

COMMONWEALTH OF MASSACHUSETTS
HEALTH POLICY COMMISSION



TECHNICAL APPENDIX B3
LOW VALUE CARE

ADDENDUM TO 2018 COST TRENDS REPORT

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1 Summary

This appendix describes the Health Policy Commission's (HPC) approach to the analyses contained in **Chapter 4: "Low Value Care"** of the 2018 Cost Trends Report.

1.1 Data

The HPC examined claims from the Massachusetts All Payer Claims Database (APCD) v5.0 for October 1, 2013-September 30, 2015 for the analysis. Our study included data from the three major commercial payers, Blue Cross Blue Shield, Harvard Pilgrim Health Plan, and Tufts Health Plan. These payers enroll 80 percent of the commercial market.

2 Analysis

In order to conduct these low value care analyses, the claims data was further restricted to an analytic file. This file contains claims for 2.36 million commercial patients with at least one year of continuous eligibility during the study period. All patients included in the analyses of provider organization performance variation have been attributed to a provider organization based on methodology described in 2017 Cost Trends Report (n=1.6 million).

2.1 Identifying a Low Value Service

The measures generally adhere to the following logic (see more detail in 2.3 Low Value Care Measure Source and Specification):

- Measure exclusions: Remove all claims for patients that have at the time of the procedure, or in their claims history, have had any diagnosis code for which the procedure in question may be indicated.
- Identify the eligible population (denominator): Use ICD-9 codes and/or CPT codes to capture all encounters. Encounters were defined as unique patient on a unique date.
- Identify LVC service (numerator): Identify all encounters that include a claim for the procedure code that is of low value for the eligible population.

Example: Imaging for syncope (dizziness)

- Measure exclusions: Drop all claims for patients with diagnoses of epilepsy or other seizures disorders, certain cancers, or that meet other exclusion criteria.
- Identify the eligible population (denominator): Keep claims for encounters where a patient presented with syncope.
- Identify LVC service (numerator): Identify claims within syncope encounters for CT or MRIs of the head or brain.

The HPC took a conservative approach in implementing the existing measures. For example, only the first screening identified in a patient's claim history was labeled as being low value. If that patient received

more than one non-indicated screening test, all subsequent tests were considered monitoring, not screening, based on clinical opinion. The exception to this is “Cascading Costs of Low Value Care” in which cascading testing was explicitly included in the final estimate of services & spending.

2.2 Low Value Care Spending

After identifying the low value encounters, the HPC calculated spending by only including spending on the specific claim line attached to the LVC service. Some claim amounts (e.g. \$0) were determined to be not representative of the actual cost because these services were likely paid under a global payment, capitated encounter records, or secondary payments where another carrier covers a portion of the reimbursement. These claims were still counted in total spending by imputing the median spending for the particular procedure code in the eligible population.

As previously mentioned, these low value care spending estimates only include the 19 services that were used in the study and do not represent all low value services. Spending includes insurer and enrollee payments for covered medical services.

2.3 Low Value Care Measure Source & Specification

Specific codes and sources of technical specification for each measure can be found below.

IMAGING		
<p>Head imaging for uncomplicated headache</p>	<p>Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring low-value care in Medicare. JAMA internal medicine. 2014 Jul 1;174(7):1067-76.</p>	<p>Eligible population: Patient with uncomplicated Headache or Migraine. ICD-9: 30781 339xx 346x 7840</p> <p>Exclusions: No diagnoses in claim warranting imaging. Exclusion diagnoses include epilepsy, giant cell arteritis, head trauma, convulsions, altered mental status, nervous system symptoms (e.g. hemiplegia) , disturbances of skin sensation, speech problems, stroke/TIA, history of stroke, cancer or history of cancer. CPT: 33920-33922 33943 14xx–208xx 230xx-239xx 3463x 3466x 4465 345xx 7803x 43xx 800xx-804xx 850xx-854xx 870xx-873xx 9590x 910xx 920xx-921xx 78097 781xx 7820 7845x 79953 V1254 V10xx</p> <p>Numerator: Brain CT/MRI with non-post-traumatic, non-thunderclap headache diagnosis. CPT: 70450 70460 70470 70551-70553</p>
<p>Back imaging for patients with</p>	<p>Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring</p>	<p>Eligible population: Patients with low back pain. ICD-9: 7213 72190</p>

<p>non-specific low back pain</p>	<p>low-value care in Medicare. JAMA internal medicine. 2014 Jul 1;174(7):1067-76.</p>	<p>72210 72252 7226 72293 72402 7242-7246 72470 72471 72479 7385 7393 7394 846x 8472</p> <p>Exclusions: Exclusion diagnoses warranting imaging including cancer, trauma, intravenous drug abuse, neurological impairment, endocarditis, septicemia, tuberculosis, osteomyelitis, fever, weight loss, loss of appetite, night sweats, anemia, radiculitis and myelopathy. Imaging occurred within 6 weeks of the first diagnosis of back pain. ICD 9: 14xx-208xx 230xx-239xx 800x-839xx 850xx-854xx 86xxx 905xx-909xx 92611 92612 929, 952xx 958xx-959xx , 3040x-3042x 3044x 3054x-3057x 34460 7292x 4210 4211 4219 038xx 01xxx 730xx 7806x 7830x 7832x 78079 7808x 2859x72142 72191 72270 72273 7244</p> <p>Numerator: Back imaging CPT: 721010 72020 72052 72100 72110 72114 72120 72200 72202 72220 72131-72133 72141 72142 72146-72149 72156 72157 72158</p>
<p>Head imaging in the evaluation of syncope</p>	<p>Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring low-value care in Medicare. JAMA internal medicine. 2014 Jul 1;174(7):1067-76.</p>	<p>Eligible population: Patients with syncope diagnosis ICD-9: 7802 9921</p> <p>Exclusions: Exclusions include epilepsy or convulsions, cerebrovascular diseases, head or face trauma, altered mental status, nervous/musculoskeletal system symptoms, personal history of stroke/TIA. ICD-9: 345xx 7803x 43xx 800xx-804xx 850xx-854xx 870xx-873xx 9590x 910xx 920xx-921xx 78097 781xx 7820 7845x V1254 V10xx</p> <p>Numerator: CT or MRI of head or brain CPT: 70450 70460 70470 70551-70553</p>
<p>Electroencephalogram (EEG) for uncomplicated</p>	<p>Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring low-value care in Medicare. JAMA internal medicine. 2014 Jul 1;174(7):1067-76.</p>	<p>Eligible population: Headaches ICD-9: 30781 339x 346x 7840</p> <p>Exclusions: Epilepsy or convulsions ICD-9: 345xx 7803x</p>

headache		7810 Numerator: Electroencephalogram CPT: 95812 95813 95816 95819 95822 95827 95830 95957
Imaging for diagnosis of plantar fasciitis/heel pain	Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring low-value care in Medicare. JAMA internal medicine. 2014 Jul 1;174(7):1067-76.	Eligible population: Patients with fasciitis diagnosis ICD-9: 72871 7294 Exclusions: None Numerator: Foot radiograph, foot MRI, extremity ultrasound CPT: 73620 73630 73650 73718 73719 73720 76880 76881 76882
Neuroimaging in children with simple febrile seizure	American Academy of Pediatrics. Subcommittee on Febrile Seizures. Febrile Seizures: Guideline for the neurodiagnostic evaluation of the child with a simple febrile seizure. Pediatrics [Internet]. 2011 Feb;127(2):389–394.	Eligible population: Children under 5 years old with simple febrile seizure ICD-9: 78031 Exclusions: None Numerator: CT or MRI of head or brain. CPT: 0042T 70450 70460 70470 70496 70551-70555 70557-70559
Sinus computed tomography (CT) for simple sinusitis	Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring low-value care in Medicare. JAMA internal medicine. 2014 Jul 1;174(7):1067-76.	Eligible population: Acute sinusitis ICD-9: 461x; 473x Exclusions: Complications of sinusitis; immune deficiencies; nasal polyps; head/face trauma, chronic sinusitis ICD-9: 2770x 042 07953 279xx 471x 373xx 37600 800xx-804xx 850xx-854xx 870xx-873xx 9590x 910xx 920xx-921xx Numerator: CT of maxillofacial area CPT: 70486-70488
Abdominal CT with and without Contrast	CMS, Hospital Outpatient Quality Reporting (OQR). OP-10: Abdomen CT use of contrast material.	Eligible population: Abdominal CT CPT: 74150, 74160, 74170, 74176, 74177, 74178 Exclusions: Adrenal mass, blunt abdominal, hematuria, kidney infections, jaundice, liver lesion, malignant neoplasm of bladder, malignant neoplasm pancreas, urinary system diseases, pancreatic disorders, unspecified disorder of kidney and ureter : 255.9, 194.x, 227.x, 237.x, 863, 864, 865, 866, 867, 868, 869, 902, 929, 120.0, 599.70, 599.71, 599.72, 590.1x,590.8x, 590.9, 782.4, 155,

		197.7, 209.72, 211.5, 230.8, 235.3, 188, 233.7, 157.0-157.4, 157.8, 157.9, 189.0, 211.5, 211.7, 223.0, 599.0, 599.9, 595, 597, 250.8x, 251.0, 251.1, 251.2, 270.3, 577.0, 577.1, 539.9
		Numerator: Abdomen CT with and without contrast 74170, 74178
Thorax CT with and without contrast	CMS, Hospital Outpatient Quality Reporting (OQR). OP-11: Thorax CT use of contrast material.	Eligible population: Thorax CT CPT: 71250, 71260, 71270
		Exclusions: Internal injury of chest, abdomen and pelvis, injury to blood vessels, crushing injury ICD-9: 860-869 901 902 926 929
		Numerator: Thorax CT with and without contrast CPT 71270
PRE-OPERATIVE		
Pre-operative cardiac stress test (low-risk, non-cardiac surgery)	Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring low-value care in Medicare. JAMA internal medicine. 2014 Jul 1;174(7):1067-76.	Eligible population: Patients undergoing selected surgeries BETOS: p1x, P3D, P4A, P4B, P4C, P5C, P5D, P8A, P8G CPT: 19120 19125 47562 47563 49560 58558
		Exclusions: Encounters were excluded from the initial population if the surgery claim occurred in the 30 day period following an inpatient admission or the 1 day period following an emergency department claim
		Numerator: Stress testing CPT: 78451-78454 78460 78461 78464 78465 78472 78473 78481 78483 78491 78492 93015-93018 93350 93351
Pre-operative Pulmonary Function Test for Low and Intermediate Risk Surgeries	Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring low-value care in Medicare. JAMA internal medicine. 2014 Jul 1;174(7):1067-76.	Eligible population: Patients undergoing selected surgeries BETOS: P1x P2x P3D P4A P4B P4C P5C P5D P8A P8G
		Exclusions: Claims that occurred in the 30 day period following an inpatient admission or the 1 day period following an emergency department claim.
		Numerator: Pulmonary Function Test CPT: 94010
PROCEDURES		

<p>Arthroscopic surgery for knee osteoarthritis</p>	<p>Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring low-value care in Medicare. JAMA internal medicine. 2014 Jul 1;174(7):1067-76.</p>	<p>Eligible population: All patients with osteoarthritis or chondromalacia ICD-9: 7177 73392 71500 71509 71510 71516 71526 71536 71596</p> <p>Exclusions: No meniscal tear noted in procedure claim. ICD-9: 8360-8362 7170 71741</p> <p>Numerator: Arthroscopic debridement/chondroplasty of the knee with diagnosis of osteoarthritis or chondromalacia in the procedure claim CPT: 29877 29879 29880 29881 G0289</p>
<p>Spinal injection for low-back pain</p>	<p>Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring low-value care in Medicare. JAMA internal medicine. 2014 Jul 1;174(7):1067-76.</p>	<p>Eligible population: Back pain ICD-9: 7213 72190 72210 7222 72252 7226 72280 72283 72293 72400 72402 72403 7242 7245 7246 72470 72471 72479 7384 7385 7393 7394 75612 8460-8463 8468 8469 8472</p> <p>Exclusions: Not etanercept injection, no diagnoses indicating radiculopathy in the claim CPT: J1438 Back pain with radiculopathy ICD-9: 72142 72191 72270 72273 7243 7244</p> <p>Numerator: Epidural (not indwelling), facet, or trigger point injections for lower back pain not associated with an inpatient stay within 14 days CPT: 62311 64483 20552 20553 64493 64475 J1438</p>
<p>IVC filters</p>	<p>Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring low-value care in Medicare. JAMA internal medicine. 2014 Jul 1;174(7):1067-76.</p>	<p>Eligible population: All patients</p> <p>Exclusions: None</p> <p>Numerator: IVC placement CPT: 37191 37192 75490</p>
<p>SCREENINGS</p>		
<p>Pap smears for women under 21</p>	<p>Washington State Choosing Wisely Task Force. 2014. https://wahealthalliance.org/wp-content/uploads/2013/11/Choosing_Wisely_Specifications_2014.pdf</p>	<p>Eligible population: Women between 13 and 20</p> <p>Exclusions: Cancer related ICD-9: 179, 180, 181, 182, 183, 1800, 1801, 1808, 1809, 1820, 1821, 1828, 1830, 1832, 1833, 1834, 1835, 1838, 1839, 1848, 1986,</p>

		2360, 2362, 2363, 19882
		Numerator: Screening Papanicolaou test for women under age 21: HCPCS: G0123 G0124 G0141 G0143 G0144 G0145 G0147 G0148 P3000 Q0091 CPT: 88141-88143, 88147, 88148, 88150, 88152- 88154, 88164-88167, 88174, 88175
Homocysteine testing for cardiovascular disease	Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring low-value care in Medicare. JAMA internal medicine. 2014 Jul 1;174(7):1067-76.	Eligible population: All patients
		Exclusions: Patients with folate or B12 disorders ICD-9: 2662 2704 2810-2812 2859
		Numerator: Homocysteine chemistry, folate testing CPT: 83090 82746 82747 82607
Screening for 25-OH-Vitamin D Deficiency	Colla CH, Morden NE, Sequist TD, Schpero WL, Rosenthal MB. Choosing wisely: prevalence and correlates of low-value health care services in the United States. Journal of general internal medicine. 2015 Feb 1;30(2):221-8.	Eligible population: All Patients
		Exclusions: Chronic kidney disease, hypertensive chronic kidney disease, secondary diabetes mellitus with renal manifestations, diabetics, osteoporosis, obesity. ICD-9: 585.x 403.x 404.x 249.4 583.81 581.81 250.4 V451 V4511 V4512 V560 V568 7330 73300 73301 73302 73303 73309 V8281 278 278.0x V77.8 or within 7 days of: Fragility fractures CPT: 27230-27248 25600 25605 25609 25611 23600-23630 23665-23680 73000 73010 73020 73030 73040 73050 73060 73070 73080 73085 73090 73092 73100 73110 73115 73120 73130 73140 73200 73201 73202 73206 73218 73219 73220 73221 73222 73223 73225
		Numerator: Vitamin D Screening tests: 82306, 82307, 82562
Screening for carotid artery disease	Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring low-value care in Medicare. JAMA internal medicine. 2014 Jul 1;174(7):1067-76.	Eligible population: All patients
		Exclusions: Retinal vascular occlusion, ischemia, nervous and musculoskeletal symptoms, stroke/TIA ICD-9: 430, 431, 43301, 43311, 43321, 43331, 43381, 43391, 43400, 43401, 43410, 43411, 43490, 43491, 4350, 4351, 4353, 4358, 4359,

		436, 99702 V1254 3623, 36284 7802, 781xx, 7820, 78451, 78452, 78459, 9921
		Numerator: Carotid imaging CPT: 70498 70547-70549 93880 93882 3100F
PHARMACY		
Inappropriate antibiotics	Fleming-Dutra KE, Hersh AL, Shapiro DJ, Bartoces M, Enns EA, File TM, Finkelstein JA, Gerber JS, Hyun DY, Linder JA, Lynfield R. Prevalence of inappropriate antibiotic prescriptions among US ambulatory care visits, 2010-2011. JAMA. 2016 May 3;315(17):1864-73.	Eligible population: Patients with diagnosis of acute sinusitis, pharyngitis, suppurative otitis media, bronchitis ICD-9: 461, 463, 462x, 382x, 490x, 466x
		Exclusions: Chronic bronchitis, emphysema, COPD, conditions where antibiotics are always indicated - miscellaneous bacterial infections, pneumonia, urinary tract infections ICD-9 491 492 496 010-018 020-027 030-033 036-041 070-104 130-139 320-323 383 475 481 482 483 484 485 486 5901 5902 5908 5909 5950 5950 5990
		Numerator: Patients prescribed antibiotics. 2016 HEDIS Table ABX-A: Antibiotic Medications

2.4 Low Value Care Exploratory Analyses

The analyses presented in the two sidebars, **Cascading costs of low value care** and **Pre-operative testing prior to cataract surgery**, are extensions of the low value care work in this chapter. Neither of these analyses were included in the overall cost or utilization estimates provided in the chapter.

2.4.1 Cascading costs of low value pap cytology

This analysis used the specifications for **Pap smears for women under 21** measure to follow women who had been exposed to a low value pap smear over time. The CPT and ICD-9 codes for the follow-on services that could be attributed to that initial low value pap smear were found from the American College of Pathologists: <http://cebp.aacrjournals.org/content/cebp/suppl/2012/07/10/1055-9965.EPI-11-1019.DC1/tab1.pdf>.

2.4.2 Low pre-operative testing for cataract surgery

In this analysis we examined ten types of pre-operative tests among the commercially insured population using the analytic approach found in **2.1 Identifying a Low Value Service**.

Pre-operative testing	<p>Chen CL, Lin GA, Bardach NS, Clay TH, Boscardin WJ, Gelb AW, Maze M, Gropper MA, Dudley RA. Preoperative medical testing in Medicare patients undergoing cataract surgery. New England Journal of Medicine. 2015 Apr 16;372(16):1530-8.</p> <p>Chen CL, Lin GA, Bardach NS, Clay TH, Boscardin WJ, Gelb AW, Maze M, Gropper MA, Dudley RA. Preoperative medical testing in Medicare patients undergoing cataract surgery. New England Journal of Medicine. 2015 Apr 16;372(16):1530-8.</p>	<p>Eligible population: Adults undergoing cataract surgery. CPT codes for cataract surgery (66982, 66983, 66984, 66850, 66920, 66930, 66940)</p>
	<p>Exclusions: Exclude those with ICD9 of previous cataract surgery (V431, V4561, 37931).</p>	
	<p>Numerator: Pre-op tests 30 days prior to the surgery: complete blood count, chemical analysis, coagulation studies, urinalysis, electrocardiography, echocardiography, cardiac stress tests, chest radiography, pulmonary function tests, standard laboratory panels CPT -80047, 80048, 80051, 80053, 80069, 80076, 82310, 82330, 82374, 82435, 82947, 84100, 84295, 82565, 84520, 82040, 82247, 82248, 84075, 84155, 84450, 84460, 85025, 85027, 85014, 85048, 85049, 81000, 81001, 81002, 81003, 81005, 93000, 93005, 93010, 93306, 93307, 93015, 93016, 93017, 93018, 93350, 93351, 93352, 75561, 75563, 78451, 78452, 78453, 78454, 71010, 71020, 94010, 94060, 93720, 93721, 93722, 94240, 94260, 94350, 94370, 94360, 94720, 94725</p>	