MN APCD
All Payer Claims Database

TECHNICAL SPECIFICATIONS AND METHODS SUPPLEMENT

Analysis of Low-Value Health Services in the Minnesota All Payer Claims Database

MAY 2017

MDH Minnesota Department of Health

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Introduction

The Health Economics Program's (HEP) analysis of low-value services in the Minnesota All Payer Claims Database (MN APCD) focused on 18 claims-based measures of low-value imaging, testing, and screening. For each measure, an existing claims-based operational definition of the low-value service was applied to outpatient claims in the MN APCD incurred during calendar year 2014. This document serves as a technical supplement to the *Analysis of Low-Value Health Services in the Minnesota All Payer Claims Database* issue brief. This document will be of particular value to organizations or researchers who are interested in conducting similar analyses on other administrative datasets.

The analysis presented in the issue brief and detailed here is intended to assist private and public stakeholders in their efforts to increase the efficiency of health care in Minnesota. These results provide the first statewide estimates of specific low-value services and demonstrate the feasibility of using the MN APCD to measure specific types of potentially low-value health care.

Sensitivity Analysis

Several measures used in this analysis were developed by Aaron Schwartz et al. in their 2014 analysis of low-value services in a Medicare dataset. Their research applied a more sensitive and more specific definition of each low-value service to examine the differences in utilization and cost drivers by the measure's specification. For all measures developed by Schwartz et al., HEP applied the more specific service definition to minimize the number of false positive errors in the analysis. A precursory sensitivity analysis on several measures indicated that utilization rates and costs were sensitive to the claims-based definition applied to the data. For example, expanding the age band for screening measures or reducing the number of exclusion criteria in a measure affected the observed utilization rate and associated costs. These findings suggest that a cautious approach is required when using these data to make policy recommendations. Researchers and analysts should think critically about the goals of measuring low-value services for their organizations and choose a claims-based measure that best serves those goals.

Limitations

The measures used in this analysis come from disparate sources and may not be directly comparable to one another in their sensitivity and specificity. Measures developed by the Washington State Choosing Wisely Task Force, Schwartz et al., and Segal et al., were not developed by certified measurement organizations and may not be appropriate for quality improvement measurement. This study is also subject to a more general set of limitations associated with using administrative billing data to measure health service utilization. This methodology is not appropriate for identifying any particular service as low-value as the clinical context and provider observation that would affect that assessment is unobservable in claims data. Additionally, variation in the generation or processing of medical claims by providers and payers may cause measurement error.

Cost Analysis

This analysis was restricted to the measurement of direct costs associated with low-value services. For all measures, only the costs associated with numerator claims were included in cost analysis. Out-of-pocket costs were defined as the sum of deductible, copayment, and coinsurance payments. This approach to cost reporting likely under-reports the true cost of low-value services by excluding facility or related claims that may not have been incurred without the provision of the low-value service. Differences in provider billing practices and payer claims adjudication may also contribute to differences in cost measurement both within and across low-value service types.

Sources of Claims-Based Low-Value Service Definitions

1. Centers for Medicare and Medicaid Services (CMS) Outpatient Imaging Efficiency Measures
   a. Abdominal computed tomography (CT) with and without contrast
   b. Simultaneous use of brain and sinus CT
   c. Thorax CT with and without contrast
2. Washington Health Alliance Choosing Wisely Task Force
   a. CT for suspected appendicitis without prior ultrasound
   b. Cervical cancer screening for women age 13-20
3. National Committee for Quality Assurance (NCQA) Health Effectiveness and Data Information Set (HEDIS) Measures
   a. Imaging for initial diagnosis of low back pain
4. Schwartz et al. (2014)
   a. Sinus CT for uncomplicated sinusitis
   b. Head imaging for uncomplicated headache
   c. Head imaging for syncope (fainting)
   d. Pre-operative chest X-ray for low/intermediate risk surgeries
   e. Pre-operative cardiac stress test for low/intermediate risk surgeries
   f. Pre-operative pulmonary function testing for low/intermediate risk surgeries
   g. Carotid artery disease screening at syncope encounters
   h. Carotid artery disease screening in asymptomatic adults
   i. Prostate-specific antigen (PSA) screening for men age 75+
   j. Cervical cancer screening for women age 65+
   k. Colorectal cancer screening for adults age 85+
5. Segal et al. (2014)
   a. Electroencephalography (EEG) testing at syncope encounters

Measure Definitions and CPT®/ICD-9[1] Code Tables

1. CMS Outpatient Imaging Efficiency Measures are publically available through CMS QualityNet Portal: http://www.qualitynet.org/dcs/er?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=1228695266120

2. Washington Health Alliance (WHA) Choosing Wisely Task Force measures are available in the *Choosing Wisely Claims-Based Technical Specifications* document available from WHA. See page 44 of the *Choosing Wisely in Washington State* report for a link to the technical specifications: http://wahealthalliance.org/wp-content/uploads.php?link-year=2014&link-month=09&link=Choosing-Wisely-in-Washington-state.pdf

3. HEDIS Use of Imaging Studies for Low Back Pain measure is available from the NCQA. This analysis used the HEDIS 2013 specification: http://www.ncqa.org/hedis-quality-measurement/hedis-measures

4. Schwartz et al. (2014) measures are available in the eAppendix: Methods and Results Supplemental Content document available via JAMA Network: http://jamanetwork.com/journals/jamainternalmedicine/fullarticle/1868536?=utm

5. Segal et al. (2014) measure available in Appendix 1 of Segal et al. (2014)

Definition of Common Terms

Encounter: All claims for a unique individual on a unique first date of service. An encounter can include both facility and professional claims and could include multiple providers or places of service.

Encounter-based Rate: Rates are calculated as numerator encounters divided by denominator encounters, and multiplied by 100. These rates are interpreted as the percentage of encounters in which the low-value service was delivered relative to the encounters where delivery of the service was possible.

Event: The claim or group of claims that indicates the encounter *could have* contained the low-value service. The encounter containing the event will contribute one to the denominator if it is not excluded based on the exclusion criteria.

Index Event: The claims that define the anchor date for measuring a time period. For measures with time dependency (e.g.: claims occurring within 30 days of a diagnosis), the index event defines the date from which the timing window will be measured.

Population-based Rate: These rates are calculated as the number of encounters that included the low-value service, divided by person years at risk, and multiplied by 1000. These rates express the number of low-value services per 1000 person years at risk. A member-month is counted as 'at risk' if it meets the inclusion criteria of the initial population.

Product Lines: The insurance types to which the measure was applied. Payer types were grouped into Commercial, Medicare Fee-for-Service (FFS), Medicare Managed Care (MC), Medicaid, and Other State Insurance for this analysis.

[1] CPT: Current Procedural Terminology
ICD-9: International Classification of Disease and Related Health Problems 9th Revision

Head Imaging for Uncomplicated Headache

Measure/Recommendation Source: Schwartz et al. (2014)

American College of Radiology

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: None
- Enrollment: Enrolled at least one month during measurement year
- Event: Outpatient claim with a diagnosis of headache or migraine headache
- Index Event: Each unique event

Rate Calculation: Encounter-based rate

Denominator: All non-excluded encounters in the initial population
Numerator: All non-excluded encounters in the initial population with a claim for CT or magnetic resonance imaging (MRI) of the head/brain

Exclusion Criteria:

An encounter in the initial population was excluded if it contained any claims with diagnoses for:
Post-traumatic or thunderclap headache; cancer; migraine with hemiplegia or infarction; giant cell arteritis; epilepsy/convulsions; cerebrovascular diseases; TIA/stroke/subarachnoid hemorrhage; head or face trauma; altered mental status; nervous and/or musculoskeletal system symptoms; personal history of stroke/TIA or cancer

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

Imaging at Initial Presentation for Low Back Pain

Measure/Recommendation Source: National Committee for Quality Assurance (NCQA) HEDIS

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: Age 18 to 50 in month of index event
- Enrollment: Continuous enrollment for 180 days prior to and 30 days following the index event
- Event: Outpatient or emergency department claim with a primary diagnosis of low back pain
- Index Event: Earliest event occurring in the measurement year

Rate Calculation: Encounter-based rate

Denominator: All non-excluded encounters in the initial population that include the index event
Numerator: Encounters in the denominator with a CPT code indicating an X-ray, MRI, or CT scan of the back within the 28 day period following the index event

Exclusion Criteria:

Encounters were excluded from the initial population if they met one or more of the following criteria:

- Any claims with a diagnosis of low back pain in the 180 day period before the index event date
- Any claims with a cancer diagnosis occurring between 1/1/2013 and 28 days after the index event date
- Any claims with diagnosis of trauma, intravenous (IV) drug abuse, or neurologic impairment between one year prior to the index event date and 28 days after the index event date

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

Electroencephalography (EEG) Testing at Syncope Encounters

Measure/Recommendation Source: Segal et al. (2014)

National Institute for Health and Care Excellence (NICE UK)

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: None
- Enrollment: Enrolled at least one month during the measurement year
- Event: Outpatient claim with a diagnosis of syncope
- Index Event: Each unique event

Rate Calculation: Encounter-based rate

Denominator: All non-excluded encounters in the initial population
Numerator: All non-excluded encounters in the initial population with a claim for EEG

Exclusion Criteria:

None

Head Imaging for Evaluation of Syncope

Measure/Recommendation Source: Schwartz et al. (2014)

American College of Physicians

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: None
- Enrollment: Enrolled at least one month during measurement year
- Event: Outpatient claim with a diagnosis of syncope
- Index Event: Each unique event

Rate Calculation: Encounter-based rate

Denominator: All non-excluded encounters in the initial population
Numerator: All non-excluded encounters in the initial population with a claim for CT or MRI imaging of the head/brain

Exclusion Criteria:

An encounter in the initial population was excluded if it contained any claims with diagnoses for:
Epilepsy/convulsions; cerebrovascular diseases; TIA/stroke/subarachnoid hemorrhage; head or face trauma; altered mental status; nervous and/or musculoskeletal system symptoms; personal history of stroke/TIA or cancer

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

Screening for Carotid Artery Stenosis at Syncope Encounters

Measure/Recommendation Source: Schwartz et al. (2014)

American Academy of Neurology

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: None
- Enrollment: Enrolled at least one month during measurement year
- Event: Outpatient claim with a diagnosis of syncope
- Index Event: Each unique event

Rate Calculation: Encounter-based rate

Denominator: All non-excluded encounters in the initial population
Numerator: All non-excluded encounters in the initial population with a claim for carotid artery disease screening

Exclusion Criteria:

An encounter in the initial population was excluded if it contained any claims with diagnoses for:
Stroke/TIA; retinal vascular occlusion/ischemia; nervous and musculoskeletal symptoms

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

Sinus CT for Simple Sinusitis

Measure Source: Schwartz et al. (2014)

American Academy of Otolaryngology—Head & Neck Surgery Foundation

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: None
- Enrollment: Enrolled at least one month during measurement year
- Event: Outpatient claim with a diagnosis of sinusitis
- Index Event: Each unique event

Rate Calculation: Encounter-based rate

Denominator: All non-excluded encounters in the initial population
Numerator: All non-excluded encounters in the initial population with a claim for a sinus CT

Exclusion Criteria:

An encounter in the initial population was excluded if it contained any claims with diagnoses for:
Complications of sinusitis; immune deficiencies; nasal polyps; head/face trauma

Additionally, patients with chronic sinusitis were excluded. Chronic sinusitis was defined as having an encounter that included at least one claim with a sinusitis diagnosis during the 365 days preceding the index event through 30 days following the index event.

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

Simultaneous Use of Brain and Sinus CT

Measure/Recommendation Source: CMS Hospital Outpatient Imaging Efficiency Measures (OP-14)

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: None
- Enrollment: Enrolled at least one month during measurement year
- Event: Outpatient claim with a CPT for a brain CT
- Index Event: Each unique event

Rate Calculation: Encounter-based rate
Denominator: All non-excluded encounters in the initial population
Numerator: All non-excluded encounters in the initial population with a claim for a sinus CT

Exclusion Criteria: An encounter in the initial population was excluded if it contained any claims with diagnoses for:
Cancer; trauma; orbital cellulitis; intracranial abscess

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

Abdominal CT with and without Contrast

Measure/Recommendation Source: CMS Hospital Outpatient Imaging Efficiency Measures (OP-10)

Initial Population:

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: None
- Enrollment: Enrolled at least one month during measurement year
- Event: Outpatient claim with a CPT for an abdominal CT with contrast, abdominal CT without contrast, or abdominal CT with and without contrast
- Index Event: Each unique event

Rate Calculation: Encounter-based rate
Denominator: All non-excluded encounters in the initial population
Numerator: All non-excluded encounters in the initial population with a claim for abdominal CT with and without contrast

Exclusion Criteria: An encounter in the initial population was excluded if it contained any claims with diagnoses for:
Adrenal mass; blunt abdominal trauma; hematuria; infections of kidney; jaundice; liver lesion (mass or cancer); malignant cancer of pancreas; diseases of urinary system; pancreatic disorders; unspecified disorder of kidney or ureter

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

Thorax CT with and without Contrast

Measure/Recommendation Source: CMS Hospital Outpatient Imaging Efficiency Measures (OP-11)

Initial Population:

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: None
- Enrollment: Enrolled at least one month during measurement year
- Event: Outpatient claim with a CPT for a thorax CT with contrast, thorax CT without contrast, or thorax CT with and without contrast
- Index Event: Each unique event

Rate Calculation: Encounter-based rate
Denominator: All non-excluded encounters in the initial population
Numerator: All non-excluded encounters in the initial population with a claim for thorax CT with and without contrast

Exclusion Criteria: An encounter in the initial population was excluded if it contained any claims with diagnoses for:
Internal injury of chest, abdomen, and pelvis; injury to blood vessels; crushing injury

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

CT for Suspected Appendicitis without Prior Ultrasound

Measure/Recommendation Source: *Less Waste, Less Harm: Choosing Wisely in Washington State* report (2014)

American College of Radiology

Initial Population

- Product Lines: Commercial, Medicaid, Other State Insurance
- Age Restrictions: Patients 18 and under in the month of the index event
- Enrollment: Enrolled in the month of the index event and in the month preceding the index event
- Event: Outpatient claim with a diagnosis of appendicitis during the measurement year
- Index Event: First qualifying event in the measurement year

Rate Calculation: Encounter-based rate
Denominator: All encounters in the initial population
Numerator: All encounters in the initial population with a claim for CT of the abdomen and/or pelvis occurring up to 30 days before the index event with no claims for ultrasound in the 30 days before the index event

Exclusion Criteria:
None

Screening for Carotid Artery Stenosis in Asymptomatic Adults

Measure/Recommendation Source: Schwartz et al. (2014)

American Academy of Family Physicians

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: 18+
- Enrollment: Continuously enrolled for 2 months

Rate Calculation: Population-based rate

Denominator: All non-excluded member months in the initial population
Numerator: Non-excluded encounter with a claim for carotid imaging by a member of the initial population

Exclusion Criteria:

An encounter in the initial population was excluded if it contained any claims with diagnoses for:
Stroke/TIA; retinal vascular occlusion/ischemia; nervous and musculoskeletal symptoms

Encounters in the initial population were excluded if they occurred in the 14 day period following an inpatient admission or emergency department claim.

Member months were excluded from the initial population if the enrollee had any claims with a TIA/stroke diagnosis in the preceding months. Claims history was assessed retrospectively to 1/1/2013.

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

Cervical Cancer Screening for Women Age 13-20

Measure/Recommendation Source: *Less Waste, Less Harm: Choosing Wisely in Washington State* report (2014)

U.S. Preventive Services Task Force

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: 13-20
- Enrollment: Continuously enrolled for 2 months

Rate Calculation: Population-based rate

Denominator: All non-excluded member months in the initial population
Numerator: Non-excluded encounters with a claim for cervical cancer screening by a member of the initial population

Exclusion Criteria:

Member months were excluded from the initial population in the enrollee had any claims with a cervical or related cancer diagnosis in the preceding months. Claims history was assessed retrospectively to 1/1/2013.

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

Cervical Cancer Screening for Women 65+

Measure/Recommendation Source: Schwartz et al. (2014)

U.S. Preventive Services Task Force

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: 65+
- Enrollment: Continuously enrolled for 2 months

Rate Calculation: Population-based rate

Denominator: All non-excluded member months in the initial population
Numerator: Non-excluded encounter with a claim for cervical cancer screening by a member of the initial population

Exclusion Criteria:

An encounter in the initial population was excluded if it contained any claims with diagnoses for:
Cervical and other cancers; dysplasias; abnormal Papanicolaou finding; HPV positivity

Member months were excluded from the initial population if the enrollee had any claims with a cervical cancer diagnosis in the preceding months. Claims history was assessed retrospectively to 1/1/2013.

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

Prostate-Specific Antigen Screening for Men 75+

Measure/Recommendation Source: Schwartz et al. (2014)

U.S. Preventive Services Task Force

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: 75+
- Enrollment: Continuously enrolled for 2 months

Rate Calculation: Population-based rate

Denominator: All non-excluded member months in the initial population
Numerator: Non-excluded encounter with a claim for prostate specific antigen screening by a member of the initial population

Exclusion Criteria:

Member months were excluded from the initial population if the enrollee had any claims with a prostate cancer diagnosis in the preceding months. Claims history was assessed retrospectively to 1/1/2013.

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

Colorectal Cancer Screening for Adults Age 85+

Measure/Recommendation Source: Schwartz et al. (2014)

U.S. Preventive Services Task Force

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: 85+
- Enrollment: Continuously enrolled for 2 months

Rate Calculation: Population-based rate

Denominator: All non-excluded member months in the initial population
Numerator: Non-excluded encounter with a claim for colorectal cancer screening by a member of the initial population

Exclusion Criteria:

Member months were excluded from the initial population if the enrollee had any claims with a colorectal cancer diagnosis in the preceding months. Claims history was assessed retrospectively to 1/1/2013.

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

Pre-operative Cardiac Stress Test for Low and Intermediate Risk Surgeries

Measure/Recommendation Source: Schwartz et al. (2014)

The Society of Thoracic Surgeons

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: None
- Enrollment: Enrolled at least one month during measurement year
- Event: Outpatient claim for a qualifying low/intermediate risk surgery
- Index Event: Each unique event

Rate Calculation: Encounter-based rate

Denominator: All non-excluded encounters in the initial population
Numerator: Non-excluded encounters in the denominator with a claim for a cardiac stress test in the 30 day period prior to the index event

Exclusion Criteria:

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 encounters were excluded if they occurred in the 30 day period following an inpatient admission, occurred in the 1 day period following an emergency department claim, or were associated with an excluded index event.

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

Pre-operative Chest X-Ray for Low and Intermediate Risk Surgeries

Measure/Recommendation Source: Schwartz et al. (2014)

American College of Surgeons

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: None
- Enrollment: Enrolled at least one month during measurement year
- Event: Outpatient claim for a qualifying low/intermediate risk surgery
- Index Event: Each unique event

Rate Calculation: Encounter-based rate

Denominator: All non-excluded encounters in the initial population
Numerator: Non-excluded encounters in the denominator with a claim for a chest X-ray in the 30 day window prior to the index event

Exclusion Criteria:

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 encounters were excluded if they occurred in the 30 day period following an inpatient admission, occurred in the 1 day period following an emergency department claim, or were associated with an excluded index event.

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

Pre-operative Pulmonary Function Test for Low and Intermediate Risk Surgeries

Measure/Recommendation Source: Schwartz et al. (2014)

The Society of Thoracic Surgeons

Initial Population

- Product Lines: Commercial, Medicaid, Medicare FFS, Medicare MC, Other State Insurance
- Age Restrictions: None
- Enrollment: Enrolled at least one month during measurement year
- Event: Outpatient claim for a qualifying low/intermediate risk surgery
- Index Event: Each unique event

Rate Calculation: Encounter-based rate

Denominator: All non-excluded encounters in the initial population
Numerator: Non-excluded encounters in the denominator with a claim for a pulmonary function test in the 30 day period prior to the index event

Exclusion Criteria:

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 encounters were excluded if they occurred in the 30 day period following an inpatient admission, occurred in the 1 day period following an emergency department claim, or were associated with an excluded index event.

Encounters meeting one or more exclusion criteria were excluded from the numerator and denominator when reporting utilization rates and their costs were not included in cost reporting.

APPENDIX TABLE

Total Spending on Low-Value Services by Payer

	Measure	Commercial	Medicaid	Medicare Fee-for-Service	Medicare Managed Care	Other State	Out-of-Pocket
1	Head Imaging for Uncomplicated Headache	$12,781,640	$3,370,811	$892,617	$791,351	$393,552	$3,935,474
2	Imaging at Initial Presentation for Low Back Pain	$2,094,245	$513,120	$64,079	$14,283	$51,069	$1,037,074
3	EEG Testing at Syncope Encounters	$333,860	$72,359	$55,529	$54,717	$7,555	$74,244
4	Head Imaging for Evaluation of Syncope	$1,086,988	$315,989	$114,458	$218,086	$32,320	$339,124
5	Screening for Carotid Artery Stenosis at Syncope Encounters	$225,126	$51,879	$47,797	$71,176	$5,386	$52,201
6	Sinus CT for Simple Sinusitis	$1,373,654	$196,229	$154,485	$126,382	$36,969	$676,652
7	Simultaneous Use of Brain and Sinus CT	$382,835	$140,111	$39,279	$61,642	$13,746	$138,935
8	Abdominal CT with and without Contrast	$4,541,581	$618,835	$699,638	$916,038	$127,019	$1,175,830
9	Thorax CT with and without Contrast	$171,324	$34,766	$76,891	$73,269	$4,539	$73,494
10	CT for Suspected Appendicitis without Prior Ultrasound	$481,108	$159,229	$0	$0	$0	$56,661
11	Screening for Carotid Artery Stenosis in Asymptomatic Adults	$5,142,809	$491,303	$1,526,090	$1,665,086	$125,506	$1,477,441
12	Cervical cancer screen, Women 13-20	$68,129	$31,840	$0	$0	$3,027	$5,196
13	Cervical cancer screen, Women 65+	$45,082	$1,701	$362,103	$293,459	$835	$20,019
14	Prostate-Specific Antigen Screening, Men 75+	$26,628	$1,564	$669,362	$218,851	$556	$48,247
15	Colorectal Cancer Screening, Adults 85+	$66	$0	$11,310	$4,451	$0	$458
16	Pre-op Cardiac Stress Test (low-risk, non-cardiac surgery)	$190,633	$28,928	$129,883	$72,310	$9,731	$69,243
17	Pre-op Chest X-Ray (low-risk, non-cardiac surgery)	$207,318	$28,283	$63,035	$55,332	$5,385	$62,620
18	Pre-op Pulmonary Function Test (low-risk, non-cardiac surgery)	$21,722	$3,791	$11,980	$7,891	$553	$7,209

Out-of-pocket spending includes deductible, copayment, and coinsurance payments across all payer types

SOURCE: MDH/Health Economics Program analysis of the MN APCD, March 2017

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MN APCD

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MDH Minnesota Department *of* Health