



CONNECTICUT HEALTHCARE COST ESTIMATOR TOOL
TECHNICAL NOTES

INTRODUCTION

The CT Healthcare Cost Estimator Tool (CET) provides cost estimates of common inpatient and outpatient medical services, durable medical equipment (DME), and prescription drugs. Estimates are calculated using claims data submitted to Connecticut's All Payer Claims Database (APCD). The claims for services used in the CET occurred between October 1, 2021 – September 30, 2023. Estimates are presented separately for commercial and Medicare Advantage plans. Averages for commercial plans are based on claims data from coverage plans purchased on the state's health insurance marketplace (Access Health, CT), and employer-sponsored and state employee health care plans, and therefore are not representative of Medicare or Medicaid/CHIP costs. Medicare Advantage estimates are based on claims data from Medicare Advantage plans and are not representative of traditional Medicare fee-for-service claims. The estimates reflect average costs for selected procedures, equipment, and drugs and should not be interpreted as quotes or guarantees of medical service costs.

Mathematica built the CET on behalf of and in consultation with CT OHS.

This document summarizes the data and methods used to create the CET.

ANALYTIC POPULATION

The CET uses an analytic file produced using commercial and Medicare Advantage medical and pharmacy claims in Connecticut's APCD. The APCD receives claims from: (1) Medicare Advantage plans, and (2) commercial fully insured plans, state employee and municipal self-insured plans. Except for the latter two, claims for Employee Retirement Income Security Act (ERISA) self-insured plans which comprise about half of CT's commercial market, are not submitted to the APCD because of the Liberty Mutual vs Gobeille Decision.¹ Medical claims utilized in the inpatient, outpatient, and DME tabs of the CET represent payments for medical services/devices only, they exclude retail pharmacy, vision, and dental service claims. Pharmacy claims are utilized in the pharmaceutical tab of the CET represent payments for retail pharmacy 30-day equivalent prescriptions.

The following claims are excluded from the analytic population:

1. Claims from plans outside of the commercial and Medicare Advantage markets
2. Denied, reversed, or non-primary claims (header_status not equal to 01, 19, -1, or -2)
3. Orphaned claims (orphaned_header_flag = Y)
4. Claims with negative paid (paid_amt) or negative cost sharing (copay_amt + coinsurance_amt + deductible_amt) amounts across all claim lines

¹ For more information about the Gobeille decision on self-insured or Employee Retirement Income Security Act (ERISA) governed plans and how it has impacted APCD please read: <https://www.dol.gov/sites/dolgov/files/ebsa/about-ebsa/about-us/state-all-payer-claims-databases-advisory-committee/final-report-and-recommendations-2021.pdf>

5. Outpatient claim lines with \$0 total payments
6. Claims paid outside of the runout period. That is, claim header records with a paid date after June 30 of the year following the date of service.
7. Claims without a matching member month record. To match a medical service/device/pharmacy claim, the member month record must have the same member (internal_member_id) and payer (medical_submitter_id) and be active during the month when medical services occurred (year_month contains first_service_dt). To match a pharmacy claim, the member month record must have the same member (internal_member_id) and be active during the month when prescription was filled or when (year_month contains prescription_filled_dt).
8. For outpatient and DME estimates, the sum of spending (insurer payments plus consumer out-of-pocket payments) reported on the claim lines associated with a medical header record must equal the allowed_amount reported on the header record, within a \$10 margin. We excluded less than one percent of outpatient claims that did not meet this criterion. The exclusion does not apply to inpatient claims, where costs are based on the medical header record, or to pharmacy claims, where cost are based on a single pharmacy claim record.

The population is restricted to Connecticut residents (out_of_state_flag = N).

The outpatient population is restricted to claims that occurred in hospitals (place_of_setting = 1 or 7) or free-standing ambulatory surgery centers (place_of_setting = 8). These are defined as facility types (fac_type) in the analytic file. The tool displays average outpatient costs for both settings for comparison.

Services with fewer than 11 instances are excluded. A small number (n<11) of inpatient claims that were associated with multiple discharges are also excluded.

Services in the Tool were selected based on a combination of (1) high prevalence and (2) high out-of-pocket costs. Additionally, for inpatient and outpatient services, we considered “shoppability,” i.e. services for which consumers are most likely to shop around. For outpatient surgeries, we only included surgeries defined as either “narrow” or “broad” per the Agency of Healthcare Research and Quality Healthcare Cost and Utilization Project’s Surgery Flags Software for Services and Procedures.

UNITS OF ANALYSIS

Inpatient. The unit of analysis for inpatient procedures is an inpatient discharge (inpatient_discharge_id) that occur in an inpatient hospital setting (type_of_setting_id = 1, place_of_setting_id = 1, 14, or 6), and that map to a major Connecticut acute care hospital. A unique Medicare Severity Diagnosis Related Group (DRG) code is assigned to each inpatient discharge. Cost estimates are displayed by hospital and are based on average costs for the selected DRG and insurance payer. If the user selects “Not sure,” inpatient facility costs are averaged for the selected DRG across all payers. To align with fiscal years 2020 to 2022, we used MS-DRG codes from versions 38 and 39, respective for each fiscal year. For more

information about Medicare Severity DRG codes, see <https://www.cms.gov/medicare/medicare-fee-for-service-payment/acuteinpatientpps/ms-drg-classifications-and-software>.

Inpatient cost estimates are displayed by hospital and include facility fees—fees associated with use of hospital space and equipment—and do not include professional fees—fees associated with clinician services. Average professional fees are displayed separately and averaged across hospitals. Average professional fees are professional services (claim_type_id = 2) provided in the same type of setting (place_of_setting_id = 1, 7, or 6) to the same member (internal_member_id), paid by the same payer (submitter_id), and provided between the admission and discharge date of the inpatient stay.

Outpatient. The unit of analysis for outpatient procedures is a medical claim line (medical_claim_service_line_id) that occurred in an outpatient (type_of_setting_id= 2) hospital (place_of_setting_id = 7) or free-standing clinic (place_of_setting_id = 8). Outpatient procedures are defined by Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) codes. Outpatient cost estimates are displayed by facility and facility type (hospital or free-standing clinic) and are based on average facility costs for the selected procedure and insurance payer. If the user selects “Not sure,” outpatient facility costs are averaged for the selected CPT/HCPCS code across all payers. For more information about CPT/HCPCS codes, see https://www.cms.gov/medicare/fraud-and-abuse/physiciansselfreferral/list_of_codes.

Outpatient cost estimates are displayed by hospital or free-standing clinic and include facility fees—fees associated with use of hospital space and equipment—and do not include professional fees—fees associated with clinician services. Average professional fees are displayed separately and averaged across hospitals or free-standing clinics. Average professional fees are professional provider services (claim_type_id = 2, type_of_setting_id = 3) provided in the same type of setting (place_of_setting_id = 1, 7, or 8) to the same member (internal_member_id), paid by the same payer (submitter_id), and provided on the same date (first_service_dt) as the outpatient service.

DME. The unit of analysis for DME is a medical claim line (medical_claim_service_line_id) coded as DME (claim_type_id = 3 and type_of_setting_id = 8). DME are defined by CPT and HCPCS codes. DME costs are averaged for the selected procedure and insurance payer. If the user selects “Not sure,” outpatient costs are averaged for the selected CPT/HCPCS code across all payers.

Pharmaceuticals. The unit of analysis for pharmaceuticals is a retail pharmacy claim (pharmacy_claim_service_line_id). Specific retail drugs are defined by National Drug Codes (NDC). Results are displayed by drug name; multiple NDCs map to a single drug name. Pharmacy costs are calculated as 30-day equivalents (allowed_amt/thirty_day_equivalent; [coinsurance_amt+deductible_amt+copay_amt]/ thirty_day_equivalent) for the selected drug name and insurance payer. The thirty-day equivalent variable equals 1 for prescriptions less than 45 days, 2 for prescriptions between 45 and 74 days, 3 for prescriptions between 75 and 104 days, etc., i.e. increasing by 1 for each additional 30 days. The tool shows: (1) a range of out-of-pocket and total payments from the 5th to the 95th percentile and (2) average out-of-pocket and insurance payments. If the user selects “Not sure,” pharmacy costs are calculated for the selected drug across all payers.

PAYMENT LOGIC

As noted above, claims with costs less than \$0 are excluded. Claims with negative out-of-pocket have their out-of-pocket costs set at \$0.

Within each fiscal year-service category-payer combination, costs are Windsorized at the 1st and 99th percentiles. The means that for costs in the lowest percentile for a given payer, category (inpatient, outpatient, DME, pharmaceutical), and fiscal year are set equal to the 1st percentile and costs in the highest percentile for a given payer, category, and fiscal year are set equal to the 99th percentile. This mitigates the impact of outliers on averages.

Total Costs include payment from insurance and consumer out-of-pocket payments. The formula for estimating average total costs is:

If prepaid = 0, then $\text{Average}(\text{paid} + \text{copay} + \text{coinsurance} + \text{deductible})$, else
 $\text{Average}(\text{prepaid} + \text{copay} + \text{coinsurance} + \text{deductible})$

Paid and prepaid represent insurance payments, and copay, coinsurance, and deductible represent consumer out-of-pocket payments.

Total Costs are then averaged for each selected service-payer combination. If the user selects “Not Sure” for the payer, the estimate is averaged across all payers.

Estimates showing total costs = \$0 are not shown.

Inpatient costs and outpatient facility costs are displayed by site of care. Inpatient costs are displayed by hospital, including all major acute care hospitals in Connecticut. Outpatient costs are displayed for two facility types; hospital and free-standing clinic. Only hospitals and free-standing clinics in Connecticut are included.

As noted above, pharmaceutical costs are transformed to 30-day equivalent payments. Because pharmacy costs may vary for a given drug, e.g. due to different dosages, the tool displays a range of total and out-of-pocket 30-day equivalent payments from the 5th to 95th percentiles. Averages are also displayed in the bar chart.

MOST COMMON PROCEDURES

To assist consumers in knowing which procedure to select, we flag the most common procedures in each service category. However, the flags are based on more than just volume. For example, all types of vaginal deliveries are prevalent within inpatient procedures, but we only flag one of the three DRGs in that category, so that a consumer trying to estimate a vaginal delivery cost can select the most common within that group. Principles to select the most common procedures for each service category are described below.

Inpatient. To select the most common inpatient procedures, we adhered to the following principles:

- We selected between 1 and 8 procedures per inpatient category.

- We selected only one DRG code per DRG group. For example, in the table below, we only flag DRG 807, even though relative to all other inpatient procedures, 806 is also prevalent.

DRG	DRG Description	Volume	Most Common Selection
805	VAGINAL DELIVERY WITHOUT STERILIZATION OR D&C WITH MCC	281	0
806	VAGINAL DELIVERY WITHOUT STERILIZATION OR D&C WITH CC	1,167	0
807	VAGINAL DELIVERY WITHOUT STERILIZATION OR D&C WITHOUT CC/MCC	5,832	1

- We prioritized those with volume ≥ 100 , except when no DRGs in an inpatient subcategory had volume ≥ 100 .

Outpatient. To select the most common outpatient procedures, we adhered to the following principles:

- We selected between 1 and 4 procedures per outpatient category.
- We selected only one CPT code per CPT group, which only was applicable to emergency room related codes.
- We prioritized those with volume $\geq 100,000$ (or $\geq 10,000$ in categories w/ lower volume)

DME. To select the most common DME options, we adhered to the following principles:

- We selected between 1 and 3 procedures per DME category based on highest prevalence in each category.
- We prioritized those with volume $\geq 10,000$

Pharmaceutical. To select the most common pharmaceutical options, we adhered to the following principles:

- We selected between 1 and 3 drugs per pharmacy subcategory based on highest prevalence in each category.
- We prioritized those with volume $\geq 100,000$

DESCRIPTIONS

Inpatient. For inpatient DRG codes, we assigned the label associated with the CMS DRG type (as opposed to APR DRG type), using the most recent applicable DRG version, i.e. version 39. If a single DRG code was associated with two descriptions, we used the more recent description.

Outpatient. The procedure code table provides both short and long descriptions for CPT codes. To enhance legibility for consumers, we manually selected the procedure that was more

understandable to the average layperson. Administrators of the dashboard should annually review the descriptions against revised descriptions in the procedure reference table and update descriptions accordingly.

DME. We used the long description from the CPT procedure code table for DME.

Pharmaceutical. We used the MICROMEDEX® RED BOOK® product type variable for drug names and drug categories, which are mapped to NDC codes.