VERMONT Blueprint for Health

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Supporting Documentation

Methods & Measures Used in the Reporting for Blueprint's Medication-Assisted Treatment Profiles

This document was prepared by
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Introduction

The Vermont Blueprint for Health medication-assisted treatment (MAT) profiles were commissioned by the Blueprint for Health in partnership with the Vermont Department of Health's Division of Alcohol and Drug Abuse Programs. The profiles offer a statewide view of the Vermont Hub & Spoke program, which provides MAT to Vermonters with opioid addiction.

The Hub & Spoke Program is a systematic treatment response to the opioid epidemic. This program enhances the provision of MAT by adding new healthcare staff to both Hub-designated providers and the Spokes to provide Health Home services described below. These new healthcare staff members link addiction treatments with Blueprint primary care practices and Community Health Teams to provide evidence-based and integrated care.

Hubs are regional specialty opioid use disorder (OUD) treatment centers regulated as Opioid Treatment Programs (OTPs) that provide intensive treatment for opioid use disorder as well as consultation and support to the Spoke teams of healthcare professionals offering MAT.

Spokes are teams of healthcare professionals working with providers that prescribe buprenorphine and naltrexone for OUD. Spokes are general outpatient medical and specialty offices — most often primary care, obstetrics and gynecology (OB/GYN), psychiatry, pain clinics, and specialty addictions treatment programs. The teams of Spoke staff are organized through the Blueprint for Health's network of Patient-Centered Medical Homes and Community Health Teams.

This document describes the methods and measures used to create two sets of service profiles:

1. **Hub Regional Profile,** which reports on the people served by Hubs and results comparing the eight Hub programs
2. **Spoke Regional Profile,** which reports on the people served by the Spokes in each Health Services Area (HSA) and compares these results

Health Home Services

To support the Hub & Spoke initiative, the Department of Vermont Health Access developed a State Plan Amendment under Section 2703 of the Affordable Care Act to create a "Health Home" for Vermont Medicaid beneficiaries with OUD. Under the Health Home framework these beneficiaries are eligible for the following services:

- Comprehensive Care Management (to identify and address gaps in care for the population)
- Care Coordination (to support the development and implementation of holistic and comprehensive plans of care for individuals)
- Support for Transitions of Care (to assure seamless transitions between health and social services and between various levels of substance use treatment programs)
- Referral to Community Supports and Services (to activate the full range of peer recovery, social, economic, vocational, housing, and health services on behalf of individual clients)
- Consumer and Family Supports (including services for family members of people with opioid use disorders, support groups, and coaching and mentoring services to help individuals develop and maintain healthy adult roles)
- Health Promotion (such as tobacco cessation, services to support healthy diet, exercise, and self-management supports for depression and other chronic conditions)

Each Hub & Spoke program participant with Medicaid must receive at least one of these Health Home services each month. These Health Home services are consistent with the services offered by teams at Patient-Centered Medical Homes to support care of chronic conditions, including substance use.

Health Home Measures

Under the terms of the Hub & Spoke Medicaid State Plan Amendment, Vermont is required to report the "Adult Medicaid Core Measures" to the U.S. Centers for Medicare and Medicaid Services (CMS) on an annual basis for the whole program. These core Health Home Measures include a combination of claims-based and hybrid (i.e., claims and clinical) measures — typically Healthcare Effectiveness Data and Information Set (HEDIS) or Physician Quality Reporting System (PQRS) national measures — and are used to evaluate health services for many conditions. The Hub & Spoke Profiles also are designed to report the Health Home measures and are identified throughout this supporting document.

Summary of Methods

The Blueprint Hub and Spoke profiles are based on data from Vermont's all-payer claims database, the Vermont Health Care Uniform Reporting and Evaluation System (VHCURES), and from the Vermont Clinical Registry. The population in these profiles is comprised of Medicaid beneficiaries, including dual eligibles, ages 18–64 years, with OUD who received treatment in a Hub and/or a Spoke in the calendar year noted on the profile.

The measure results in the profile have not been risk adjusted unless specifically noted. To prevent potential reidentification of individuals, results with fewer than 11 members are not reported consistent with Medicare guidelines.

Data Sources

As noted above, both the Hub Regional Profile and the Spoke Regional Profile consist of population-based reporting and use eligibility and claims data supplied to the state's all-payer claims database, VHCURES. These reports include data for Vermont residents, ages 18–64 years, for whom Medicaid was the primary payer or have dual eligibility in Medicaid and Medicare.

The MAT population subset includes any member receiving buprenorphine, naltrexone, or suboxone treatment in a Spoke during the measurement year as identified in the pharmacy claims data using a particular set of National Drug Codes (NDCs) (see Table 1) or any member receiving methadone, buprenorphine, or naltrexone in a Hub as identified in the medical claims data using a particular set of procedure codes (Current Procedural Terminology (CPT) / Healthcare Common Procedure Coding System (HCPCS)) (see Table 2).

Table 1. NDCs for Spoke Selection

Product Name	NDCs
BUNAVAIL®	59385001230, 59385001401, 59385001430, 59385001630, 59385001201, 59385001601
Buprenorphine Hydrochloride	00054017613, 00054017713, 00093537856, 00093537956, 00228315303, 00228315603, 00378092393, 00378092493, 35356055530, 35356055630, 42858050103, 42858050203, 43063066706, 43063075306, 50383092493, 50383093093, 53217024630, 54569657800, 55700030230, 55700030330, 62756045983, 62756046083, 68258299103, 68308020230, 68308020830, 12496010001, 12496010002, 12496010005, 12496030001, 12496030002, 12496030005, 58284010014
Buprenorphine/Naloxone	00054018813, 00054018913, 00093572056, 00093572156, 00228315403, 00228315473, 00228315503, 00228315573, 00406192303, 00406192403, 00406802003, 42291017430, 42291017530, 50268014411, 50268014415, 50268014511, 50268014515, 50383028793, 50383029493, 53217013830, 54569640800, 55700018430, 60429058630, 60429058633, 60429058730, 60429058733, 62756096983, 62756097083, 65162041503, 65162041603, 53217013830, 54569640800, 65162041503, 65162041603, 00228315403, 00228315503, 00406192303, 00406192403, 42291017430, 42291017530, 55700018430, 00228315567, 60429058711, 60429058611, 54569640800, 65162041503, 65162041603, 50268014411, 50268014415, 50268014515, 00228315403, 00228315503, 00406192303, 00406192403, 42291017430, 42291017530

Product Name	NDCs
Subutex	12496127802, 12496131002, 63874117303, 49999063830, 49999063930, 63629409201, 63874117403
Suboxone	12496120201, 12496120203, 12496120401, 12496120403, 12496120801, 12496120803, 2496121201, 12496121203, 12496128302, 12496130602, 00490005100, 00490005130, 00490005160, 00490005190, 16590066605, 16590066630, 16590066705, 16590066730, 16590066790, 23490927003, 23490927006, 23490927009, 35356000407, 35356000430, 43063018407, 43063018430, 49999039507, 49999039515, 49999039530, 52959030430, 52959074930, 54569549600, 54569573900, 54569573901, 54569573902, 54569639900, 54868570700, 54868570701, 54868570702, 54868570703, 54868570704, 54868575000, 55045378403, 55700014730, 55887031204, 55887031215, 63629403401, 63629403402, 63629403403, 63874108403, 63874108503, 66336001530, 66336001630, 68071138003, 68071151003, 68258299903
Zubsolv	54123011430, 54123090730, 54123091430, 54123092930, 54123095730, 54123098630
Vivitrol	63459030042, 65757030001

Table 2. CPTs/HCPCSs for Hub Selection

Procedure Codes	Applicable Dates	Procedure Code Description
H0020	N/A	ALCOHOL &/RX SRVC; METHDONE ADMN&/SRVC
J0571	12/1/2016 – present	BUPRENORPHINE ORAL 1 MG
J0572	12/1/2016 – present	BUPRENORPHINE/NALOXONE ORAL </=TO 3 MG BPN
J0573	12/1/2016 – present	BUPRENORPHNE/NALOXONE ORAL >3 MG BUT </=6 MG BPN
J0574	12/1/2016 – present	BUPRENORPHINE/NLX ORAL >6 MG BUT </=TO 10 MG BPN
J0575	12/1/2016 – present	BUPRENORPHINE/NALOXONE ORAL >10 MG BUPRENORPHINE

The population with an OUD that received other, non-MAT forms of treatment (the "non-MAT" group) includes members diagnosed in claims with an OUD during the measurement year, including a 24-month look-back, who did not participate in a Hub or a Spoke during the measurement year (as defined by the codes in Tables 1 and 2).

For measures requiring both claims and clinical information (e.g., Adult Body Mass Index Assessment, Screening for Clinical Depression, etc.), VHCURES data were linked to clinical data from the Vermont Clinical Registry supplied by Blueprint practices. This linkage was accomplished using fields available in both data sets (i.e., ZIP code of residence, first name, last name, date of birth, and gender). Approximately 85 percent of Vermont Clinical Registry IDs were successfully matched to VHCURES members (which exclude residents that were from out of state, uninsured, federal employees, veterans, military, and covered by self-insured plans that no longer contribute data to VHCURES). Of note, Hubs and specialty addictions treatment Spokes do not yet report to the clinical registry so measure results are not available for people served in these settings.

Attribution Methods

The Hub and Spoke regional profiles use a common attribution process to assign members receiving MAT to either a Hub or a Spoke. Therefore, the overall Hub and Spoke measure rates

and denominators are consistent throughout both profiles. In contrast, the Hub and Spoke regional profiles use separate attribution processes to attribute members to a Hub site or to a Spoke site's Health Service Area (HSA). The method of attribution used for each profile is detailed below.

Attribution to Either a Hub or a Spoke

The determination of whether to attribute a member to a Hub or a Spoke was based on where the member received a plurality of treatment months over the previous 12 months. Spoke members were identified by a list of NDC codes for buprenorphine, naltrexone, or suboxone (Table 1), and Hub members were identified by the Hub program procedure codes (Table 2). If a member had an equal number of Hub treatment months and Spoke treatment months, then they were assigned to a Hub or a Spoke using the following tie-breaker rules:

- If the same number of treatment months, then the most recent visit date
  - If the same visit date, then the highest treatment dollars

Hub Site Attribution

Attribution of members was made to a Hub site as determined by the billing provider NPI (Table 3). This was based on a 12-month look-back using the Hub program procedure codes (Table 2) for members receiving MAT at a Hub treatment center. Members were assigned to the Hub site where they received a plurality of treatment months. In the event of a tie, attribution was determined using the tie-breaker logic described above.

Table 3. Billing Provider NPIs & Reported Hub Sites

Billing Provider NPI	Reported Hub Site
1134346687	Howard Center, Inc.
1639267404	
1720042203	West Ridge
1467416206	
1730185232	Brattleboro Retreat
1912155516	Habit OPCO – Brattleboro
1023175072	Habit OPCO – West Lebanon
1013055110	BAART – Northeast Kingdom
1902944002	
1003081399	BAART – Central VT
1225115439	
1083141600	BAART – St. Albans

Spoke HSA Attribution

Attribution of members was made to a Spoke site as determined by the prescribing provider's NPI and the prescribing provider's Health Service Area (HSA). This was based on a 12-month look-back for members receiving MAT as determined by the list of NDC codes (Table 1). Members were assigned to the Spoke site where they received a plurality of treatment months. In the event of a tie, attribution was determined using the tie-breaker logic described above.

The prescribing provider's HSA was determined by the town of the provider's physical location as reported to VHCURES and by a standard Blueprint town-to-HSA crosswalk (see Appendix A).

The Blueprint also provided a roster of Spoke providers who were to be reported under either a different HSA or multiple HSAs. If a member was attributed to a provider in this roster, they were assigned to the Blueprint-reported HSA rather than the HSA determined by the crosswalk. Members assigned to providers who could be reported in multiple HSAs were assigned to a single HSA based on the proportions provided in the roster.

Demographics, Health Status, & Risk-Adjusted Measures

Demographic and health status information derived from the VHCURES claims data served as the primary inputs for the risk-adjustment methods used for the Blueprint Hub and Spoke profiles. Adjustment variables included age, gender, presence of a Blueprint-selected chronic condition, health status as measured by 3M™ Clinical Risk Groups (CRGs), and the occurrence of a maternity diagnosis (see below for additional detail).

Adjustments also were made for the partial length of Medicaid enrollment reported for some members during the measurement year. Average members (i.e., cumulative member months divided by 12) were reported for each group. For the purposes of risk adjustment, members also were stratified by gender and by age group (i.e., 18–34 years, 35–44 years, and 45–64 years).

Prevalence rates listed in the profiles use total average members as their denominator.

Selected Chronic Diseases

Blueprint-selected chronic diseases were identified from the VHCURES claims data using diagnosis coding reported in the medical claims and were based on nationally accepted definitions (e.g., HEDIS). The algorithm employed to determine Blueprint-selected chronic conditions was based on the following criteria: One or more inpatient visits, one or more outpatient emergency department (ED) visits, or two or more non-hospital outpatient visits. For identifying members with diabetes and asthma, at least two pharmacy prescriptions for those conditions also were required (see Table 4).

Table 4. Selected Chronic Condition Definitions

Chronic Disease	Medical Claim ICD-9 & ICD-10 Diagnosis Code(s) (Include 4th & 5th Digits)*	Pharmacy	Source from which ICD-9 & ICD-10 Codes were Determined
Asthma	ICD-9: 493 ICD-10: J45	NCQA NDC List	HEDIS ASM Measure
Attention Deficit Disorder (ADD)	ICD-9: 31400, 31401 ICD-10: F90	N/A	American Academy of Pediatrics and National Initiative for Children's Healthcare Quality
Depression	ICD-9: 296.2, 296.3, 300.4, 309.1, 311 ICD-10: F32, F33	N/A	HEDIS AMM Measure
Hepatitis C	ICD-9: V0262, 7041, 7044, 7051, 7054, 7070, 7071 ICD-10: B1710, B17141, B182, B1920, B1921, Z2252	N/A	Internal
Mental Health (Non-Substance Use)	ICD-9: 290, 291, 292, 293, 294, 295, 296, 297, 298, 300, 301, 302, 313, 314, 306, 307, 308, 309, 310, 311, 312 ICD-10: F0, F2, F3, F4, F5, F6, F9	N/A	Internal
Opioid Dependence	ICD-9: 30400, 30401, 30402, 30470, 30471, 30472 ICD-10: F1120, F1123, F1124, F11220, F11221, F11222, F11229, F11250, F11251, F11259, F11281, F11282, F11288	N/A	Internal
Other Substance Use	ICD-9: 303, 304 (excludes 30401, 30402, 30470, 30471, 30472), 305 (excludes 3051), 30400, 30401, 30402, 30470, 30471, 30472 ICD-10: F12, F13, 14, F15, F16, F18, F19 (excludes F1920, F1921)	N/A	Internal
Tobacco Dependence	ICD-9: 305.1 ICD-10: F172	N/A	Internal

* Includes principal diagnosis and any secondary diagnosis code reported on the claim

Current Year Pain

Chronic pain is associated with use of medications leading to opioid addiction and has been shown to occur in higher prevalence in persons with opioid addiction. Blueprint developed a measure of concurrent persistent pain using medical and pharmacy claims from the current year through the review of published methods and clinical consultation. This measure's inclusion criteria included ICD diagnosis codes specific to chronic pain, diagnosis codes for musculoskeletal conditions (e.g., low back pain, neck pain, spinal stenosis) and migraines, and pharmacy claims for non-steroidal anti-inflammatory drugs (NSAIDs), anti-convulsants, muscle relaxants, antidepressants, opiates, and migraine vascular 5-HT1 agonist medications. Opiates used to treat respiratory conditions (e.g., cough) were excluded. Selective serotonin re-uptake inhibitors (SSRIs) and other medications in the antidepressant category were excluded based on clinician review. Buprenorphine used to treat opioid addiction was excluded. Methadone was not excluded from the drug claims since it is not billed in the prescription drugs when used to treat opioid addiction but only when used to treat pain.

The following algorithm was applied to determine concurrent pain during the year:

- Any visit during the year with a primary or secondary diagnosis of chronic pain
- Four or more visits during the year with a primary or secondary diagnosis of other musculoskeletal or migraine condition(s) associated with pain
- Four or more prescriptions that used to treat pain during the year

Clinical Risk Groups

Clinical Risk Groups (CRGs) were applied to the VHCURES claims data to determine each member's health status. CRGs are a product of 3M™ Health Information Systems and are used throughout the United States as a method of risk-adjusting populations. The grouper first classifies each member into one of 1,080 distinct clinical groups based on the diagnoses reported on claims and then further aggregates these clinical groupings into nine major CRG status categories. Due to small numbers in some categories used for the Blueprint MAT Profile's risk-adjustment regression model, these nine categories were combined further. Table 5 identifies both the nine major CRG categories (columns 1 and 2) as well as the five aggregated categories used in the Blueprint profile's regression model (Column 4).

Table 5. CRG Health Status Major Categories

#	CRG Major Category Description	Examples	Aggregation for Regression Model
1	Healthy	N/A	Reference group
2	History of Significant Acute Disease	Acute ear, nose, throat illness	Acute or Minor Chronic
3	Single Minor Chronic Disease	Minor chronic joint	
4	Minor chronic disease in multiple organ systems	Minor chronic joint and migraine	Moderate Chronic
5	Single dominant or moderate chronic disease	Diabetes	
6	Significant chronic disease in multiple organ systems	Diabetes and hypertension	Significant Chronic
7	Dominant chronic disease in 3 or more organ systems	CHF, diabetes, COPD	
8	Dominant, metastatic, and complicated malignancies	Malignant breast cancer	Cancer or Catastrophic
9	Catastrophic conditions	HIV, cystic fibrosis, muscular dystrophy, quadriplegia	

It should be noted that CRGs do not include maternity and child birth in clinical classification. Since pregnant women, women delivering, and newborns contribute to utilization and expenditures, members who had claims for any of these diagnoses were flagged with a binary (0/1) variable for the risk-adjustment model.

The following ICD-9 and ICD-10 diagnosis codings were used for this purpose:

- Pregnancy and child birth: ICD-9 codes 630–677 and ICD-10 codes O00-O9A (and all 3rd and 4th digits)
- Conditions in perinatal period: ICD-9 codes 760–779 and ICD-10 codes P00-P96 (and all 3rd and 4th digits)
- Supervision of pregnancy: ICD-9 codes V22, V23, V24, V27 and ICD-10 codes Z33, Z34, Z39 (and all 3rd and 4th digits)
- Live-born infants: ICD-9 code V3 and ICD-10 code Z38 (and all 3rd and 4th digits)

Risk Adjustment for Outpatient ED Visits, Inpatient Discharges, & Total Expenditures

Risk adjustment was applied to three measures — outpatient ED visits, inpatient discharges, and total expenditures per capita — to account for potential differences in demographics and health status between treatment groups. All other measures included in the Blueprint MAT Profiles were expressed as crude rates.

For risk-adjusted utilization measures, a Poisson distribution was assumed; for risk-adjusted expenditure measures, a normal distribution was assumed. Both models included age/gender stratification groups, Blueprint-selected chronic conditions, CRG classification, and maternity. Adjusted rates were produced by summing the differences between each member's actual value and their predicted measurement from the model. Rates were weighted for partial lengths of Medicaid enrollment. Risk adjustment for reporting was implemented in SAS Enterprise Guide (Version 7.15) using regression methods.

Adjusted values were computed for each member by adding model residuals (e) to the population grand mean ($\bar{y}$). To report the overall adjusted rate for each practice, the mean of the adjusted values for the members in each treatment group ($\bar{y}_{\text{hub, }}\bar{y}_{\text{spoke}}$) and statewide ($\bar{y}_{\text{statewide}}$) were computed. The following equations represent the models for the MAT Profiles. (Note that for the risk-adjustment model, males, ages 18–34 years, and "healthy" individuals (from the 3M CRG categories) served as the reference group and therefore do not appear in the model statement.)

Model

$$y = \alpha + (F\_AGE1834)\beta_1 + (F\_AGE3544)\beta_2 + (F\_AGE4564)\beta_3 + (M\_AGE3544)\beta_4 + (M\_AGE4564)\beta_5 + (CRG\_SIGNIFICANT\_CHRONIC)\beta_6 + (MATERNITY)\beta_7 + (OTHER\_SUBSTANCE\_USE)\beta_8 + (MENTAL\_HEALTH\_NONSUBSTANCE\_USE)\beta_9 + (HEPATITIS\_C)\beta_{10}$$

$$\bar{y} = \left(\frac{\sum y_i}{MMA}\right)$$

$$y_{\text{adj}} = \bar{y} + e$$

$$e = y - \hat{y}$$

$$\bar{y}_{\text{hub, spoke}} = \left(\frac{\sum y_{adj_i}}{\sum MMA_i}\right) \text{ for each treatment group}$$

$$\bar{y}_{\text{statewide}} = \left(\frac{\sum y_{adj_i}}{\sum MMA_i}\right) \text{ for all members (equals the grand mean)}$$

Where:

- α is the intercept
- ε is the error term
- $\hat{y}$ is the predicted value from the regression model for each member
- e is the residual
- MMA is the average enrollment for each participant (i.e., the cumulative member months of enrollment during the year divided by 12)
- Subscript $_i$ indicates a value for an individual member

Measurement of Expenditures

Expenditures were measured based on the allowed amount on claims, which included both the plan payments and the member's out-of-pocket payments (i.e., deductible, coinsurance, and copayments). For each member, total expenditures were determined for the measurement year. In addition, expenditures by major and selected service categories were determined. Each detailed expenditure category was capped separately at the 99th percentile of the statewide study population to reduce the distorting influence of extreme outlier cases.

Expenditures rates were computed as an annualized crude per capita rate unless explicitly stated otherwise. Lower and upper confidence intervals of 95 percent also were included. The major and detailed expenditure categories (see Table 6) were based on type of claim, primary diagnosis codes, revenue codes, site of service codes, provider taxonomy codes, and pharmacy therapeutic groupings based on assignment of National Drug Codes (NDCs) using RED BOOK®. The reporting was hierarchical and rolled up service-line claim payments to the header claim level. For example, if an outpatient hospital claim contained a primary diagnosis of mental health or substance abuse (i.e., ICD-9 codes 290–316 or ICD-10 codes F01–F99), then the entire claim, regardless of the specific services performed, was assigned to the category of outpatient hospital mental health / substance abuse.

OUD Treatment Expenditures

The subset of healthcare expenditures associated with treatment for OUD was created to help compare the use of other general healthcare services between Hub participants, Spoke participants, and members with OUD who did not receive MAT. The OUD expenditures include the following categories:

- Professional opioid use disorder (OUD)
- Urinalysis
- Expenditure categories specific to MAT:
  - Buprenorphine dispensed in a Hub
  - Hub bundled payments
  - MAT pharmacy (buprenorphine)

Table 6. Expenditure Reporting Category Definitions

Description	Major Category	Detail Category
Hospital Inpatient	Claim type description = 'Facility', type of setting = 'Inpatient', and place of setting = 'Acute inpatient or hospital' (whole claim is assigned hierarchically in order below based on finding the diagnosis or revenue code)	
Mental Health / Substance Abuse – Inpatient		1. Primary diagnosis code = ICD-9 290–316, ICD-10 F01–F99
Maternity-Related and Newborns		2. Primary diagnosis code = ICD-9 630–677, 760–779, V22–V24, V27, V30–V39; ICD-10 O00–O9A, P00–P96, Z33, Z34, Z38, Z39
Surgical		3. Revenue code = 0360–0369 (operating room service) within the claim
Medical		4. All others
Hospital Outpatient	Claim type description = 'Facility' and type of setting = 'Outpatient' and place of setting = 'Hospital' (whole claim is assigned hierarchically in order below based on finding the diagnosis or revenue code)	
Hospital Mental Health / Substance Abuse		1. Primary diagnosis code = ICD-9 290–316, ICD-10 F01–F99
Observation Room		2. Revenue code = 0762
Emergency Room		3. Revenue codes = 0450–0459
Outpatient Surgery		4. Revenue codes = 0360–0369 (operating room services)
Outpatient Radiology		5. Revenue codes = 0320–0359, 0610–0619

Description	Major Category	Detail Category
Outpatient Laboratory		6. Revenue codes = 0300–0319
Hospital-Dispensed Pharmacy		7. Revenue codes = 0250–0259
Outpatient Physical Therapy		8. Revenue Codes = 0420–0429
Outpatient Other Therapy		9. Revenue Codes = 0430–0439, 0440–0449
Other Outpatient Hospital		10. All Others
Professional Total	Claim type description = 'Professional' and type of setting = 'Provider' or claim type = 'Outpatient' and type of setting = 'FQHC' or 'Rural Health Clinic'	
Physician Services	Primary diagnosis code not ICD-9 290–316 or ICD-10 F01–F99	Provider taxonomy coding indicates provider specialty is an allopathic or osteopathic physician (excluding psychiatrist)
Physician Inpatient Setting		With Place of Service code = 21
Physician Outpatient Setting		With Place of Service codes = 19, 22
Physician Office Setting		With Place of Service code = 11
Professional Non-Physician		Provider taxonomy coding indicates nurse practitioner, physician assistant, physical therapist, chiropractor, podiatrist, speech therapist, occupational therapist, optometrist/optician, respiratory therapist
Professional Mental Health Provider	Primary diagnosis code = ICD-9 290–316 or ICD-10 F01–F99	Provider taxonomy coding indicates psychiatrist, psychologist, MSW, LICSW, LCSW, or claims from other providers with a principal diagnosis of mental health or substance abuse
Professional OUD	Primary diagnosis code = ICD-9 30400-30403, 30470-30472 or ICD-10 F1120, F1122-F1125, F1128, F1129	
Buprenorphine Dispensed in Hub	Procedure code of J0571, J0572, J0573, J0574, J0575	
Urinalysis	Procedure codes = G0431, 80301, G0479, G0480, 83925, 80348, G0434, G6056, 80102, 80361, 80154, 82145, 83840, 80360, 80365, G6058, 82520, 80349, G0481, G0477, 80346, 80302, G6046, 82055, G6031, G6045, 80358, 82205, 80324, 80353, G6042, G0478, 80152, 80160, G6053, 80356, 80359, G6044, G0461, G0444, 80321, 80300, 80371, 80362, G0462, 80354, 80373, G0482, G6040, G0483, G0451, 80350, G6043, G0438, G0452, G6032, G6036, 80345, G6037, G0432, G6052, 80368, 80355, 84600, G6047, G0439, 80366, 80320, 80332, G0447, 80326, G0433, 80325, G6055, 80323, 80372, G6034, 80369, 80367, 80304, 80338, 80352, G6041, 80303	

Description	Major Category	Detail Category
Pharmacy	From pharmacy claims and medical claims paid to pharmacies	
Pharmacy Mental Health		RED BOOK classification used to determine therapeutic CNS medications based on NDC codes
MAT Pharmacy		See NDC codes listed in Table 1
Special Medicaid Services	From category of service and fund source coding as identified in consultation with Vermont Medicaid staff	Examples include Hub treatment, day treatment, residential care, school-based services, dental services, transportation, and case-management
Hub Bundled Payment	Any medical claim with procedure code of H0020, J0571, J0572, J0573, J0574, J0575, J2315, or J3490	

Measurement of Utilization

Selected utilization measures were determined from the claims data using the definitions outlined below in Table 7. The diagnostic testing and non-hospital outpatient visit measures were based on CPT coding linked to the Berenson-Eggers Type of Service (BETOS) classification system developed by CMS. Utilization rates were computed as an annualized crude rate per 1,000 members unless explicitly stated otherwise. Lower and upper confidence intervals of 95 percent also have been included.

Table 7. Methods & Coding for the Utilization by Type of Service Section

Category/Measure	Methods/Coding
Inpatient Hospital	
Inpatient Discharges	NCQA HEDIS Inpatient Utilization (IPU) measure: Medical, surgical, maternity. Mental disorders are not excluded. Counts the number of inpatient discharges.
Inpatient Days	NCQA HEDIS Inpatient Utilization (IPU) measure: Medical, surgical, maternity. Mental disorders are not excluded. Last date of service minus first date of service. If inpatient days > 90, inpatient days were capped at 90.
Outpatient Service Encounters	
Outpatient Emergency Department Visits	NCQA HEDIS Ambulatory Care (AMB) emergency department visit specifications. Mental disorders are not excluded.

Category/Measure	Methods/Coding
Outpatient Potentially Avoidable Emergency Department Visits	NCQA HEDIS Ambulatory Care (AMB) emergency department visit specifications and ICD-9 / ICD-10 primary diagnosis codes: ICD-9 • 034.0 – sore throat, strep • 079.99 – viral infection, unspecified • 300.00, 300.02 – anxiety, unspecified or generalized • 372.00, 372.30 – conjunctivitis, acute or unspecified • 380.10, 381.01, 381.4, 382.00, 382.9 – external and middle ear infections, acute or unspecified • 461.9, 473.9, 462, 465.9 – upper respiratory infections, acute or unspecified • 466.0, 786.2, 490 – bronchitis, acute or unspecified, or cough • 493 – asthma • 691.0, 691.8, 692.6, 692.9, 782.1 – dermatitis and rash • 719.4 – joint pain • 724.2, 724.5 – lower/unspecified back pain • 729.1, 729.5 – muscle/soft tissue limb pain • 780.79 – fatigue • 784.0 – headache ICD-10 • J020, J0300, J0301 – sore throat, strep • B9710 – viral infection, unspecified • F419, F411 – anxiety, unspecified or generalized • H1030, H1031, H1032, H1033, H109 – conjunctivitis, acute or unspecified • H6590–H6593, H6690–H6693, H6000–H6003, H6010–H6013, H60311–H60319, H60321–H60329, H60391–H60399, H6500–H6507, H66001–H66009 – external and middle ear infections, acute or unspecified • J028, J029, J0190, J0191, J069, J329 – upper respiratory infections, acute or unspecified • J40, J200, J201, J202, J203, J204, J205, J206, J207, J208, J209, R05 - bronchitis, acute or unspecified, or cough • J4520, J4530, J4540, J4550, J4522, J4532, J4542, J4552, J4521, J4531, J4531, J4541, J4551, J45990, J45991, J45909, J45998, J45902, J45901 – asthma • L22, L200, L2081, L2082, L2084, L2089, L209, L237, L247, L255, L239, L249, L259, L300, L302, L308, L309, R21 – dermatitis and rash • M25511, M25512, M25519, M25521, M25522, M25529, M25531, M25532, M25539, M25551, M25552, M25559, M25561, M25562, M25569, M25571, M25572, M25579, M2550 – joint pain • M545, M5489, M549 – lower or unspecified back pain • M6080, M60811, M60812, M60819, M60821, M60822, M60829, M60831, M60832, M60839, M60841, M60842, M60849, M60851, M60852, M60859, M60861, M60862, M60869, M60871, M60872, M60879, M6088, M6089, M609, M791, M797, M79601, M79602, M79603, M79604, M79605, M79606, M79609, M79621, M79622, M79629, M79631, M79632, M79639, M79641, M79642, M79643, M79644, M79645, M79646, M79651, M79652, M79659, M79661, M79662, M79669, M79671, M79672, M79673, M79674, M79675, M79676 – muscle/soft tissue limb pain • G933, R530, R531, R5381, R5383 - fatigue • G441, R51 - headache
Non-Hospital Outpatient Visits	Measure defined by Dartmouth Institute: BETOS M1A, M1B, M4A, M4B, M5A, M5C, M5D, M6
Professional Encounters	
Primary Care Encounters	Claim type description = 'Professional' and type of setting = 'Provider' and provider specialty based on taxonomy coding is pediatrics, internal medicine, family practice, nurse practitioner, or physician assistant

Category/Measure	Methods/Coding
Medical Specialist Encounters	Claim type description = 'Professional' and type of setting = 'Provider' and provider specialty coding based on taxonomy coding is allergy/immunology, cardiology, critical care, dermatology, endocrinology, gastroenterology, geriatric medicine, hematology/oncology, infectious disease, neurology, nephrology, pulmonary medicine, rheumatology, emergency medicine
Surgical Specialist Encounters	Claim type description = 'Professional' and type of setting = 'Provider' and provider specialty coding based on taxonomy coding is the following surgical specialty types: general surgery, cardio-thoracic, ENT, hand, neurological, plastic/reconstructive, OB/GYN, ophthalmology, orthopedic, pediatric, urology, vascular
Diagnostic Testing	
Standard Imaging	BETOS I1A–I1F
Advanced Imaging	BETOS I2A–I2D
Echography	BETOS I3A–I3F
Colonoscopy	BETOS P8D
Admissions	
Prevention Quality Indicator #05: Asthma/COPD	This measure assesses the observed rate of Ambulatory Care Sensitive (ACS) admissions with a principal diagnosis of chronic obstructive pulmonary disorder (COPD) or asthma per 1,000 members, ages 40 years and older. The specified diagnosis codes can be found on the AHRQ website.
Prevention Quality Indicator #92: Composite (Chronic)	Chronic Composite, AHRQ: This measure assesses the observed rate of ACS admissions for the composite of chronic conditions per 1,000 members, ages 18 years and older. The measure includes admissions for at least one of the following conditions: diabetes with short-term complications, diabetes with long-term complications, uncontrolled diabetes without complications, diabetes with lower-extremity amputations, chronic obstructive pulmonary disorder (COPD), asthma, hypertension, heart failure, and angina without a cardiac procedure. The specified diagnosis codes for these conditions can be found on the AHRQ website.
Prevention Quality Indicator #08: Congestive Heart Failure (CHF)	This measure assesses the observed rate of ACS admissions with a principal diagnosis of heart failure per 1,000 members, ages 18 years and older. The specified diagnosis codes can be found on the AHRQ website.
Measurement of Plan All-Cause Readmissions	Plan All-Cause Readmissions, NCQA HEDIS. This measure represents a comparison of the rate of (a) continuously enrolled members, ages 18 years and older, that had an inpatient stay followed by an acute readmission for any diagnosis within 30 days during the measurement year to (b) the expected rate of readmissions given risk factors of the patient (i.e., presence of surgeries, discharge condition, comorbidity, age, and gender). The rate is expressed as a ratio of the observed to expected readmissions where the expected number of readmissions has been risk adjusted. Because the risk probabilities for this measure are generated by NCQA, neither the statewide ratio nor the national ratio is the typical 1.0. The ratio should be used to compare the relative difference between practices and HSAs.
Health Home Utilization	
Ambulatory Care ED Visits	U.S. Centers for Medicare & Medicaid Services FY16 Health Home Measures
Inpatient Utilization	U.S. Centers for Medicare & Medicaid Services FY16 Health Home Measures
Short-Term Nursing Facility Admissions	U.S. Centers for Medicare & Medicaid Services FY16 Health Home Measures
Long-Term Nursing Facility Admissions	U.S. Centers for Medicare & Medicaid Services FY16 Health Home Measures

* When comparing to AHRQ's national benchmarks for the observed rate, it is important to keep in mind that AHRQ guidelines suggest including the entire population for the specified area in the denominator. The rates provided in the

Blueprint MAT Profiles are based on members attributed to a Hub or a Spoke for which the denominator is the sum of average members for the treatment group.

Measurement of Effective & Preventive Care

Seven primary measures were selected for inclusion in the Blueprint MAT Profiles. While it is beyond the scope of this document to provide all of the detailed specifications for each effective and preventive care measure, the denominator and numerator for each are summarized below. Since health plans may supplement claims data with medical chart reviews, the effective and preventive care measures reported in the Blueprint MAT Profiles are not directly comparable to summary HEDIS rates reported by National Committee for Quality Assurance (NCQA) or health plans.

These measures are a mixture of claims-based and hybrid (i.e., clinical and claims) measures. The source of the clinical data is the Vermont Clinical Registry, which is primarily populated by primary care practices (not including Hub facilities). When there is reporting on behalf of a Hub facility, it likely was reported by the patient's primary care practice. One implication for clinical measures is that we are reporting on a subset of the MAT population who have measurements in the clinical registry. Some of the claims-based measures have very small sample sizes as well, including Follow-up After Hospitalization for Mental Illness (HEDIS) and Breast Cancer Screening (HEDIS).

Breast Cancer Screening

Core-11, MSSP-20, NQF #0031, HEDIS Measure

This measure assesses the percentage of women, ages 52–64 years, who had a mammogram to screen for breast cancer during the measurement year or the prior year. This is a claims-based measure.

The denominator requires continuous enrollment during the two-year period. Women with evidence of bilateral mastectomy are excluded. The numerator is based on the identification of CPT, Healthcare Common Procedure Coding System (HCPCS), ICD-9, ICD-10, and Uniform Billing (UB) revenue codes in the claims data that indicated a mammogram.

Cervical Cancer Screening

Core-30, NQF #0032, HEDIS Measure

This measure assesses the percentage of women either (a) ages 21–64 years who received one or more Papanicolaou (Pap) tests to screen for cervical cancer during the measurement year or the two years prior to the measurement year or (b) ages 30–64 years who received one or more Pap tests to screen for cervical cancer during the measurement year or four years prior to the measurement year. This is a claims-based measure.

The denominator requires continuous enrollment in Medicaid during the measurement year and the three or four years prior to the measurement year. Women with evidence of a hysterectomy are excluded. The numerator is based on identification of CPT, HCPCS, ICD-9, ICD-10, and UB revenue codes in the claims data that indicate a Pap test.

Follow-Up After Hospitalization for Mental Illness

Core-4, NQF #0576, HEDIS Measure

This measure assesses the percentage of discharges for members, ages 18 years and older, who were hospitalized for treatment of selected mental health diagnoses and who had an outpatient visit, an intensive outpatient encounter, or a partial hospitalization with a mental health provider and had a follow-up visit within seven days of discharge. This is a claims-based measure.

The denominator is based on discharges, not members. For inclusion, individuals must be discharged alive from an acute inpatient setting (including an acute care psychiatric facility) with a principal diagnosis of mental illness on or between the first and last day of the measurement year. Members must be continuously enrolled in Medicaid for inclusion. Follow-up criteria must include a visit with a mental health practitioner, a visit to a behavioral healthcare facility, a visit to a non-behavioral healthcare facility with a mental health provider, and/or a visit to a non-behavioral healthcare facility with a diagnosis of mental illness.

Controlling High Blood Pressure

Core-39, NQF #0018, HEDIS Measure

This measure assesses the percentage of members, ages 18–64 years, who had a diagnosis of hypertension and whose blood pressure was adequately controlled (< 140/90 mmHg) during the measurement period. This is a hybrid measure that includes both claims and clinical data.

The denominator requires continuous enrollment in Medicaid during the measurement year and the year prior with an allowable gap of 45 days during each 12-month enrollment period. The denominator includes members who had a valid blood pressure measurement in the Blueprint clinical registry and who had an outpatient visit with a diagnosis of essential hypertension (based on claims data codes) within the first six months of the measurement period or any time prior to the measurement period. The numerator includes members whose blood pressure at the most recent visit was adequately controlled (< 140/90 mmHg) during the measurement period.

Adult Body Mass Index Assessment

This measure assesses the percentage of members, ages 18–64 years, who had an outpatient visit and whose body mass index (BMI) was documented during the measurement year or the

year prior to the measurement year. This is a hybrid measure that includes both claims and clinical data.

The denominator requires continuous enrollment in Medicaid during the measurement year and the year prior with an allowable gap of 45 days during each 12-month enrollment period. The denominator includes members who had at least one clinical measure in the Blueprint clinical registry and an outpatient visit identified in the claims data during the measurement year or the year prior. The numerator is based on members who had a valid BMI reading as identified in the clinical data.

Screening for Clinical Depression

Core-19, NQF #0418, CMS Measure

This measure assesses the percentage of members, ages 18–64 years, who had an outpatient visit and were screened for clinical depression. This is a hybrid measure that includes both claims and clinical data.

The denominator requires continuous enrollment in Medicaid for at least 90 days during the measurement year. The denominator includes members who had an outpatient visit identified in the claims data during the measurement year. The numerator is based on members who were screened for clinical depression as identified in the clinical data. Due to insufficient reporting in the clinical data registry, the Blueprint MAT Profiles do not include information on follow-up care.

Tobacco Use Screening

Core-36, NQF #1651, Joint Commission Measure

This measure assesses the percentage of members, ages 18–64 years, who were screened for tobacco use one or more times within a 24-month look-back period and who received cessation counseling intervention. This is a hybrid measure that includes both claims and clinical data.

Appendix A – Blueprint Town-to-HSA Crosswalk

HSA	Towns
Barre	Barre City Barre Town Berlin Bolton Cabot Calais Duxbury East Montpelier Fayston Marshfield Middlesex Montpelier Moretown Northfield Orange Plainfield Roxbury Topsham Waitsfield Warren Washington Waterbury Williamstown Woodbury Worcester
Bennington	Arlington Bennington Dorset Dover Glastenbury Manchester Pownal Readsboro Rupert Sandgate Searsburg Shaftsbury Somerset Stamford Sunderland Whitingham Wilmington Woodford
Brattleboro	Brattleboro Brookline Dummerston Guilford Halifax Jamaica Marlboro Newfane
Burlington (cont'd)	Fairfax Ferrisburgh Fletcher Grand Isle Hinesburg Huntington Jericho Milton Monkton North Hero Richmond Shelburne South Burlington South Hero St. George Starksboro Underhill Westford Williston Winooski
Middlebury	Addison Bridport Bristol Cornwall Lincoln Middlebury New Haven Orwell Panton Ripton Salisbury Shoreham Vergennes Waltham Weybridge Whiting
Morrisville	Belvidere Craftsbury Eden Elmore Greensboro Hardwick Hyde Park Johnson Morristown Stannard Stowe Waterville Wolcott
Newport (cont'd)	Irasburg Jay Lemington Lewis Lowell Morgan Newport City Newport Town Norton Troy Warner's Grant Warren Gore Westfield Westmore
Randolph	Barnard Bethel Braintree Brookfield Chelsea Granville Hancock Pittsfield Randolph Rochester Stockbridge
Rutland	Benson Brandon Castleton Chittenden Clarendon Danby Fair Haven Goshen Hubbardton Ira Killington Leicester Mendon Middletown Springs Mount Holly Mount Tabor Pawlet Pittsford Poultney Proctor Rutland Rutland City Shrewsbury
Springfield (cont'd)	Peru Rockingham Springfield Weathersfield Weston
St. Albans	Alburgh Bakersfield Berkshire Enosburg Fairfield Franklin Georgia Highgate Isle La Motte Montgomery Richford Sheldon St. Albans City St. Albans Town Swanton
St. Johnsbury	Barnet Burke Concord Danville East Haven Granby Guildhall Kirby Lunenburg Lyndon Maidstone Newark Sheffield St. Johnsbury Sutton Victory Walden Waterford Wheelock
White River Junction	Bradford Bridgewater Corinth Fairlee Groton Hartford Hartland Newbury Norwich Peacham

HSA	Towns	HSA	Towns	HSA	Towns	HSA	Towns
	Putney Stratton Townshend Vernon Wardsboro Westminster Windham Winhall	Newport	Albany Averill Averys Gore Barton Bloomfield Brighton Brownington Brunswick Canaan Charleston Coventry Derby Ferdinand Glover Holland		Sudbury Tinmouth Wallingford Wells West Haven West Rutland		Plymouth Pomfret Reading Royalton Ryegate Sharon Strafford Thetford Tunbridge Vershire West Fairlee West Windsor Windsor Woodstock
Burlington	Buels Gore Burlington Cambridge Charlotte Colchester Essex			Springfield	Andover Athens Baltimore Cavendish Chester Grafton Landgrove Londonderry Ludlow		

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