

eAppendix I. Electronic Health Record Reported Measure Data Specifications – Numerator and Denominator Inclusion Definitions

Choosing Wisely Recommendation	EHR Reported Measure	Numerator	Denominator^a
Don't use DEXA screening for osteoporosis in women younger than 65 without risk factors	% of DEXA exams performed on women younger than 65 without risk factors	DEXA exams performed on 18<=women<65	DEXA exams on women >=18
Don't routinely repeat DEXA scans more often than once every two years	% of DEXA exams followed by a repeat within 2 years	DEXA exams on women > 18 repeated within 2 years of prior exam	DEXA exams on women >=18
Don't perform Pap smears on women younger than 21	% of Pap smears performed on 18<=women<21	Pap smears on 18<=women<21	Pap smears on women >=18
Don't perform Pap smears on women >65 with adequate prior screening	% of Pap smears performed on women >65 with adequate prior screening	Pap smears on women >65 and adequate prior screening	Pap smears on women >=18
Don't perform Pap smear test on women with total hysterectomy for non-cancer disease	% of Pap smears performed on women with total hysterectomy for non-cancer disease	Pap smears on patients with total hysterectomy for non-cancer disease	Pap smears on women >=18
Don't repeat endoscopy within 3 years for Barrett's esophagus if prior exam is normal	% of normal endoscopies for Barrett's patients followed by a repeat within 3 years	Repeat endoscopies within 3 years of prior normal endoscopy for Barrett's	Normal-result endoscopies for Barrett's patients >=18
Don't perform population based screening for 25-OH-Vitamin D deficiency	% of 25-OH-Vitamin D deficiency screening performed for non-indicated reasons	25-OH-Vitamin D test for patients >=18 with no indication	25-OH-Vitamin D test for adults >= 18
Don't obtain brain imaging for simple syncope	% of patients with simple syncope who had brain imaging	Patients >=18 obtaining brain head CT or MRI/MRA	Patients >=18 with simple syncope
Don't do imaging for low back pain within first 6 weeks	% of patients with imaging performed for low back pain within first 6 weeks	Patients >=18 with low back pain and imaging	Patients >=18 with low back pain

		performed within first 6 weeks	
Don't use opioid or butalbital treatment for migraine, except as a last resort	% of patients with migraine who received opioid or butalbital treatment	Prescription for opioid or butalbital following evaluation for migraine	Patients >=18 with migraine headache
Don't order sinus CT or prescribe antibiotics for uncomplicated acute rhinosinusitis	% of patients with uncomplicated acute rhinosinusitis who had a sinus CT or were prescribed antibiotics	Had sinus CT OR were prescribed antibiotics	Patients >= 18 with at least one face-to-face visit for rhinosinusitis
Don't do imaging for uncomplicated headache	% of patients with uncomplicated headache who receive imaging	Patients >=18 with brain imaging done for uncomplicated headache	Patients >=18 with uncomplicated headache

^aExam level measures have 1 record per exam in Denominator (ie, patients repeated if more than 1 exam). Patient measures have 1 record per patient identified in Denominator population.

eAppendix II. Electronic Health Record Reported Measure Data Specifications – Explanatory Risk Factors^a

Measure	<u>Risk Factors</u>
<p>Don't use DEXA screening for osteoporosis in women younger than 65 without risk factors</p>	<p><u>Y or N for each as of DEXA exam date:</u></p> <ol style="list-style-type: none"> 1) Previous fracture - if Y, include dates of all fractures. 2) Smoking status 3) Oral or inhaled glucocorticoid use (medication order within 12 months prior to exam result date) 4) Anticonvulsant use (medication order within 12 months prior to exam result date) 5) Hx rheumatoid arthritis 6) Hx Osteoporosis 7) Osteopenia 8) Celiac disease 9) Chronic pancreatitis 10) Lactase deficiency 11) Crohn's disease 12) Ulcerative colitis 13) Vitamin D Deficiency 14) Hypogonadism 15) Hyperthyroidism 16) Menopause
<p>Don't routinely repeat DEXA scans more often than once every 2 years</p>	<p><u>Y or N for each as of both (if applicable) DEXA exam dates:</u></p> <ol style="list-style-type: none"> 1) Previous fracture - if Y, include dates of all fractures. 2) Smoking status 3) Oral or inhaled glucocorticoid use (medication order within 12 months prior to exam result date) 4) Anticonvulsant use (medication order within 12 months prior to exam result date) 5) Hx rheumatoid arthritis 6) Hx Osteoporosis 7) Hx Osteopenia 8) Celiac disease 9) Chronic pancreatitis 10) Lactase deficiency 11) Crohn's disease

Measure	<u>Risk Factors</u>
	12) Ulcerative colitis 13) Vitamin D Deficiency 14) Hypogonadism 15) Hyperthyroidism 16) Menopause
Don't perform cardiac testing for low risk patients without symptoms	<u>As of cardiac test date:</u> 1) Framingham Risk Score
Don't perform Pap smears on women younger than 21	<u>As of Pap result date (Y/N):</u> 1) History of cancer/pre-cancer (Y/N)?
Don't perform Pap smears on women >65 with adequate prior screening	<u>As of Pap result date (Y/N):</u> 1) History of cancer/pre-cancer (Y/N)?
Don't perform Pap smear test on women with total hysterectomy for non-cancer disease	N/A
Don't repeat endoscopy within 3 years for Barrett's esophagus if prior exam is normal	<u>Code added AFTER 2010 endoscopy and BEFORE f/u endoscopy (Y/N):</u> 1) Weight loss 2) Change in bowel habits 3) GI bleeding 4) Dysphagia 5) Odynophagia 6) Caustic ingestion 7) Esophageal varices 8) Portal hypertension 9) Removal of foreign body 10) Placement of feeding or drainage 11) Achalasia 12) Esophageal stricture

Measure	<u>Risk Factors</u>
	13) Esophageal cancer 14) Gastric cancer 15) Duodenal cancer 16) Pancreatic cancer 17) Gall Bladder cancer
Don't perform population based screening for 25-OH-Vitamin D deficiency	Appropriate indications include presence of the following prior to performance of the Vitamin D test, either on problem list or in face-to-face encounter diagnosis: 1) Kidney Disease 2) Osteoporosis 4) Osteopenia 5) Obesity 6) Parathyroidism 7) Liver disease 8) Anticonvulsant use (medication order within 12 months prior to Vit D test date) 9) Celiac disease 10) Chronic pancreatitis 11) Lactase deficiency 12) Crohn's disease 13) Ulcerative colitis 14) Vitamin D Deficiency
Don't obtain brain imaging for simple syncope	<u>Presence (Y/N) as of syncope diagnosis date:</u> 1) Coronary heart disease 2) Epilepsy/ Seizure 3) Stroke/ TIA <u>Presence (Y/N) of codes <i>on the same day of visit:</i></u> 1) Cardiac symptoms: - Chest pain - Palpitations - Breathing difficulty (dyspnea, shortness of breath)

Measure	<u>Risk Factors</u>
	<ul style="list-style-type: none"> - arrhythmia 2) Neurologic symptoms: - Visual changes - Seizures -Numbness/ Paresthesias - Hearing change - Change in smell - Incontinence - Aura - Headache
Don't do imaging for low back pain within first 6 weeks	<p>Presence (Y/N) prior to INDEX diagnosis date OR between INDEX diagnosis date and imaging date, if applicable (if Y, include date of most recent face-to-face encounter dx):</p> <p><i>*** For each of the following 13 fields, please gather sub-fields A and B, where</i></p> <ul style="list-style-type: none"> - A indicates "Y/N, within 12 months prior to INDEX dx date or btw dx and imaging date?" and - B indicates "Y/N, within 5 years prior to INDEX dx date or btw dx and imaging date?" <ol style="list-style-type: none"> 1) Cancer (See Cancer Codes sheet) <ol style="list-style-type: none"> 1a) Cancer, Y/N, within 12 months prior to INDEX dx date or btw dx and imaging date? 1b) Cancer, Y/N, within 5 years prior to INDEX dx date or btw dx and imaging date? 2) Trauma 3) IV drug abuse 4) Neurologic impairment 5) Unexplained weight loss 6) Immunosuppression 7) Oral glucocorticoid use (medication order within 12 months prior to exam result date) 8) Fever 9) Hx urinary infections 10) Hx abdominal aortic aneurysm 11) Low back pain dx present within 12 months prior to INDEX lbp dx NOTE: For this risk factor only, <ul style="list-style-type: none"> - A indicates "Y/N, within 12 months prior to INDEX dx date - B indicates "Y/N, within 5 years prior to INDEX dx date

Measure	<u>Risk Factors</u>
	12) intraspinal abscess 13) Any “e” code
Don’t use opioid or butalbital treatment for migraine, except as a last resort	Presence (Y/N) within 60 days prior to migraine diagnosis date: 1) External causes of injury: Any “E” code from ICD9 set (external causes) 2) Back pain 3) Fractures 4) All cancers, except non-melanoma skin cancers
Don’t order sinus CT or prescribe antibiotics for uncomplicated acute rhinosinusitis	Identify presence of conditions that might indicated complicated or chronic rhinosinusitis (Y/N) diagnosed during the index encounter or within the following 1 month of the encounter: 1) Chronic sinusitis
Don’t do imaging for uncomplicated headache	Within 5 years prior to index diagnosis: 1) Presence of cancer (Y/N), excluding non-melanoma skin cancer On Day of Diagnosis (Y/N): 1) Fever 2) Neurologic symptoms - Visual changes - Seizures - Numbness/Paresthesia - Hearing change - Change in smell - Incontinence - Aura 3) Syncope

^aTwo board certified internal medicine physicians and a research assistant collected information on whether we accurately captured the numerator, denominator, and exclusion definitions, and whether clinical explanatory risk factors were present.