



CENTER FOR IMPROVING
VALUE IN HEALTH CARE

Low Value Care Analysis – Affordability Dashboard

Methodology

Spring 2023

Overview

This document summarized methodology for the Low Value Care analysis which is part of the Affordability Dashboard available at civhc.org. Low-value health services include certain treatments and diagnostic and screening tests where the risk of harm or cost exceeds the likely benefit for patients. Low value care services have been defined by a variety of medical organizations, principally national boards and medical specialty societies, which documented low value services in the [Choosing Wisely guidelines](#).

To conduct the analysis, the Center for Improving Value in Health Care (CIVHC) engaged Milliman, a health care actuarial and consulting firm, to apply its MedInsight health waste calculator software to the Colorado All Payer Claims Database (CO APCD) to measure the use and cost of low value services. The output provided back to CIVHC analysts was then quality checked and analyzed further in order to provide the public display of the data in the Affordability Dashboard.

The low value care report summarizes findings from claims analysis for 58 measures of low value care from 2017 through 2021. It includes information across all payer types: commercial, Medicaid, CHP+, Medicare Fee-for-Service and Medicare Advantage. The report provides information about the frequency and costs associated with low value care and comparisons across Colorado's Division of Insurance (DOI) rate setting regions. It also identifies the care that accounts for the majority of low value care volume and spending.

The Choosing Wisely guidelines were used to identify and define measures of low value care that could be produced from health insurance claims data. In many cases, the classification of care as low value depends on the patient's clinical condition and claims may not have the clinical details or patient history necessary to distinguish necessary from low value care. As a consequence, measures for only a small subset (58) of the guidelines are possible to produce using the CO APCD.

Below are two examples of Choosing Wisely guidelines that were used as the basis for Milliman measures of low value care, with a description of their potential harm to patients.

1) Peripherally inserted central catheters in stage III-V chronic kidney disease patients

- Don't place peripherally inserted central catheters (PICC) in stage III–V CKD patients without consulting nephrology
- Potential Harm (High): Arteriovenous fistulas (AVF) are the best hemodialysis access, with fewer complications and lower patient mortality. Excessive venous puncture damages veins, destroying potential AVF sites.

2) Antibiotics for Acute Upper Respiratory and Ear Infections

- Antibiotics should not be used for apparent viral respiratory illnesses (sinusitis, pharyngitis, bronchitis)
- Potential Harm (Low): Unnecessary medication use for viral respiratory illnesses can lead to antibiotic resistance and contributes to higher health care costs and the risk of adverse events.

Most of the Milliman measures of low value care were derived from Choosing Wisely and several were derived from the US Preventive Services Task Force guidelines and other organizations.

For a list of all potential low value services that were evaluated in this analysis, please refer to **Appendix A**.

Definitions and Methods

Milliman's Health Waste Calculator

Using medical and pharmacy claims as well as enrollment information from the CO APCD, the health waste calculator identifies a population of patients who have received care related to the 58 potentially wasteful services. A trigger event is flagged if the service being measured is identified within the claim. Then, based on the care received, the calculator determines whether the service event was necessary, likely wasteful, or wasteful. These are defined as follows:

- Necessary – A trigger event for a low value service was identified, but the care was clinically appropriate and therefore not low value.
- Likely Wasteful – A low value service was provided and its appropriateness is questionable.
- Wasteful – A low value service was provided and was very likely unnecessary.

In this analysis, low value care results include services that are likely wasteful or wasteful.

- Low value care results were produced for **only measures with sufficient patient history to distinguish necessary from low value care.**
- Different low value care services cause **different levels of potential patient harm.** Each measure of low value services has been classified as having a high, medium or low risk of causing patient harm, according to Milliman.
- **Spending for low value care services represents the total allowed amount** (health insurance payment and patient portion combined) for the specified service(s). CIVHC chose to isolate spending estimates to the service only, rather than include additional services that may have resulted from the low value service, or occurred at the same time. For example, if a patient received an unnecessary diagnostic test, and the test produced a false positive or unclear result, they may undergo other tests and services as a consequence. Spending for these additional services is not included in the spending report estimates and would result in higher potential cost and savings estimates.
- Statistical calculations, illustrated below, are presented throughout the report:

Measure	Numerator	Denominator	Calculation
Volume of Low Value Care	Volume of services that are low value (B)	Volume of potential low value services measured (A)	Percent Low Value Care (B/A)
Spending for Low Value Services	Spending for low value services (F)	Spending for potential low value services measured (E)	Percent low value care spending (F/E)
Average Cost Per Service	Total cost of services determined to be low value (C)	The total volume of low value services (D)	Cost of LVC per service (C/D)

See **Appendix A** below for a list of all low value care services measured.

Geographic Groupings

Geographic breakdowns available in the report are Colorado counties and Division of Insurance (DOI) commercial insurance geographic rate setting areas.¹ The following is a list of counties in each DOI region, along with the label displayed for each region in this report:

- Rating Area 1 – Boulder: Boulder
- Rating Area 2 – Colorado Springs: El Paso, Teller
- Rating Area 3 – Denver: Adams, Arapahoe, Broomfield, Clear Creek, Denver, Douglas, Elbert, Gilpin, Jefferson, Park
- Rating Area 4 – Ft. Collins: Larimer
- Rating Area 5 – Grand Junction: Mesa
- Rating Area 6 – Greeley: Weld
- Rating Area 7 – Pueblo: Pueblo
- Rating Area 8 – East: Alamosa, Baca, Bent, Chaffee, Cheyenne, Conejos, Costilla, Crowley, Custer, Fremont, Huerfano, Kiowa, Kit Carson, Las Animas, Lincoln, Logan, Mineral, Morgan, Otero, Phillips, Prowers, Rio Grande, Saguache, Sedgwick, Washington, Yuma
- Rating Area 9 – West: Archuleta, Delta, Dolores, Eagle, Garfield, Grand, Gunnison, Hinsdale, Jackson, La Plata, Lake, Moffat, Montezuma, Montrose, Ouray, Pitkin, Rio Blanco, Routt, San Juan, San Miguel, Summit

DOI region breakdown in the Tableau is based on provider or service location.

Data Limitations

Data presented in this report are the result of a process that strives to ensure high quality, reliable, and accurate information. Potential areas of concern are investigated and addressed accordingly, on a regular basis, and while every effort is made to address all known areas of concern for this report.

Medicare FFS claims for medical and pharmacy are submitted on an annual as opposed to a monthly basis for other payers. As a result, Medicare FFS claims are not available for both medical and pharmacy

¹ <https://www.cms.gov/CCIIO/Programs-and-Initiatives/Health-Insurance-Market-Reforms/co-gra>

claim types and for all years displayed in the dashboard. For more information about what's currently available in the CO APCD (paid through dates), [click here](#).

Data Suppression

Following privacy protection standards used by the Centers for Medicare & Medicaid Services (CMS), data are suppressed for values based on fewer than 11 units. For example, cost PPPY values based on fewer than 11 insured-years or emergency department rates based on fewer than 11 visits. Throughout the dashboard and the data files, data points impacted by low volume are replaced with an "n/a" on the dashboard and left as blank cells in the data files.

Copyright

CPT copyright 2023 American Medical Association. All rights reserved.

Fee schedules, relative value units, conversion factors and/or related components are not assigned by the AMA, are not part of CPT, and the AMA is not recommending their use. The AMA does not directly or indirectly practice medicine or dispense medical services. The AMA assumes no liability for data contained or not contained herein.

CPT is a registered trademark of the American Medical Association.

Data Vintage

This report is based on claims data in the CO ACPD data warehouse refresh of January 16th, 2023. For more information about number of claims in the CO APCD during a particular reporting year and data discovery information regarding payer submissions, please visit our website at civhc.org.

For additional questions related to this report, please contact us at info@civhc.org.

Appendix A: List of 58 Measures of Low Value Care Analyzed with CO APCD Data

Measure	Guideline Recommendation	Guideline	Population	Likely Ordering Physician: Specialty, PCP, or Facility	Purpose (and Type) of Service	Risk of Patient
25-OH-Vitamin D deficiency	Don't perform population-based screening for 25-OH-Vitamin D deficiency	Choosing Wisely	All ages	PCP	Screening Tests	Low
Antibiotics for Acute Upper Respiratory and Ear Infections	Don't prescribe oral antibiotics for members with upper URI or ear infection (acute sinusitis, URI, viral respiratory illness or acute otitis externa)	Choosing Wisely	> 3 months	PCP	Common Treatments	Low
Antibiotics for adenoviral conjunctivitis	Don't order antibiotics for adenoviral conjunctivitis (pink eye).	Choosing Wisely	All ages	PCP	Common Treatments	Low
Antidepressants Monotherapy in Bipolar Disorder	Don't prescribe antidepressants as monotherapy in patients with bipolar I disorder.	MISC Research	All ages	SPEC	Disease Approach	Medium
Arthroscopic Lavage and Debridement for Knee OA	Don't perform an arthroscopic knee surgery for knee osteoarthritis.	MISC Research	> 18	SPEC	Disease Approach	Medium
Bleeding Time Testing	Don't use bleeding time test to guide patient care.	Choosing Wisely	All ages	PCP	Diagnostic Testing	Low
Cardiac Stress Testing	Don't perform stress cardiac imaging or advanced non-invasive imaging in the initial evaluation of patients without cardiac symptoms unless high-risk markers are present.	Choosing Wisely	> 18	SPEC	Diagnostic Testing	Medium
Carotid endarterectomy in asymptomatic patients	Don't perform a carotid endarterectomy in asymptomatic patients or for patients without a history of stroke or TIA and without stroke, TIA, or focal neurological symptoms noted in claim.	MISC Research	Adults <65	SPEC	Disease Approach	High
Cervical Cancer Screening in Women	Don't order unnecessary cervical	Choosing Wisely	All ages	PCP	Screening Tests	Medium

	cancer screening (Pap smear and HPV test) in all women who have had adequate prior screening and are not otherwise at high risk for cervical cancer					
Colorectal Cancer Screening in Adults 50 Years and Older	Don't order unnecessary screening for colorectal cancer in adults older than age 45 years.	USPSTF	> 50	PCP	Screening Tests	Medium
Coronary angiography	Don't perform coronary angiography in patients without cardiac symptoms unless high-risk markers present.	Choosing Wisely	> 18	SPEC	Screening Tests	Medium
Coronary artery calcium scoring for known CAD	Don't use coronary artery calcium scoring for patients with known coronary artery disease (including stents and bypass grafts).	Choosing Wisely	> 18	SPEC	Diagnostic Testing	Medium
Cough and cold medicines in children <4 years	Don't prescribe or recommend cough and cold medicines for respiratory illnesses in children under four years of age.	Choosing Wisely	<4	PCP	Common Treatments	Low
CT head/brain for sudden hearing loss.	Don't order computed tomography (CT) scan of the head/brain for sudden hearing loss.	Choosing Wisely	All ages	SPEC	Diagnostic Testing	Low
CT Scans for Abdominal Pain in Children	Don't perform Computed tomography (CT) scans in the routine evaluation of abdominal pain.	Choosing Wisely	1-17	FAC	Disease Approach	Low
Dexa	Don't use dual-energy x-ray absorptiometry (DEXA) screening for osteoporosis in women younger than 65 or men younger than 70 with no risk factors.	Choosing Wisely	Women < 65 Men 50-69	PCP	Screening Tests	Low
Diagnostics chronic urticaria	Don't routinely do diagnostic testing in patients with chronic urticaria.	Choosing Wisely	All ages	SPEC	Diagnostic Testing	Low
ED CT Scans for Dizziness	Don't perform routine head CT scans for emergency room visits	MISC Research	> 18	FAC	Diagnostic Testing	Low

	for severe dizziness.					
EKGs and Other Cardiac Screens	Don't order annual electrocardiograms (EKGs) or any other cardiac screening for low-risk patients without symptoms.	Choosing Wisely	> 18	PCP	Screening Tests	Medium
Electroencephalography (EEG) for headaches.	Don't perform electroencephalography (EEG) for headaches.	Choosing Wisely	All ages	PCP	Diagnostic Testing	Low
Headache Image	Don't do imaging for uncomplicated headache.	Choosing Wisely	> 18	PCP	Diagnostic Testing	Low
Imaging for uncomplicated acute rhinosinusitis	Don't routinely obtain radiographic imaging for patients who meet diagnostic criteria for uncomplicated acute rhinosinusitis.	Choosing Wisely	All ages	PCP	Diagnostic Testing	Medium
Imaging of the carotid arteries	Don't perform imaging of the carotid arteries for simple syncope without other neurologic symptoms.	Choosing Wisely	All ages	SPEC	Diagnostic Testing	Medium
Imaging tests for eye disease	Don't routinely order imaging tests for patients without symptoms or signs of significant eye disease.	Choosing Wisely	All ages	SPEC	Diagnostic Testing	Low
Immunoglobulin G / immunoglobulin E testing	Don't perform unproven diagnostic tests, such as immunoglobulin G (IgG) testing or an indiscriminate battery of immunoglobulin E (IgE) tests, in the evaluation of allergy.	Choosing Wisely	All ages	SPEC	Diagnostic Testing	Low
Inappropriate opioid prescription	Don't prescribe opioids for acute disabling low back pain or any non-cancer chronic pain.	Choosing Wisely	Adults <65	PCP	Common Treatments	High
Inductions of labor or Cesarean deliveries	Don't schedule elective, non-medically indicated inductions of labor or Cesarean deliveries before 39 weeks, 0 days gestational age.	Choosing Wisely	8-64	SPEC	Disease Approach	High
Intensity modulated radiotherapy (IMRT)	Don't routinely use intensity modulated radiotherapy (IMRT) to deliver whole breast	Choosing Wisely	Adults <65	SPEC	Disease Approach	Low

	radiotherapy as part of breast conservation therapy.					
Lower back pain image	Don't do imaging for low back pain within the first six weeks, unless red flags are present.	Choosing Wisely	> 18	PCP	Diagnostic Testing	Medium
MRI for Rheumatoid Arthritis	Don't perform MRI of the peripheral joints to routinely monitor inflammatory arthritis.	Choosing Wisely	> 18	SPEC	Routine FU/Monitoring	Low
Multiple Palliative Radiation Treatments in Bone Metastases	Don't recommend more than a single fraction of palliative radiation for an uncomplicated painful bone metastasis.	Choosing Wisely	All ages	SPEC	Disease Approach	Medium
NSAIDs for hypertension, heart failure or CKD	Don't prescribe nonsteroidal anti-inflammatory drugs (NSAIDs) in individuals with hypertension or heart failure or CKD of all causes, including diabetes.	Choosing Wisely	> 18	SPEC	Disease Approach	Medium
Oral antibiotics for treatment of atopic dermatitis	Don't use oral antibiotics for treatment of atopic dermatitis unless there is clinical evidence of infection.	Choosing Wisely	All ages	PCP	Common Treatments	Low
Oral antibiotics for uncomplicated acute TTO	Don't prescribe oral antibiotics for uncomplicated acute tympanostomy tube otorrhea.	Choosing Wisely	6 months-12 years	SPEC	Common Treatments	Low
Pediatric Head Computed Tomography Scans	Don't order computed tomography (CT) head imaging in children 1 month to 17 years of age unless indicated.	Choosing Wisely	1 month - 17 years	PCP	Diagnostic Testing	Low
PFT prior to cardiac surgery	Don't recommend pulmonary function testing prior to cardiac surgery, in the absence of respiratory symptoms.	Choosing Wisely	> 18	SPEC	Preoperative evaluation	Low
PICC stage III–V CKD	Don't place peripherally inserted central catheters (PICC) in stage	Choosing Wisely	All ages	SPEC	Disease Approach	High

	III–V CKD patients without consulting nephrology.					
Postcoital Test for Infertility	Don't perform a postcoital test (PCT) for the evaluation of infertility.	Choosing Wisely	All ages	SPEC	Diagnostic Testing	Low
Preop Cardiac Echocardiography or Stress Testing	Don't obtain baseline diagnostic cardiac testing or cardiac stress testing in asymptomatic stable patients with known cardiac disease undergoing low or moderate risk non-cardiac surgery	Choosing Wisely	> 18	SPEC	Preoperative evaluation	Medium
Preoperative Baseline Laboratory Studies	Don't obtain baseline laboratory studies in patients without significant systemic disease (ASA I or II) undergoing low-risk surgery	Choosing Wisely	> 2	SPEC	Preoperative evaluation	Low
Preoperative EKG, Chest X ray and PFT	Don't obtain EKG, chest X rays or Pulmonary function test in patients without significant systemic disease (ASA I or II) undergoing low-risk surgery	Choosing Wisely	> 2	SPEC	Preoperative evaluation	Medium
Proton beam therapy for prostate cancer	Don't routinely recommend proton beam therapy for prostate cancer outside of a prospective clinical trial or registry.	Choosing Wisely	Adults <65	SPEC	Disease Approach	Low
PSA	Don't perform PSA-based screening for prostate cancer in all men regardless of age.	USPSTF	All ages	SPEC	Screening Tests	Medium
PTH for CKD	Don't order PTH measurement for patients with stage 1-3 CKD.	MISC Research	Adults <65	SPEC	Diagnostic Testing	Low
Renal Artery Revascularization	Don't perform revascularization without prior medical management for renal artery stenosis.	MISC Research	All ages	SPEC	Disease Approach	High

Repeat CT for kidney stones	Don't order CT scans of the abdomen and pelvis in young otherwise healthy emergency department patients (age <50) with known histories of kidney stones, or ureterolithiasis, presenting with symptoms consistent with uncomplicated renal colic.	Choosing Wisely	< 49	SPEC	Diagnostic Testing	Low
Routine general health checks	Don't perform routine general health checks for asymptomatic adults	Choosing Wisely	18-64	PCP	Screening Tests	Low
Sperm Function Testing	Don't perform advanced sperm function testing, such as sperm penetration or hemizona assays, in the initial evaluation of the infertile couple.	Choosing Wisely	All ages	SPEC	Diagnostic Testing	Low
Surgery for a torn meniscus	Don't perform arthroscopic partial meniscectomy for degenerative meniscal tear in middle aged patients without symptoms of knee pain.	MISC Research	Adults <65	SPEC	Disease Approach	High
Syncopal Image	Don't obtain brain imaging studies (CT or MRI) in the evaluation of simple syncope and a normal neurological examination.	Choosing Wisely	> 18	PCP	Diagnostic Testing	Low
Testosterone testing in hypogonadism or hyperandrogenism	Don't order free testosterone testing for hypogonadism or hyperandrogenism diagnosis.	Choosing Wisely	Adults <65	SPEC	Diagnostic Testing	Low
Tests for Cellulitis	Do not order testing for uncomplicated cellulitis	MISC Research	Adults <65	PCP	Diagnostic Testing	Low
Total or free T3 level	Don't order a total or free T3 level when assessing levothyroxine (T4) dose in hypothyroid patients.	Choosing Wisely	All ages	PCP	Diagnostic Testing	Low
Two or more antipsychotic medications	Don't routinely prescribe two or more antipsychotic	Choosing Wisely	All ages	PCP	Disease Approach	Medium

	medications concurrently.					
Vertebroplasty	Don't perform vertebroplasty for osteoporotic vertebral fractures.	MISC Research	> 18	SPEC	Disease Approach	High
Vision therapy for patients with dyslexia	Don't recommend vision therapy for patients with dyslexia	Choosing Wisely	2-17	PCP	Disease Approach	Low
Voiding Cystourethrogram for Urinary Tract Infection	Don't perform voiding cystourethrogram (VCUG) routinely in first febrile urinary tract infection (UTI) in children aged 2-24 months	Choosing Wisely	2-24 months	PCP	Diagnostic Testing	High
X-ray for diagnosis of plantar fasciitis/heel pain	Don't routinely order X-ray for diagnosis of plantar fasciitis/heel pain in employees who stand or walk at work.	Choosing Wisely	Adults <65	PCP	Diagnostic Testing	Medium