classification of cough and cold medicines included in this measure: • Antitussives • Decongestant • Antihistamines • Expectorants/mucolytic Acute cough is a common symptom in children and adults suffering from acute URIs, cough and cold medicines should not be used in children less than 4 years of age. Research has shown these medications offer little benefit to young children and can have potentially serious side effects. Many cough and cold products for children have more than one ingredient, increasing the chance of accidental overdose if combined with other products. *NOTE: Cough and cold medicines are commonly purchased over the counter (without a prescription) and are outside traditional data capture through claims. These are not included in this measure.*	Common treatments (prescribing)

Measure name	Measure detail	Measure type
Computed tomography (CT) head imaging in children 1 month to 17 years of age	This measure identifies the use of CT head imaging in children ages 1 month to 17 years in the absence of specific indications as "low value." For this measure if there are specific indications present, the imaging is considered "Necessary:" • CT imaging for "thunderclap" headache, moderate or severe head injury, or minor head trauma with high risk factors (e.g., altered mental state, clinical evidence of basilar skull fracture), suspected non-accidental trauma, post-traumatic seizures, or subacute closed health injury with cognitive or neurologic deficit. For this measure, the following are considered "likely wasteful" • CT scans in children with headache and having increased intracranial pressure or positive neurological signs (MRI is preferred) • CT scans for first generalized seizure or intractable or refractory seizure or partial seizures. Children with brain tumors or sinusitis are excluded from this measure.	Diagnostic testing

Measure name	Measure detail	Measure type
Stress cardiac imaging in the initial evaluation of patients without cardiac symptoms or high-risk markers	This measure identifies cardiac stress testing (including stress electrocardiogram, echocardiography and advanced cardiac testing in patients 18 years and older in the absence of specific circumstances as "low value." For this measure if there are specific indications present, the imaging is considered "necessary:" • Patients who underwent stress EKG, stress radionuclide imaging, stress echocardiography and had acute cardiac symptoms or ventricular tachycardia. • Patients who underwent stress CMR and had ventricular tachycardia. • Patients with cardiac conditions (such as heart failure, ventricular fibrillation, abnormal EKG findings, and coronary stenosis) who underwent stress radionuclide imaging, stress echo or stress CMR. • Patients with heart failure who had stress EKG testing prior to the initiation of cardiac rehab. • Patients who had stress echo with valve disease and cardiomyopathy. • Patients who had preoperative stress EKG, cardiac radionuclide imaging, stress echocardiography and CMR prior to kidney or liver transplant for cardiac evaluation. For this measure, the following are considered "likely low value:" • Patients with cardiac conditions (such as heart failure, ventricular fibrillation, abnormal EKG findings, and coronary stenosis) who underwent stress EKG. • Patients ages older than 40 with two or more risk factors for developing coronary artery disease (high blood cholesterol, high blood pressure, diabetes and pre-diabetes, obesity, etc.) who underwent cardiac stress testing. Any stress testing occurring during or within 30 days following an inpatient stay, or any stress imaging occurring during or one day after an ER visit was excluded from this measure. Asymptomatic, low-risk patients account for a significant portion of unnecessary cardiac screening. Cardiac stress testing should only occur when specific clinical circumstances.	Diagnostic testing

Appendix 3: Low-value measures by type

The Milliman Waste Calculator, Version 7.1, was used for this analysis. The Calculator includes 48 measures of common treatments, tests and procedures known by the medical community to be overused. For this analysis, we used 47 of the 48 measures. We excluded one measure, "two or more antipsychotics prescribed concurrently" as this measure is currently under review for possible revision (listed as #46).

The following is a list of the measures included in the Calculator at the time this report was completed. All measures tie directly to one or more Choosing Wisely® recommendations.

The list is organized by different types of care and the measures are not listed in any priority order.

Common treatments (prescribing)

1. Prescribing antibiotics for adenoviral conjunctivitis (pink eye)
2. Prescribing oral antibiotics for uncomplicated acute tympanostomy tube otorrhea
3. Prescribing cough and cold medicines for respiratory illnesses in children under 4 years of age
4. Prescribing oral antibiotics for upper respiratory infection or ear infection (acute sinusitis, URI, viral respiratory illness or acute otitis externa
5. Prescribing opioids for acute low back pain within first four weeks

Prevention/screening tests

6. PSA-based screening for prostate cancer in all men regardless of age
7. Unnecessary (too frequent) screening for colorectal cancer in adults older than age 50 years
8. Dual energy X-ray absorptiometry (DEXA) screening for osteoporosis in women younger than 65 or men younger than 70 with no risk factors
9. Annual electrocardiograms (EKGs) or any other cardiac screening for low-risk patients without symptoms
10. Population based screening for 25-OH-Vitamin D deficiency in the absence of risk factors
11. Use of coronary angiography in patients without cardiac symptoms or high-risk markers present
12. Unnecessary (too frequent) cervical cancer screening (Pap smear and HPV test) in women who have had adequate prior screening and are not otherwise at high risk for cervical cancer
13. Routine general health checks for asymptomatic adults ages 18-64 (no other diagnosis noted other than general health check)

Diagnostic testing

14. Imaging for low back pain within the first six weeks and no red flags present
15. Imaging for uncomplicated headache
16. Brain imaging studies (CT or MRI) in the evaluation of simple syncope and a normal neurological examination
17. Use of unproven diagnostic tests, such as immunoglobulin G (IgG) testing or an indiscriminate battery of immunoglobulin E (IgE) tests in the evaluation of allergy
18. Routine diagnostic testing in patients with chronic urticaria (hives)
19. Electroencephalography (EEG) for headaches
20. Imaging of the carotid arteries for simple syncope without other neurologic symptoms present
21. Computed tomography (CT) scans of the head/brain for sudden hearing loss
22. Radiographic imaging for patients who meet diagnostic criteria for uncomplicated acute rhinosinusitis
23. Coronary artery calcium scoring for patients with known coronary artery disease (including stents and bypass grafts)
24. Routine head CT scans for emergency room visits for severe dizziness
25. Advanced sperm function testing, such as sperm penetration or hemizona assays, in the initial evaluation of the infertile couple
26. Postcoital test (PCT) for the evaluation of infertility
27. Repeat CT scans of the abdomen and pelvis in otherwise healthy emergency department patients (age <50) with known histories of kidney stones or ureterolithiasis, presenting with symptoms consistent with uncomplicated renal colic
28. Routine imaging tests for patients without symptoms or signs of significant eye disease (e.g., visual field testing, optical coherence tomography testing, neuroimaging or fundus photography)
29. Routine use of voiding cystourethrogram (VCUG) first febrile urinary tract infection (UTI) in children aged 2–24 months
30. Computed tomography (CT) head imaging in children 1 month to 17 years of age unless indicated
31. Stress cardiac imaging or advanced non-invasive imaging in the initial evaluation of patients without cardiac symptoms or high-risk markers present
32. Use of bleeding time test to evaluate the risk of bleeding (e.g., during planned procedures)

Pre-operative evaluation

33. Baseline laboratory studies in patients without significant systemic disease (ASA I or II) undergoing low-risk surgery
34. Baseline diagnostic cardiac testing or cardiac stress testing in asymptomatic stable patients with known cardiac disease undergoing low or moderate risk non-cardiac surgery
35. EKG, chest X rays or pulmonary function test in patients without significant systemic disease (ASA I or II) undergoing low-risk surgery
36. Pulmonary function testing prior to cardiac surgery, in the absence of respiratory symptoms

Disease approach

37. Prescribing nonsteroidal anti-inflammatory drugs (NSAIDS) for individuals with hypertension, heart failure or CKD of all causes, including diabetes
38. Scheduled elective, non-medically indicated inductions of labor or Cesarean deliveries before 39 weeks, 0 days gestational age
39. Arthroscopic knee surgery for knee osteoarthritis
40. Prescribing antidepressants as monotherapy in patients with bipolar I disorder
41. Use of computed tomography (CT) scans in the routine evaluation of abdominal pain for children aged 1-17 years
42. Renal artery revascularization without prior medical management
43. Vertebroplasty in adults ages 18 years and older
44. Placement of peripherally inserted central catheters (PICC) in stage III-IV patients with nephrology consult
45. Multiple palliative radiation treatments for bone metastases in the absence of specific indications (e.g., spinal cord compression, cauda equine syndrome)
46. Prescribing two or more anti-psychotics concurrently[26]
47. Vision therapy for people with dyslexia

Routine monitoring

48. MRI of the peripheral joints to routinely monitor inflammatory arthritis

[26] This measure was excluded from this analysis.

Appendix 4: Methodology detail

Data analysis tool

In preparing this report, we used the most recent version of the Milliman MedInsight Health Waste Calculator (Version 7.1), including 47 of the Calculator's 48 measures of common tests, treatments and procedures known by the medical community to be overused.

The Health Waste Calculator analyzes information from claims data to evaluate for low-value services, according to evidence-based recommendations from national initiatives, such as Choosing Wisely and the US Preventative Task Force. Claims data elements analyzed include enrollment data, diagnosis codes, procedure codes, claims history, pharmacy data, member date of birth and gender, dates of service, allowed and paid amounts.

After removing claims with measure exclusions, the remaining services are categorized as "not wasteful" (the available data suggests appropriate services were administered by the health care provider), "likely wasteful" (indicates the need to question the appropriateness of services rendered based on member history), and "wasteful" (based on the available data, the services should not have occurred). Due to the limitations of clinical data within claims records, the Calculator approach is very conservative in terms of its definitions of "waste".

For more information about the Milliman Health Waste Calculator:
http://www.medinsight.milliman.com/MedInsight/Products/Medinsight-Tools/?prid=71832.

Contact: Marcos Dachary Marcos.Dachary@milliman.com.

Data source

For this report, claims data was supplied by OHA's All Payer All Claims Database (APAC) for calendar years 2016, 2017 and 2018 (preliminary). APAC includes claims for approximately 3.8 million insured lives annually, across Medicare, Medicaid and commercial lines of business. This report does not include any analysis on claims that are not included in APAC.

APAC does *not* include claims data for the following:[27]

- Data from commercial health plans with fewer than 5,000 covered lives
- Data on individuals insured through federal programs including Tricare, Federal Employees Health Benefits Program, Department of Veterans Affairs and the Indian Health Service

[27] Source: https://www.oregon.gov/oha/HPA/ANALYTICS/APAC%20Page%20Docs/APAC-Overview.pdf

- Data on uninsured populations and other individuals who pay out of pocket
- Data for other types of insurance such as workers' compensation and stand-alone dental or vision policies
- Claims related to alcohol and drug treatment

Once a health care service has been provided, it may take up to 12 months before the claim is generated, processed, paid and then reported to APAC. There also may be claims adjustments if an error is identified. OHA receives 12 months of claims data from insurers on a quarterly basis. Each quarterly submission refreshes the previous data received for the same time periods. For example, an insurer's July 31, 2019 submission would include one new quarter of claims (April-June of 2019) and would replace previously submitted claims for three quarters (July 2018-March 2019). Because of variations in claims lag and OHA's rolling 12-month submission schedule, APAC data are not considered complete for approximately two years. At the time the APAC data was sourced for this report, the January-June 2018 claims were complete. However, the July-December 2018 claims were still considered preliminary.

Cost methodology

The Calculator's cost model includes two methodologies for counting costs: case rate and claim line itemization. Case rate counts costs from all lines for a particular claim ID, where at least one claim line has been identified as "wasteful". Claim line itemization counts only costs from the claim line(s) where the line(s) has been identified as "wasteful". For some measures, claim line itemization is used, as it may be more appropriate, and for others the case rate methodology is used.

For the purposes of this report, we reported analysis of allowed amounts, as opposed to paid amounts. The allowed amount is the maximum amount a provider will be paid for a particular service based on payer-provider negotiated contracts. The allowed amount may include patient cost responsibility such as co-insurance and deductibles, in addition to what the insurer pays. The paid amount reflects only the amount actually paid by the insurer. We used allowed amounts for this report, as we believe they more accurately reflect the total spend.

Limitations

While we can gain a wealth of information from claims data, it is not a medical record and is unable to tell an entire patient story. Data integrity limitations and lack of continuous claims can pose challenges to detailed analysis. As such, results in this report should be viewed as directional, rather than absolute.