

ONLINE APPENDIXES

10

**Medicare coverage policy
and use of low-value care**

10-A

ONLINE APPENDIX

Measures of low-value services

**TABLE
10-A1**

Measures of low-value services

Measure	Source and supporting literature	Definition	
		Broader (Base definition)	Narrower (Additional restrictions)
Cancer screening			
Cancer screening for patients with CKD on dialysis	CW	Screening for cancer of the breast, cervix, colon, or prostate for patients with CKD receiving dialysis services	Only patients age ≥ 75 years ^a
Cervical cancer screening at age > 65 years	CW, USPSTF	Screening Papanicolaou test for women age ≥ 65 years	No personal history of cervical cancer or dysplasia noted in claim or in prior claims ^b ; no diagnoses of other female genital cancers, abnormal Papanicolaou findings, or human papillomavirus positivity in prior claims
Colon cancer screening for older adults	USPSTF	Colorectal cancer screening (colonoscopy, sigmoidoscopy, barium enema, or fecal occult blood testing) for patients ages ≥ 75 years	No history of colon cancer; only screening (i.e., not diagnostic) procedure codes; only patients age ≥ 85 years
PSA screening at age ≥ 75 years	USPSTF	PSA test for patients age ≥ 75 years ^c	No history of prostate cancer; only screening (i.e., not diagnostic) procedure codes
Diagnostic and preventive testing			
Bone mineral density testing at frequent intervals	Literature	Bone mineral density test < 2 years after prior bone mineral density test	Only patients with a diagnosis of osteoporosis before initial bone mineral density test ^d
Homocysteine testing in cardiovascular disease	Literature	Homocysteine testing	No diagnoses of folate or B12 deficiencies in claim and no folate or B12 testing in prior claims
Hypercoagulability testing after deep vein thrombosis	CW	Laboratory tests for hypercoagulable states within 30 days after diagnosis of lower extremity deep vein thrombosis or pulmonary embolism	No evidence of recurrent thrombosis, defined by diagnosis of deep vein thrombosis or pulmonary embolism > 90 days before claim
PTH testing in early CKD	NICE	PTH measurement in patients with stage 1–3 CKD; no dialysis services before PTH testing or within 30 days after testing	No hypercalcemia diagnosis in any claim
T3 level testing for patients with hypothyroidism	CW	Total or free T3 measurement in a patient with a hypothyroidism diagnosis during the calendar year	
Vitamin D testing in absence of hypercalcemia or decreased kidney function	CW	Calcitriol testing for patients without hypercalcemia or secondary hyperparathyroidism of renal origin noted in claim and without a history of CKD	No diagnoses indicating non-PTH-mediated hypercalcemia; no diagnosis of hypercalcemia in past 30 days

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10-A1**

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Measure	Source and supporting literature	Definition	
		Broader (Base definition)	Narrower (Additional restrictions)
Preoperative testing			
Preoperative chest radiography	CADTH, CW	Chest radiograph specified as a preoperative assessment or occurring within 30 days before a low- or intermediate-risk noncardiothoracic surgical procedure ^e	No radiographs related to inpatient or emergency care ^f ; only radiographs that preceded a low- or intermediate-risk noncardiothoracic surgical procedure (i.e., excluding those specified as preoperative before other procedures) ^e
Preoperative echocardiography	CW	Echocardiogram specified as a preoperative assessment or occurring within 30 days before a low- or intermediate-risk noncardiothoracic surgical procedure ^e	No echocardiograms related to inpatient or emergency care ^f ; only echocardiograms that preceded a low- or intermediate-risk noncardiothoracic surgical procedure ^e
Preoperative PFT	CW	PFT specified as a preoperative assessment or occurring within 30 days before a low- or intermediate-risk surgical procedure ^g	No PFT related to inpatient or emergency care ^f ; only PFT that preceded a low- or intermediate-risk surgical procedure ^g
Preoperative stress testing	CW	Stress electrocardiogram, echocardiogram, nuclear medicine imaging, cardiac MRI, or CT angiography specified as a preoperative assessment or occurring within 30 days before a low- or intermediate-risk noncardiothoracic surgical procedure ^e	No stress testing related to inpatient or emergency care ^f ; only stress testing that preceded a low- or intermediate-risk noncardiothoracic surgical procedure ^e
Imaging			
CT for rhinosinusitis	CW	Maxillofacial CT study with a diagnosis of sinusitis in the imaging claim	No complications of sinusitis ^h , immune deficiencies, nasal polyps, or head/face trauma noted in claim; no patients with chronic sinusitis, defined by sinusitis diagnosis between 30 days and 1 year before imaging
Head imaging for syncope	CW, NICE	CT or MR imaging of the head with a diagnosis of syncope in the imaging claim	No diagnoses in claim warranting imaging ⁱ
Head imaging for headache	CW	CT or MR imaging of the head with a diagnosis of nonthunderclap, nonposttraumatic headache	No diagnoses in claim warranting imaging ⁱ
EEG for headache	CW	EEG with headache diagnosis in the claim	No epilepsy or convulsions noted in current or prior claims
Imaging for patients with nonspecific low back pain	CW, NICE	Back imaging with a diagnosis of low back pain	No diagnoses in claim warranting imaging ^k ; imaging occurred within 6 weeks of the first diagnosis of back pain

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10-A1**

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		Broader (Base definition)	Narrower (Additional restrictions)
Carotid artery disease screening in asymptomatic adults	CW, USPSTF	Carotid imaging for patients without a history of stroke or TIA and without a diagnosis of stroke, TIA, or focal neurological symptoms in claim	Test not associated with inpatient or emergency care ^l
Screening for carotid artery disease for syncope	CW	Carotid imaging with syncope diagnosis	No history of stroke or TIA; no stroke, TIA, or focal neurological symptoms in claim
Imaging for plantar fasciitis	CW	Radiographic or MR imaging with diagnosis of plantar fasciitis	Imaging was within 2 weeks of the first appearance of a foot pain diagnosis
Cardiovascular testing and procedures			
Stress testing for stable coronary disease	CW	Stress testing for patients with an established diagnosis of ischemic heart disease or angina (≥6 months before the stress test) and thus not done for screening; test not associated with inpatient or emergency care, which might be indicative of unstable angina ^l	Only patients with a past diagnosis of myocardial infarction to exclude patients with a history of noncardiac chest pain inaccurately coded as angina (i.e., those with no underlying ischemic heart disease who might benefit from screening and optimization of medical management)
Percutaneous coronary intervention with balloon angioplasty or stent placement for stable coronary disease	Literature	Coronary stent placement or balloon angioplasty for patients with an established diagnosis of ischemic heart disease or angina (≥6 months before the procedure); procedure not associated with emergency care ^l , which might be indicative of acute coronary syndrome	Only patients with a past diagnosis of myocardial infarction to exclude patients with a history of noncardiac chest pain inaccurately coded as angina
Renal artery stenting	Literature	Renal or visceral angioplasty or stent placement	Diagnosis of renal atherosclerosis or renovascular hypertension and no diagnosis of fibromuscular dysplasia of renal artery in procedure claim
Carotid endarterectomy for asymptomatic patients	CW	Carotid endarterectomy for patients without a history of stroke or TIA and without stroke, TIA, or focal neurological symptoms in claim	Operation not associated with emergency care ^l ; only female patients ^m
IVC filter placement to prevent pulmonary embolism	Literature	Any IVC filter placement	No additional restrictions
Pulmonary artery catheterization in ICU	Literature	Pulmonary artery catheterization for monitoring purposes during an inpatient stay that involved an ICU but not a surgical DRG	Excludes claims that involve pulmonary hypertension, cardiac tamponade, or preoperative assessment diagnoses

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Measure	Source and supporting literature	Definition	
		Broader (Base definition)	Narrower (Additional restrictions)
Other surgical procedures			
Vertebroplasty or kyphoplasty for osteoporotic vertebral fractures	Literature	Vertebroplasty or kyphoplasty for vertebral fracture	No bone cancers, myeloma, or hemangioma in procedure claim
Arthroscopic surgery for knee osteoarthritis	NICE	Arthroscopic debridement/ chondroplasty of the knee with diagnosis of osteoarthritis or chondromalacia in procedure claim	No meniscal tear in procedure claim
Spinal injection for low back pain	Literature	Epidural (not indwelling), facet, or trigger point injections for lower back pain not associated with an inpatient stay (within 14 days)	Not etanercept; no diagnoses in claim indicating radiculopathy

Note: CKD (chronic kidney disease), CW (Choosing Wisely), USPSTF (United States Preventive Services Task Force C or D recommendations), PSA (prostate-specific antigen), PTH (parathyroid hormone), NICE (National Institute for Health and Care Excellence “do not do” list), CADTH (Canadian Agency for Drugs and Technologies in Health technology assessments), PFT (pulmonary function testing), CT (computed tomography), MR (magnetic resonance), EEG (electroencephalography), TIA (transient ischemic attack), IVC (inferior vena cava), ICU (intensive care unit), DRG (diagnosis related group).

^aThis age cutoff is included because transplantation is uncommon in patients age 75 or older.

^bThroughout the table, “prior claims” refers to claims for services before the day of the measured service and during or after the prior calendar year.

^cThis measure is based on a 2008 recommendation from the USPSTF that men age 75 or older should not receive PSA-based screening for prostate cancer. In 2012, the USPSTF recommended against the use of PSA-based screening for men of all ages. This measure is based on the earlier recommendation because the measure was originally applied to claims data from 2009.

^dThis restriction limits the measure to testing of patients with osteoporosis.

^eIncludes breast procedures, colectomy, cholecystectomy, transurethral resection of the prostate, hysterectomy, orthopedic surgical procedures other than hip and knee replacement, corneal transplant, cataract removal, retinal detachment, hernia repair, lithotripsy, and arthroscopy. The 30-day window between preoperative testing and surgery was derived empirically based on distribution of intervals between the test and the procedure.

^f“Related to inpatient care” is defined as occurring during or within 30 days after an inpatient stay; “related to emergency care” is defined as occurring during or 1 day after an emergency department (ED) visit.

^gIncludes procedures listed in note “e” as well as coronary artery bypass graft, aneurysm repair, thromboendarterectomy, percutaneous transluminal coronary angioplasty, and pacemaker insertion.

^hIncludes inflammation of eyelid or orbit, orbital cellulitis, and visual problems.

ⁱDiagnoses that warrant imaging include epilepsy, head trauma, convulsions, altered mental status, nervous system symptoms (e.g., hemiplegia), speech problems, stroke, transient ischemic attack, and history of stroke.

^jDiagnoses that warrant imaging include those listed in the preceding note as well as giant cell arteritis, cancer, and history of cancer.

^kDiagnoses that warrant imaging include cancer, trauma, intravenous drug abuse, neurological impairment, endocarditis, septicemia, tuberculosis, osteomyelitis, fever, weight loss, loss of appetite, night sweats, and anemia.

^l“Associated with inpatient care” is defined as occurring during an inpatient stay; “associated with emergency care” is defined as occurring during or within 14 days after an ED visit.

^mRestriction is based on sex-specific subgroup analyses of procedure efficacy in the literature.

Source: Schwartz, A., B. Landon, A. Elshaug, et al. 2014. Measuring low-value care in Medicare. *JAMA Internal Medicine* 174, no. 7 (July): 1067–1076.
 Schwartz, A. L., M. E. Chernew, B. E. Landon, et al. 2015. Changes in low-value services in year 1 of the Medicare Pioneer Accountable Care Organization Program. *JAMA Internal Medicine* 175, no. 11 (November): 1815–1825.