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| **Domain:** | Substance Use-related Co-morbidities and Health-related Outcomes |
| **Measure:** | Service Utilization and Cost |
| **Definition:** | This measure takes the days/times in the past 90 days of self-reported service utilization variables related to health care, mental health care, and school and justice system involvement and multiplies them by a unit price of those services. These costs are then summed to get a quarterly burden of substance use for a study sample or can be used to demonstrate gains in these domains associated with treatment/recovery. |
| **Purpose:** | The purpose of this measure is to estimate the tangible cost of service utilization during the past quarter, to identify subgroups of particularly expensive clients, to examine the extent to which the cost of treatment is offset by reductions in costs to society in a study sample, or to compare two or more interventions in terms of the relative cost-effectiveness or benefit cost. |
| **Essential PhenX Measures:** | Current Age |
| **Related PhenX Measures:** |  |
| **Collections:** | Treatment ProceduresSubstance Use-related Co-morbidities and Health-related OutcomesSCD Neurology, Quality of Life, and Health Services Additional Relevant Measures |
| **Keywords:** | Global Appraisal of Individual Needs, GAIN, Cost effectiveness, Cost-benefit analysis, Service utilization, Treatment, Emergency room, Hospitalization, Outpatient service, Criminal justice costs, Criminal justice savings, SAA, Substance Use-related Co-morbidities and Health-related Outcomes |

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| **Protocol Release Date:** | February 24, 2012 |
| **PhenX Protocol Name:** | Service Utilization and Cost |
| **Protocol Name from Source:** | The Expert Review Panel has not reviewed this measure yet. |
| **Description:** | The Global Appraisal of Individual Needs (GAIN) uses 18 items to ask about days and times that different types of services were used in the past 90 days (treatment, school, incarceration). Costs have been derived for each item by economists from numerous sources. Costs can be adjusted for inflation using the Consumer Price Index. The costs are each multiplied by the number of times/days reported to the corresponding GAIN item and summed to get the quarterly cost for the study population. |
| **Specific Instructions:** | Collect data on service utilization from the 18-item Global Appraisal of Individual Needs (GAIN) protocol; multiply these by unit prices/costs and sum. Unit costs can be updated to current market values using original source documents, adjusted based on the Consumer Price Index (CPI) to standardize on a given year or be replaced with local costs where available. In all cases, cost assumptions should be explicitly stated when reporting the results. Note, additional costs (service utilization) might also be exhibited by a population (e.g., social welfare or social services) and intangible costs are not captured by these estimates. Therefore one must be careful interpreting information from just this scale as the full societal cost. |
| **Protocol:** | Please answer the next questions using the number of times, nights, or days.1. **During the past 90 days**, how many . . .1a. **times** have you had to go to the **emergency room** for a health problem? ">\_\_">\_\_"> Times1b. **nights** total did you spend in the **hospital** for a health problem? ">\_\_">\_\_"> Nights1c. **times** did you see a doctor or nurse in an **office or outpatient clinic** for a health problem?">\_\_">\_\_"> TimesPlease answer the next question using the number of days.2. **During the past 90 days**, on how many **days** were you bothered by **any** health or medical problems? ">\_\_">\_\_"> DaysPlease answer the next questions using the number of times, nights, or days.3. **During the past 90 days**, how many . . .3a. **times** have you had to go to the **emergency room** for mental, emotional, behavioral, or psychological problems? ">\_\_">\_\_"> Times3b. **nights** total did you spend in the **hospital** for mental, emotional, behavioral, or psychological problems? ">\_\_">\_\_"> Nights3c. **times** did you see a mental health doctor in an **office or outpatient clinic** for mental, emotional, behavioral, or psychologicalproblems?">\_\_">\_\_"> TimesPlease answer the next questions using the number of days.4. **During the past 90 days**, on how many **days** were you bothered by any nerve, mental, or psychological problems? ">\_\_">\_\_"> DaysPlease answer the next questions using the number of times, nights, or days.5. **During the past 90 days**, on how many **days** have you been in a detoxification program to help you through withdrawal? ">\_\_">\_\_"> Days6. **During the past 90 days**, how many . . .6a. **nights** were you in a halfway house, **residential**, inpatient, or hospital program for your alcohol or other drug use problems? ">\_\_">\_\_"> Nights6b. **days** were you in an **intensive outpatient** or day program for your alcohol or other drug use problems?">\_\_">\_\_"> Days6c. **times** did you go to a regular (1-8 hours per week) **outpatient** program for your alcohol or other drug use problems? ">\_\_">\_\_"> Times7. **During the past 90 days**, how many **days** did you go to any kind of school or training?">\_\_">\_\_"> DaysPlease answer the next questions using the number of times.8. **During the past 90 days**, how many **times** have you been arrested and charged with breaking a law? (Please do not count minor traffic violations.) ">\_\_">\_\_">\_\_"> TimesPlease answer the next questions using the number of days.9. **During the past 90 days**, how many **days** have you been . . .9a. on probation? ">\_\_">\_\_"> Days9b. on parole? ">\_\_">\_\_"> Days9c. in juvenile detention?">\_\_">\_\_"> Days9d. in jail or prison? ">\_\_">\_\_"> Days**Scoring:**Each item response is multiplied by the associated unit cost reported in the table below. These are then summed to get the quarterly cost (or benefit for those treated) to society (past 90 days):

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| Item | Description | Unit | Cost in 2009 $ |
| 1a | Emergency room visit \b | Visits | $6,177.52 |
| 1b | Inpatient hospital nights \a | Nights | $2,101.00 |
| 1c | Outpatient clinic/doctor’s office visit \c | Visits | $65.41 |
| 2 | Days bothered by any health problems \d | Days | $25.25 |
| 3a | Times gone to emergency room \b | Times | $6,177.52 |
| 3b | Nights spent in hospital \a | Nights | $2,101.00 |
| 3c | Times seen MD in office or clinic \c | Times | $76.08 |
| 4 | Days bothered by psychological problems \e | Days | $10.22 |
| 5 | How many days in detox \f | Days | $224.00 |
| 6a | Nights in residential for AOD use \g | Nights | $116.00 |
| 6b | Days in intensive outpatient program for AOD use \g | Days | $90.00 |
| 6c | Times did you go to regular outpatient program \g | Times | $31.00 |
| 7 | Days missed school or training for any reason \h | Days | $18.30 |
| 8 | How many times arrested \i | Times | $2,091.51 |
| 9a | Days on probation \j | Days | $5.67 |
| 9b | Days on parole \j | Days | $18.41 |
| 9c | Days in jail/prison/detention \j | Days | $80.26 |
| 9d | Days detention/jail \j | Days | $80.26 |
| a. Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2004. Average of national estimate for cost per hospital day with injury and for any other reason. 2004 inflated to 2009. http://www.ahrq.gov/ |
| b. Weighted national estimates from HCUP Nationwide Emergency Department Sample (NEDS), 2006, Agency for Healthcare Research and Quality (AHRQ), based on data collected by individual States and provided to AHRQ by the States. 2006 inflated to 2009. http://www.hcup-us.ahrq.gov/nedsoverview.jsp |
| c. National fee for an office or other outpatient visit (with a physician) for the evaluation and management of an established patient, which requires a detailed history, a detailed examination, and medical decisionmaking of moderate complexity. Physicians typically spend 25 minutes face-to-face with the patient and/or family (American Medical Association, 2005). |
| d. Estimated by summing the dollar-equivalent decrement in a quality-adjusted life day (QALD) associated with medical problems related to drug abuse (value of statistical life = $1 million) (see French, Salome, et al., 2000). |
| e. Estimated by summing the dollar-equivalent decrement in a quality-adjusted life day (QALD) associated with psychiatric problems related to drug abuse (value of statistical life = $1 million) (see French, Salome, et al., 2000). |
| f. http://mentalhealth.samhsa.gov/cmhs/CommunitySupport/research/toolkits/pn37ch4.asp |
| g. French, Popovici, and Tapsell (2008). |
| h. Calculated using Light’s (2001) estimated coefficient for the wage premium of an additional year of schooling (0.1325) times the average hourly rate in her sample ($6.20), inflated from 1988 dollars to 2009 dollars using the Consumer Price Index (CPI), annualized, and then divided by a 180-day school year. |
| i. Estimated using 2000 Corrections Yearbook (Criminal Justice Institute, Inc., 2001).  |
| j. Estimated using 2000 Corrections Yearbook (Criminal Justice Institute, Inc., 2001). |

Once the quarterly cost to society has been computed, due to extreme high scores, cap it at the 99.9 percentile (costs greater than 99.9 percentile are made equal to the 99.9 percentile).To update costs to new year in dollars we use the percent December to December from CPI put out by the U.S. Department of Labor Bureau of Labor Statistics. These values can be found at ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt. The value represents the change (before or after July 1, 1983) in the cost of a basic set of goods, with 1.5 meaning they had increased 150%.Here is an example of how to adjust costs from inflation. Let’s say the above costs were in 2009 dollars and we wanted to update them to 2010 dollars. Using the CPI table at the above website, we would find:For 2009, the CPI is 214.537 For 2010, the CPI is 218.056The change is calculated based on the ratio of new-to-2009 CPI, or 218.056/214.537 = 1.016. Thus 2010 costs would be estimated at 1.016 times 2009 costs from above. Users may also consider obtaining updated costs of hospitalization stays, doctor visits, and prison/jail stays from sources stated above, as the unit costs of these services change over time in ways not captured by inflation.Costs can also be triaged into Low ($0-$1,999), Moderate ($2,000-$9,999), or High ($10,000+), where the cut point Low/Moderate is based on the average cost of an episode of outpatient substance abuse treatment and the cut point Moderate/High is based on the average cost of an episode of residential treatment. While all three groups tend to reduce their costs after treatment, the amount of change is greater in the larger groups. |
| **Selection Rationale:** | More than 80 percent of substance abuse treatment is publicly funded, so historically the arguments for providing it have been around the extent to which these costs are offset by reductions in other costs to society associated with reduced substance use. The least controversial of these costs to society are those associated with the cost of tangible service utilization (e.g., emergency rooms) for which unit costs are readily available. These are considered a lower bound because they do not include the cost to society of other important expensive outcomes for which it is much more difficult to give an explicit value (e.g., avoiding a case of AIDS, a premature baby, an assault or rape). Using the 18 items from the Global Appraisal of Individual Needs (GAIN), a quarterly burden (benefit) to society associated with substance use (treatment) for this population is derived.  |
| **Source:** | Dennis, M. L., Titus, J. C., White, M., Unsicker, J., & Hodgkins, D. (2003). *Global Appraisal of Individual Needs (GAIN): Administration guide for the GAIN and related measures. Version 5.* Bloomington, IL: Chestnut Health Systems.French, M. T., Roebuck, M. C., Dennis, M. L., Diamond, G., Godley, S. H., Liddle, H. A., & Tims, F. M. (2003). Outpatient marijuana treatment for adolescents: Economic evaluation of a multisite field experiment. *Evaluation Review, 27*(4), 421-459.Salomé, H. J., French, M. T., Scott, C. K., Foss, M., & Dennis, M. L. (2003). Investigating the variation in the costs and benefits of addiction treatment: Econometric analysis of the Chicago Target Cities Project. *Evaluation and Programming Planning, 26*(3), 325-338. |
| **Life Stage:** | AdolescentAdultSeniorPregnancy |
| **Language of source:** | English, Spanish |
| **Participant:** | Adolescents and adults aged 12 years or older |
| **Personnel and Training Required:** | Interviewer must be trained and found competent to conduct personal interviews with individuals from the general population. The interviewer should be trained to prompt respondents further if a "don’t know" response is provided. |
| **Equipment Needs:** | None |
| **Standards:** |

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| **Standard** | **Name** | **ID** | **Source** |
| Common Data Element (CDE) | Health Services Use and Cost Questionnaire Assessment Score | 3376110 | [CDE Browser](https://cdebrowser.nci.nih.gov/CDEBrowser/search?elementDetails=9&FirstTimer=0&PageId=ElementDetailsGroup&publicId=3376110&version=1.0) |

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| **General references:** | American Medical Association. (2005). *Medicare physician fee schedule.* Chicago: Author.Criminal Justice Institute, Inc. (2001). *2000 corrections yearbook.* Middletown, CT: Author.French, M. T., Popovici, I., & Tapsell, L. (2008). The economic costs of substance abuse treatment: Updated estimates and cost bands for program assessment and reimbursement. *Journal of Substance Abuse Treatment, 35,* 462-469.Light, A. (2001). In-school work experience and the returns to schooling. *Journal of Labor Economics, 19*(1), 65-93.McCollister, K. E., French, M. T., & Fang, H. (2010). The cost of crime to society: New crime-specific estimates for policy and program evaluation. *Drug and Alcohol Dependence, 108*, 98-109.Salomé, H. J., French, M. T., Scott, C. K., Foss, M., & Dennis, M. L. (2003). Investigating the variation in the costs and benefits of addiction treatment: Econometric analysis of the Chicago Target Cities Project. *Evaluation and Programming Planning, 26*(3), 325-338. |
| **Mode of Administration:** | Self-administered or interviewer-administered questionnaire |
| **Derived Variables:** | None |
| **Requirements:** |

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| **Requirement Category** | **Required** |
| Major equipment | No |
| Specialized training | No |
| Specialized requirements for biospecimen collection | No |
| Average time of greater than 15 minutes in an unaffected individual | No |

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| **Process and Review:** | The Expert Review Panel has not reviewed this measure yet. |