

THE
University of Vermont
HEALTH NETWORK

To: The Honorable Kevin Mullin, Chair, Green Mountain Care Board

From: John Brumsted, CEO University of Vermont Medical Center/President and Chief Executive Officer, University of Vermont Health Network

Date: February 15, 2022 (**Corrected February 23, 2022**)

Subject: UVM Health Network quarterly report on inpatient mental health capacity

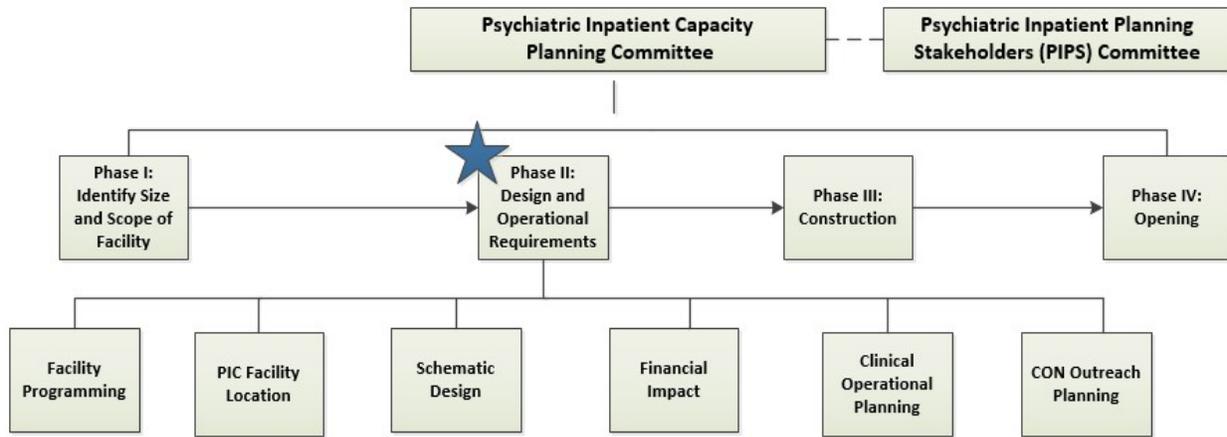
Please accept this memorandum as the UVM Health Network's quarterly status report on the planning for the new inpatient adult psychiatric capacity on the Central Vermont Medical Center (CVMC) campus. We look forward to discussing this report at an upcoming public hearing should the Board request explanatory or additional information.

For this quarterly report, we are providing an update on the progress made towards our facility planning and Certificate of Need (CON) application since our last report, as well as an overview of the planning journey conducted since our project inception in 2018. This will allow an opportunity for Board members to get re-acquainted with the earlier milestones completed ahead of our anticipated CON submission in late April, 2022.

The GMCB identified the following milestones for completion, which are addressed in this report and appendices:

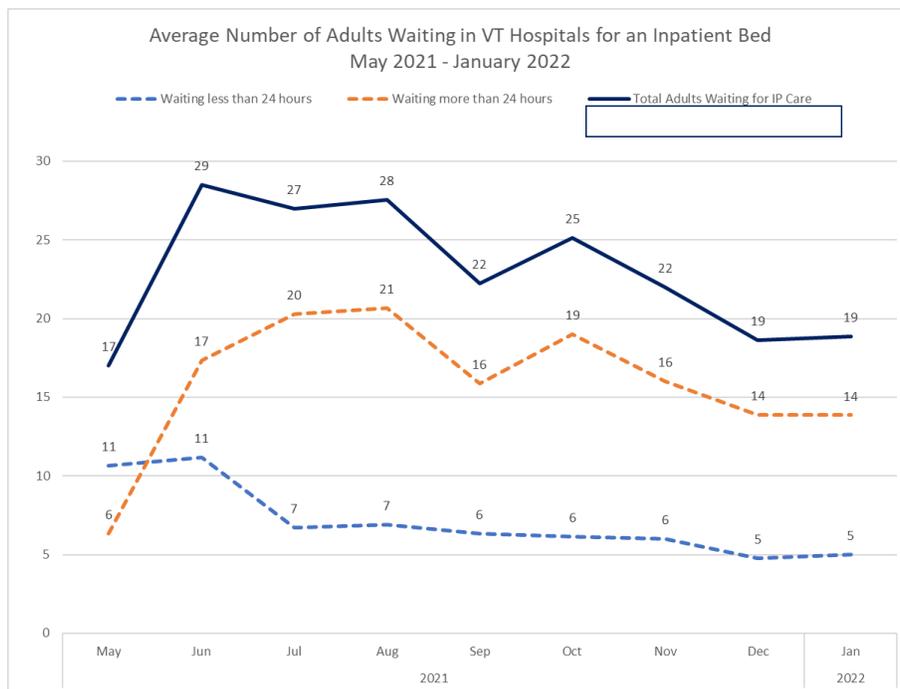
- Identify the stakeholders from whom UVM Health Network will seek input, and how those stakeholders will be engaged
- Identify the existing analyses and data sources (e.g. ED data, hospital/VAHHS data, AHS/DMH data, information on impact of IMD federal funding changes) that will be drawn from to determine need
- Describe additional analyses to be conducted and summarize results of the needs assessment
- Describe how UVM Health Network will assess and address workforce needs for the additional beds
- Provide timeline/work plan and progress report for the following:
 - Obtaining public/stakeholder input
 - Hiring architect and developing schematic-level architectural drawings that are compliant with Facility Guideline Institute guidelines.
 - Consideration and approval of the proposal by UVM Health Network, CVMC, and UVM Medical Center Boards
 - Developing and submitting the CON application
- Describe the flow of funds from \$21 million FY2017 net patient revenue overage

Project Overview



As directed by the Board, the UVM Health Network committed to a 3-4 year timeframe to “significantly improve access to inpatient psychiatric care.” This important effort was paused due to the COVID-19 pandemic in April of 2020, and efforts were resumed in August, 2021. We structured this project into four phases, and we are currently working through facility planning in Phase II.

Since the launch of the planning to address the need for increased inpatient psychiatric bed capacity, the number of Vermonters waiting in EDs for an inpatient psychiatric bed to become available has only increased, as well as the length of time spent in the ED while waiting for a bed to become available. Despite best efforts to prevent COVID-19 infections for psychiatric inpatients and provide staffing for the current supply of inpatient beds, the challenges for hospital EDs across the state continue. The Vermont Association of Hospitals and Health Systems (VAHHS) began tracking the census of adults waiting for an inpatient psychiatric bed in Vermont hospitals beginning in May 2021; below is a graph of the average census by month from May 2021:



In December of 2021, Dr. Ramsey Herrington, Healthcare Service Leader for Emergency Medicine at UVM Medical Center and for the UVM Health Network, testified before the Vermont House Committee on Health Care on the situation in UVM Medical Center’s Emergency Department. Dr. Herrington shared the following graphs with legislators illustrating the increased number of psychiatric visits in 2021 as compared to 2019, as well as the greatly expanded number of hours of care in the ED for these patients.

Fig 3a: UVMHC ED Recent Arrival Volumes, Psychiatric Visits
Central Moving Average with a 28 Day Window



Denis Hudon, UVMHC ED, denis.hudon@uvmhealth.org
This data is solely for QI purposes.

Fig 3a: UVMHC ED Recent Hours of Care Provided, Psychiatric HOC
Central Moving Average with a 28 Day Window



Denis Hudon, UVMHC ED, denis.hudon@uvmhealth.org
This data is solely for QI purposes.

In the following excerpt from his legislative testimony, Dr. Herrington urged the Committee to take action, stating:

- We must urgently address the lack of inpatient capacity for the treatment of our most acutely ill patients with mental health care needs.
- Similar to all other acute illness and disease patterns, preventative measures do not avert the need for higher levels of care for the most acutely ill.
- Failure to provide higher level of care options for our mental health patient population is negatively impacting all members of our community that need emergency health care.

Dr. Herrington's full written legislative testimony is available [here](#).

As Dr. Herrington appropriately notes, expansion of inpatient psychiatric capacity is one of several components—a crucial one—in a multi-pronged approach to caring for the growing number of Vermonters requiring access to mental health care and treatment. The UVM Health Network, with valuable input from an array of stakeholders, has sought to balance the urgency of this need with the importance of developing a high quality facility that provides robust inpatient psychiatric and ED programs. The updates below underscore our commitment to this important work and focus on our goal to complete business planning and submit a CON application for this project by our target date of April 30, 2022.

Additionally, we believe it is important to reference here the Agency of Human Services' (AHS) "Report on Vermont's Institutions for Mental Disease,"¹ submitted to the Vermont General Assembly on January 15, 2022. In this fourth annual report on the impact of federal spending reductions for care for persons with serious mental illness or substance use disorders receiving in Institutions for Mental Disease (IMDs), the Agency concludes: "As a practical matter, the elimination of IMD federal funding currently required by STC 84 will result in bed closures. Vermont does not have the infrastructure, staff resources, or geographic attributes needed to further decentralize its systems of care." While the adult inpatient psychiatric project at CVMC's patient demand model is predicated on the Brattleboro Retreat and Vermont Psychiatric Care Hospital maintaining their pre-pandemic levels of inpatient care services, it nevertheless facilitates the Agency's policy objective to achieve "an integrated and holistic health care system." By expanding inpatient psychiatric care services within a general, acute care hospital, we will be taking steps to provide equitable access to services to patients seeking psychiatric care and/or general physical health care. We will also be protecting a portion of Vermont's system of inpatient psychiatric care from any future limitation or elimination of IMD federal funding.

¹ <https://legislature.vermont.gov/assets/Legislative-Reports/Report-Institutions-for-Mental-Disease.pdf>

Inpatient Psychiatric and Emergency Department Schematic Design Highlights

Since our November 2021 submission, the design team, working in concert with the core user group for the project, continued to advance the Schematic Design documents. As in earlier design efforts, we held multiple meetings with peer advocates, nursing and physician staff, operational leaders, and ancillary and support service staff. These documents reflect the full program design of the ED and three tiers of acute inpatient psychiatry, identified as integral to meeting the standard of care for the adult inpatient psychiatric population. This program was developed in 2019 with robust stakeholder engagement and remains unchanged.

Floor plan designs that support and enable the programs developed for each of the three tiers of acute psychiatric care and the ED were updated in 2020 from our previous work. The updated plans reflect the following cost savings: the elimination of a new parking garage, elimination of an entry connector from the parking garage to the facility, and simplification of the mechanical systems.

In the facility design, the second and third floors of the building house forty adult inpatient psychiatry beds and associated spaces for patient care. The second floor consists of an eight-bed, Tier 1 unit and a 16-bed, Tier 2 unit. The Tier 1 and Tier 2 units can be easily subdivided with doors into two smaller units, if needed for optimal patient care and safety. These units are separated by a centrally located support core. The core includes intake spaces for the units, as well as primary vertical circulation for patients, the public, and hospital services.

The third floor includes sixteen Tier 3 beds, divided into two eight-bed units, also separated by the support core. Each unit has direct access to outdoor roof garden space from the living/dining area. The design on all floors prioritizes flexibility. Consideration for family and other visitors is reflected in the designs of all units.

The building design appropriately locates the Emergency Department on the first floor of the new addition, proximate to the new inpatient psychiatric unit. The ED includes a six-bed Psychiatric Care Area (PCA), as well as two emergency department general treatment rooms, which can be converted to provide safe care for psychiatric patients. The PCA includes milieu space for patients, access to a small outdoor space, and is designed to be easily separated into smaller two-room pods to accommodate different patient populations. The ED space also includes treatment and administrative spaces and ED-specific diagnostic imaging.

The basement is sized to house a portion of the building's mechanical systems. Office and support space for psychiatric services is located in a partial fourth floor; the remainder of the level supports rooftop mechanical units dedicated to the new addition. This building is structured to allow the construction of additional medical/surgical floors in the future in support of CVMC's long-term master facilities plan.

Additional information on the building, site planning, parking and permitting is included in Appendix B.

Preconstruction Services, Early Procurement and Enabling Work

The Construction Manager, Whiting-Turner is assisting UVM Health Network in outlining early work, and associated costs, that will keep the project on the proposed schedule. This work includes preconstruction services, early procurement of long lead-time items and enabling work.

Current supply chain delays indicate the need for early procurement of long lead-time items. To date, the following items within this category include: structural steel (raw material), structural steel metal deck, roofing and roof insulation, ductile iron pipe and associated site work materials, and storm water retention

materials and structures. The Construction Manager is actively monitoring the lead times, associated early commitments, and cost risks relating to these items to help ensure the project can be completed on the proposed schedule. Our April CON application will include a more detailed breakdown and spend request to address this issue.

The Construction Manager, design team and UVM Health Network are currently evaluating several enabling projects that can enable construction logistics and the overall project schedule. The viability of performing this enabling work is also under review in terms of its permitting timeframes and approvals. Possible enabling work includes the following:

- Construction of new parking to replace parking that will be displaced during construction of the project.
- Construction of a new loop road to provide access and deliveries to the hospital during construction. This work includes the installation of an underground water line and an underground storm water basin under the roadway.
- Construction of a pedestrian pathway to the south entry of the hospital for safe patient and staff access during construction.

If it is determined that any or all of this work will benefit the project and is possible within the permitting timeline, we will provide additional detail in our CON application. We may request GMCB approval to move forward with such work as soon as practicable to minimize delays in construction and completion of the project.

Cost Estimating

As we work to complete the Schematic Design portion of the project, the Construction Manager and an independent cost estimator are developing a construction cost estimate.² The construction cost estimate will factor in the most up-to-date pricing information, as current commodity prices are still on the rise and will remain unpredictable through 2022, and will be used to develop the full project cost estimate. We anticipate completion of a project cost estimate sometime in March, timed for inclusion in our April CON application. This estimate will include project soft costs and owner-purchased items, such as IT components, major equipment, furniture, fixtures and small equipment.

Business Plan Development

Much of our business planning focus since August 2021 has been on refinement of the staffing and operating cost models for the Inpatient Psychiatry Unit and the new Emergency Department space. In addition to the focus on staffing models, reimbursement models for both units are now being refined and finalized. The inpatient bed and updated ED space need analyses have been completed; these are included in Appendices C and D. The final business plan will include a description and rationale for the project, needs assessments, facility plans, operational and human resource assessments, and financial pro formas. The following is a brief overview of these components.

² It is important to note that normally, cost estimates are submitted when the Design Development Planning Phase is completed so that cost estimates are more refined. To accelerate implementation of this project and sooner meet the urgent need of the many patients who wait in our EDs for an inpatient psychiatric bed, however, facility cost estimates for the business plan and CON submission will be based on the completion of the Schematic Design phase of facility planning.

Bed and ED Needs Assessments

Adult Inpatient Psychiatric Bed Need: Perhaps the most important analysis is the bed demand model that demonstrates how many inpatient psychiatric beds are still needed in Vermont’s health care system and how many can be built at CVMC. The original bed need model, completed in 2018, was updated using data from calendar year 2019, the last full year before the arrival of COVID-19. This was completed to get the most accurate assessment of the current supply of inpatient psychiatric beds for adults, and address the need for acute mental health care in a non-pandemic world. Through this analysis three things became clear:

1. The number of additional CVMC inpatient beds is effectively capped at 25 due to provisions of the federal “Institution of Mental Disease” (IMD) law (as explained in more detail in Appendix C);
2. The statewide need for additional inpatient psychiatric beds exceeds that number; and
3. The 25 new beds, in addition to the 15 existing beds, would reduce delays in patients receiving care and significantly address the unmet adult inpatient psychiatric care need.

Appendix C comprises complete documentation of the bed need model methodology and results of recent data updates which confirm that the original results of the model remain valid. Extensive stakeholder review and input has been our standard since we first shared the bed need model in the fall of 2018, and has continued during the course of planning. As recently as November 2021, the bed model methodology and updated results were reviewed with the PIPS stakeholder group and in separate follow-up meetings with DMH Deputy Commissioner Krompf and a PIPS committee member (and founder of the advocacy group MadFreedom).

ED Space Need Analysis:

The ED space need model was reviewed given updated forecasts for mental health and non-mental health emergent visits through 2029. The modeling incorporated a look at expected ED visits at peak times of day. The results of the analysis indicated the need for 35 spaces to address an 11% growth in ED visits by 2029. Documentation of this methodology and results of the analysis are included in Appendix D.

Facility Planning and Design

Inpatient Psychiatric Facility: As mentioned above, the schematic design phase of facility planning is based on the original programming work done with extensive involvement from internal leaders, representatives from patient support teams, patient advisors, and external stakeholders. Consideration of facility space needs to support patient flow—from their arrival at CVMC to admission in the inpatient bed unit—was included in this work. The work was guided by six objectives:

1. Provide high quality care in a trauma-informed environment.
2. Provide a person-centered, therapeutic environment to support recovery and reinforce patient autonomy.
3. Minimize risk of harm to self, to other patients, and to staff.
4. Minimize the number of people who wait >4 hours in the ED for admission, once the determination has been made that inpatient care is necessary.
5. Maximize the capability to manage any psychiatric or medical presentation.
6. Ensure efficient and cost-effective operations.

Emergency Department Space: To date, programming and facility design work has focused on the diverse patient needs of patients expected to come to the CVMC ED seeking emergent care, as well as supporting the needs of our ED providers and staff to provide timely and appropriate care to these patients. The 35 ED spaces include the following:

- 14 general treatment rooms
- 4 critical care rooms
- 2 code/trauma spaces
- 1 sexual assault nurse examination room
- 2 airborne infection isolation rooms
- 2 med/psychiatric swing rooms
- 4 vertical treatment spaces
- 4 PCA rooms + 2 PCA/ED swing rooms

Staffing Models

Inpatient Psychiatry Units: The development of an efficient, highly-effective, and clinically-appropriate staffing model has been a major project milestone within the larger planning work related to the inpatient psychiatric facility. A large planning team made up of nursing and provider leadership, and support services leaders and staff from Strategic Planning, Quality and Facilities Planning, has been activity involved in this work.

To date, we have developed several iterations of our Provider and Nursing unit staffing model. This model was the result of extensive analysis of staffing of similar inpatient psychiatry units (both within and outside of UVM Health Network), and comparisons of the use of Tier 1 staffing, in particular, with Vermont Psychiatric Community Hospital and Rutland Regional Medical Center. In creating this model, we have included all clinical staffing necessary to operate each of the three proposed tiers of the psychiatric facility, as well as staff adjustment to the ED to accommodate the proposed increase in psychiatric emergent care needs. The model incorporates additional staffing needed to fill in for sick and vacation time, education time, and time off due to injury. The model also includes peer support and crisis clinician resources recommended during the programming phase by patient advisor and stakeholder participants. Increases in ancillary staff (clinical and non-clinical staff necessary to support these units) have been estimated using current staff-to-patient ratios to effectively calculate the necessary impacts to these areas.

ED:

Staffing models, which include both provider and non-provider clinicians, as well as support and administrative functions within the ED, have been developed. The current ED staffing model, mirrors the care model of the current CVMC ED. Psychiatric care staffing has been enhanced to provide adequate resources necessary to provide patient care for the additional spaces, inclusive of staffing needed for admitting patients who are transferred from other hospitals for admission in the new inpatient psychiatric unit.

Operating Cost Models and Financial Pro Formas

Inpatient Psychiatry Facility:

A staffing cost model was developed based on the staffing model described above. The model includes salaries for staff roles, and the percentage of roles to be filled by travelers or locums. Additional costs related to lab, pharmacy, nutrition services, laundry, and other aspects of patient care are included. Other costs in the operating cost model include information technology expenses, facility costs, utility costs, and other non-clinical business expenses necessary to support the delivery of patient care in these units. This model can be found in Appendix C.

The reimbursement model was originally developed in the fall 2019 and was reviewed by a workgroup consisting of representatives from the Department of Vermont Health Access (DHVA), the Director of VT Health Care Reform, the Department of Mental Health (DMH), GMCB, VAHHS, Burns Health Policy, OneCare Vermont, and members of Finance and Reimbursement teams from CVMC and UVM Health Network. At those meetings, the workgroup reviewed assumptions on occupancy, average length of stay, discharge volumes and payer mix by tier. Reimbursement rates have since been updated to reflect 2022 reimbursement rates, and our most recent review indicates that the model's methodology remains valid.

ED:

Parallel work has continued in the development of an operating model and pro forma for the ED, including an increase in psychiatric emergency care. A pro forma of operations has been completed, which assesses the financial impact of the proposed ED. This pro forma is currently undergoing review and is schedule to be finalized in the coming weeks.

Both the pro forma for the ED and the pro forma for the 40 bed adult inpatient psychiatric facility will be the foundation of the financial tables submitted with the CON application.

Project Timeline

Since our last report in November, we have continued to work through the schematic design and cost estimating process and have remained on target with our projected timeline. We will spend the next month reconciling the cost estimate, establishing the project budget and finalizing the business plan in preparation for a CON submission in April, 2022.

| Timeframe | Milestone |
|------------------|--|
| March, 2022 | Schematic Design, Cost Estimate and Cost Reconciliation Complete, Initial Project Budget Established |
| | Business Plan Complete |
| April, 2022 | Business Plan Approvals and CON Submission |
| Summer/Fall 2022 | Possible Enabling Work (tbd) |
| December, 2022 | Construction Documents Complete |
| January, 2023 | Assumed CON Approval Date |
| March, 2023 | Proposed Construction Start Date |
| Fall, 2025 | Estimated First Patient Day |

Stakeholder Engagement to Date

The Network remains committed to reviewing the project with key constituents from across Vermont, at strategic points as the project progresses.

In the previous quarter, we reconvened our Psychiatric Inpatient Planning Stakeholders (PIPS) committee, comprised of representatives from state government, designated agencies, clinicians, mental health advocates and individuals with lived experience. This group often meets prior to our quarterly report. Because we do not have substantive updates to share this quarter, we plan to communicate by email and convene the PIPS committee shortly after submission of this report to re-acclimate the committee with the prior planning work contained in the appendices.

We have been holding targeted meetings with the Design Advisory group, who actively participated during the earlier schematic design work, to focus on elements of the design specific to patient care and experience. We will continue to include peer advocates and patient advisors in future design planning sessions per our standard facility planning process.

The following table reflects key constituents and forums that have been engaged in the PIC planning process since August, 2021 when work recommenced. Please see Appendix A for stakeholder engagements prior to August, 2021.

| Date | Tactic | Audiences |
|------------|--------------------------------------|--|
| 8/02/2021 | Update Meeting | Rep. Anne Donahue |
| 10/25/2021 | Update Meeting | Rep Anne Donahue |
| 10/25/2021 | PIC Update Presentation | Secretary Mike Smith, AHS Deputy Secretary Jenney Samuelson, AHS Commissioner Emily Hawes, Mental Health Deputy Commissioner Alison Krompf, Mental Health |
| 11/02/2021 | PIC Presentation and Regroup Meeting | Psychiatric Inpatient Planning Stakeholders Group (PIPS) |
| 11/15/2021 | GMCB Report Distribution | Green Mountain Care Board, PIPS, UVMCC Program Quality Committee |
| 11/16/2021 | PIC Demand Analysis | Department of Mental Health |
| 11/16/2021 | PIC Demand Analysis | PIPS Committee Member |
| 11/23/2021 | PIC Demand Analysis | Department of Mental Health |

| | | |
|------------------|--|--|
| 1/3/2022 | PIC Introductory Presentation | Berlin Select Board |
| 1/4/2022 | PIC Follow-up Meeting | Peer Advocate |
| 1/7/2022 | Email in response to Times Argus article about the projected | PIPS Committee |
| 1/12/2022 | PIC Introductory Presentation | Berlin Planning Commission |
| 1/12/2022 | PIC Review | Secretary Samuelson |
| 1/20/2022 | PIC Review | Secretary Samuelson |
| 1/27/2022 | Design Input Session | Judiciary Members |
| 2/3/2022 | PIC Review | Secretary Samuelson |
| 2/15/2022 | GMCB Report Distribution | GMCB, PIPS, UVM Medical Center Quality Committee |

Funds to Date

To date, UVM Health Network has expensed \$1,873,097.19 of the \$21 million FY2017 net patient revenue overage, without taking account of the significant internal resources already devoted to the planning process. The below table reflects the breakdown of funds allocated to date.

| Time Period | Description of Transaction | Amount of Expenditure | Amount of Revenue | Balance |
|--------------------|--|------------------------------|--------------------------|-----------------|
| 7/3/2018 | Halsa Consulting | \$19,588.72 | \$21,000,000.00 | \$20,980,411.28 |
| 9/13/2018 | Halsa Consulting | \$25,170.92 | \$20,980,411.28 | \$20,955,240.36 |
| 12/5/2018 | Manatt Group | \$33,381.00 | \$20,955,240.36 | \$20,921,859.36 |
| 1/11/2019 | Manatt Group | \$217.50 | \$20,921,859.36 | \$20,921,641.86 |
| 1/16/2019 | Halsa Consulting | \$1,397.85 | \$20,921,641.86 | \$20,920,244.01 |
| 3/8/2019 | Halsa Consulting | \$15,000.00 | \$20,920,244.01 | \$20,905,244.01 |
| 3/31/2019 | E4h | \$20,240.00 | \$20,905,244.01 | \$20,885,004.01 |
| 4/22/2019 | Halsa Consulting | \$3,403.67 | \$20,885,004.01 | \$20,881,600.34 |
| 4/30/2019 | E4h | \$8,840.00 | \$20,881,600.34 | \$20,872,760.34 |
| 5/16/2019 | PIC Site Visits | \$6,675.21 | \$20,872,760.34 | \$20,866,085.13 |
| 5/21/2019 | Halsa Consulting | \$30,000.00 | \$20,866,085.13 | \$20,836,085.13 |
| 5/31/2019 | E4h | \$5,613.12 | \$20,836,085.13 | \$20,830,472.01 |
| 6/20/2019 | Halsa Consulting | \$5,063.97 | \$20,830,472.01 | \$20,825,408.04 |
| 10/29/2019 | Cx Associates & GeoDesign | \$8,465.61 | \$20,825,408.04 | \$20,816,942.43 |
| 11/30/2019 | Cx Associates: Commissioning | \$734.00 | \$20,816,942.43 | \$20,816,208.43 |
| 11/30/2019 | GeoDesign - Geotechnical Borings and Analysis | \$17,006.92 | \$20,816,208.43 | \$20,799,201.51 |
| 11/30/2019 | E4h - Architectural Design and Engineering Services | \$315,514.62 | \$20,799,201.51 | \$20,483,686.89 |
| 11/30/2019 | E4h - Architectural Design and Engineering Services | \$249,668.32 | \$20,483,686.89 | \$20,234,018.57 |
| 12/31/2019 | GeoDesign - Geotechnical Borings and Analysis | \$958.50 | \$20,234,018.57 | \$20,233,060.07 |
| 12/31/2019 | Dubois/King - Traffic & Parking Studies | \$2,038.28 | \$20,233,060.07 | \$20,231,021.79 |
| 12/31/2019 | Dubois/King - Traffic & Parking Studies | \$7,351.01 | \$20,231,021.79 | \$20,223,670.78 |
| 12/31/2019 | Dubois/King - Traffic & Parking Studies | \$12,289.25 | \$20,223,670.78 | \$20,211,381.53 |
| 12/31/2019 | Dubois/King - Traffic & Parking Studies | \$8,537.00 | \$20,211,381.53 | \$20,202,844.53 |
| 12/31/2019 | Vermeulens - Cost Consulting | \$32,400.00 | \$20,202,844.53 | \$20,170,444.53 |
| 1/31/2020 | Cx Associates - Commissioning | \$633.50 | \$20,170,444.53 | \$20,169,811.03 |
| 1/31/2020 | GeoDesign - Geotechnical Borings and Analysis | \$19,571.18 | \$20,169,811.03 | \$20,150,239.85 |

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|-----------|---|--------------|-----------------|-----------------|
| 1/31/2020 | GeoDesign - Geotechnical Borings and Analysis | \$13,049.50 | \$20,150,239.85 | \$20,137,190.35 |
| 1/31/2020 | E4h - Architectural Design and Engineering Services | \$177,598.28 | \$20,137,190.35 | \$19,959,592.07 |
| 1/31/2020 | E4h - Architectural Design and Engineering Services | \$132,410.80 | \$19,959,592.07 | \$19,827,181.27 |
| 1/31/2020 | Dubois/King - Traffic & Parking Studies | \$2,497.00 | \$19,827,181.27 | \$19,824,684.27 |
| 1/31/2020 | Dubois/King - Traffic & Parking Studies | \$898.00 | \$19,824,684.27 | \$19,823,786.27 |
| 1/31/2020 | Dubois/King - Survey | \$7,735.34 | \$19,823,786.27 | \$19,816,050.93 |
| 2/29/2020 | K-D Associates | \$4,500.00 | \$19,816,050.93 | \$19,811,550.93 |
| 2/29/2020 | E4h - Architectural Design and Engineering Services | \$217,231.76 | \$19,811,550.93 | \$19,594,319.17 |
| 2/29/2020 | Dubois/King - Traffic & Parking Studies | \$3,333.75 | \$19,594,319.17 | \$19,590,985.42 |
| 2/29/2020 | Dubois/King - Traffic & Parking Studies | \$5,294.40 | \$19,590,985.42 | \$19,585,691.02 |
| 2/29/2020 | Dubois/King - Survey | \$6,944.00 | \$19,585,691.02 | \$19,578,747.02 |
| 2/29/2020 | EJ Prescott - Hydrant Flow Survey | \$400.00 | \$19,578,747.02 | \$19,578,347.02 |
| 2/29/2020 | EJ Prescott - Hydrant Flow Survey | \$1,200.00 | \$19,578,347.02 | \$19,577,147.02 |
| 3/31/2020 | Cx Associates - Commissioning | \$2,562.50 | \$19,577,147.02 | \$19,574,584.52 |
| 3/31/2020 | GeoDesign - Geotechnical Borings and Analysis | \$15,574.50 | \$19,574,584.52 | \$19,559,010.02 |
| 3/31/2020 | Vermeulens - Cost Consulting | \$48,800.00 | \$19,559,010.02 | \$19,510,210.02 |
| 3/31/2020 | Vermeulens - Cost Consulting | \$673.83 | \$19,510,210.02 | \$19,509,536.19 |
| 4/30/2020 | GeoDesign - Geotechnical Borings and Analysis | \$888.05 | \$19,509,536.19 | \$19,508,648.14 |
| 4/30/2020 | E4h - Architectural Design and Engineering Services | \$31,549.45 | \$19,508,648.14 | \$19,477,098.69 |
| 4/30/2020 | Dubois/King - Traffic & Parking Studies | \$2,680.96 | \$19,477,098.69 | \$19,474,417.73 |
| 4/30/2020 | Dubois/King - Traffic & Parking Studies | \$466.65 | \$19,474,417.73 | \$19,473,951.08 |
| 4/30/2020 | Whiting Turner - Preconstruction Services | \$97,020.00 | \$19,473,951.08 | \$19,376,931.08 |
| 4/30/2020 | Dubois/King - Survey | \$445.73 | \$19,376,931.08 | \$19,376,485.35 |
| 5/31/2020 | GeoDesign - Geotechnical Borings and Analysis | \$8,770.50 | \$19,376,485.35 | \$19,367,714.85 |

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|------------|---|--------------|-----------------|-----------------|
| 6/30/2020 | GeoDesign - Geotechnical Borings and Analysis | \$1,125.00 | \$19,367,714.85 | \$19,366,589.85 |
| 10/31/2021 | E4h - Architectural Design and Engineering Services | \$46,483.50 | \$19,366,589.95 | \$19,320,106.45 |
| 10/31/2021 | E4h - Architectural Design and Engineering Services | \$26,860.56 | \$19,320,106.45 | \$19,293,245.89 |
| 11/30/2021 | E4h - Architectural Design and Engineering Services | \$50,517.18 | \$19,366,589.95 | \$19,316,072.77 |
| 11/30/2021 | White & Burke - Permitting Consulting | \$421.40 | \$19,320,106.45 | \$19,319,685.05 |
| 11/30/2021 | White & Burke - Permitting Consulting | \$75.60 | \$19,293,245.89 | \$19,293,170.29 |
| 12/31/2021 | E4h - Architectural Design and Engineering Services | \$114,954.50 | \$19,316,072.77 | \$19,201,118.27 |
| 1/31/2022 | White & Burke - Permitting Consulting | \$374.40 | \$19,319,685.05 | \$19,319,310.65 |

Conclusion

We remain committed to this important project and look forward to the progress that we will continue to make in this planning process.

Appendix A: Stakeholder Engagement Grid September 6, 2018 to July 31, 2021

| Date | Tactic | Audiences |
|------------|--|---|
| 9/6/2018 | Presentation: PIC Modeling Analysis | Internal Sub-group preliminary |
| 9/6/2018 | Presentation: PIC Overview | Community Collaborative |
| 9/7/2018 | Presentation: PIC Modeling Analysis | Full internal group review |
| 9/17/2018 | Presentation: PIC Modeling Analysis | PIC Steering Committee |
| 9/18/2018 | Presentation: PIC Overview | BOT Planning |
| 9/19/2018 | Presentation: PIC Modeling Analysis | THRIVE: Barre |
| 9/24/2018 | Presentation: PIC Modeling Analysis | DMH |
| 9/26/2018 | Presentation: PIC Modeling Analysis | Network Board Planning |
| 9/27/2018 | PIPS Meeting | Community Stakeholders Group |
| 10/4/2018 | Presentation: PIC Modeling Analysis | Community Collaborative |
| 10/5/2018 | GMCB Meeting | Green Mountain Care Board and Staff |
| 10/12/2018 | Presentation: PIC Modeling Analysis | VAHHS Board meeting |
| 10/12/2018 | Presentation: PIC Modeling Analysis | VAHHS CMO Meeting |
| 10/15/2018 | Presentation: PIC Modeling Analysis | Howard Center (Catherine Simonson and Charlotte McCorkel) |
| 10/15/2018 | GMCB Report Distribution | Green Mountain Care Board |
| 10/16/2018 | PIC overview | Program Quality Meeting |
| 10/16/2018 | CVMC Community Town Hall | CVMC key influencers and public |
| 10/23/2018 | Presentation: PIPs Follow-up Deep Dive | Rep. Anne Donahue, Ward Nial and Daniel Towle |

| | | |
|-------------------|--|--|
| 10/25/2018 | GMCB Report Distribution | PIPs Committee; UVMMC Program Quality Committee |
| 10/26/2018 | Meeting with Legislators | Rep. Lori Houghton and Rep. Ben Jickling |
| 11/6/2018 | AHS Meeting | AHS Secretary |
| 11/27/2018 | Legislative Update | Rep. Mary Hooper |
| 11/28/2018 | GMCB Hearing | Green Mountain Care Board |
| 12/5/2018 | AHS Meeting | AHS Secretary and key staff (Al Gobeille, Michael Costa, Ena Backus, Cory Gustafson, Mourning Fox) |
| 12/20/2018 | Inpatient Psych Presentation | Vermont Medical Society |
| 12/20/2018 | PIPS Meeting | Community Stakeholders Group |
| 1/4/2019 | VAHHS ED Medical Directors | ED Medical Directors |
| 1/8/2019 | Meeting with Peer Advocates | Elaine Toohey , Vicki Warfield and Ward Nial |
| 1/15/2019 | GMCB Report Distribution | Green Mountain Care Board, PIPS |
| 1/17/2019 | UVMMC Community Leaders Breakfast | AHS, GMCB, PIPS, Community members |
| 1/24/2019 | PIC Update Presentation | VAHHS Designated Hospitals |
| 2/6/2019 | PIC Update Presentation | House Corrections and Institutions Committee |
| 2/12/2019 | PIC Overview Presentation | CVMC Clinical and Administrative Leadership Meeting (CALM) |
| 2/20/2019 | GMCB Hearing | Green Mountain Care Board |
| 3/20/2019 | PIC Presentation - Overview, IMD, Bed Planning | Psychiatric Inpatient Planning Stakeholders Group (PIPS) |
| 3/27/2019 | PIC Update Presentation | CVMC Community Town Hall |

| | | |
|-----------------|---------------------------|-----------------------------|
| 4/2/2019 | PIC Overview Presentation | Senate Institutes Committee |
| 4/9/2019 | Follow-up meeting | Ken Liberto |

| | | |
|-------------------|---|--|
| 4/16/2019 | Follow-up meeting | Rep. Anne Donahue and Ward Nial |
| 5/15/2019 | GMCB Report Distribution | Green Mountain Care Board, PIPS, UVMMC Program Quality Committee |
| 5/17/2019 | PIC Presentation - Overview, IMD, Bed Planning | Commissioner of the Department of Mental Health - Sarah Squirrel |
| 6/12/2019 | PIC Facilities Presentation | Green Mountain Care Board and attending public |
| 7/9/2019 | PIC Presentation - Facilities Planning | Psychiatric Inpatient Planning Stakeholders Group (PIPS) |
| 8/9/2019 | Update Meeting | Green Mountain Care Board |
| 8/12/2019 | Update meeting | Rep. Anne Donahue |
| 8/13/2019 | PIC Presentation - Facilities and site planning | Psychiatric Inpatient Planning Stakeholders Group (PIPS) |
| 8/14/2019 | AHS Meeting | AHS key staff (Martha Maksym, Sarah Squirrel, Mourning Fox) |
| 8/15/2019 | GMCB Report Distribution | Green Mountain Care Board, PIPS, UVMMC Program Quality Committee |
| 9/18/2019 | GMCB Hearing | Green Mountain Care Board |
| 10/22/2019 | Update Meeting | Rep. Anne Donahue |
| 11/4/2019 | Meeting with Peer Advocates | Anne Donahue, Ward Nial |
| 11/5/2019 | PIC Presentation: Facilities and Site Planning | Psychiatric Inpatient Planning Stakeholders Group (PIPS) |
| 11/15/2019 | GMCB Report Distribution | Green Mountain Care Board, PIPS, UVMMC Program Quality Committee |

| | | |
|-------------------|-------------------------------------|--|
| 11/18/2019 | Update Meeting | Rep. Anne Donahue |
| 12/16/2019 | Update Meeting | Rep. Anne Donahue |
| 1/14/2020 | Update Meeting | Rep. Anne Donahue |
| 2/10/2020 | Update discussions with legislators | Rep. Donahue, Hooper and Lippert. Sen. Lyons and Balint |
| 2/11/2020 | PIC Presentation - Facility Plans | Psychiatric Inpatient Planning Stakeholders Group (PIPS) |
| 2/14/2020 | GMCB Report Distribution | Green Mountain Care Board, PIPS, UVMHC Program Quality Committee |
| 5/4/2020 | Update Meeting | Rep. Anne Donahue |
| | Project on-hold Covid-19 | |

Appendix B: Inpatient Psychiatric and Emergency Department Schematic Design

The building design is a four-story structure, with a partial basement, directly connected to the existing hospital and one of the adjacent medical office buildings. The fourth floor is a partial story with rooftop mechanical equipment located adjacent to the occupied space. Site improvements include additional surface parking, grading, and site circulation modifications.

Site Planning and Design

The CVMC campus is constrained by a ravine to the north, steep slopes to the southeast, multiple power lines and easements, and five buildings spread across the campus. Any new construction on the campus is impacted by these constraints as well as the existing sloping topography across the site. The site of the proposed new Emergency Department and Inpatient Psychiatry Units was identified as the most viable during the planning stage, as it allows for a direct connection to the existing building and affords flexibility for future growth on campus. This site was confirmed upon restart of the project in Spring 2021.

This site has an approximately eight-foot elevation difference between the hospital access road and the hospital building. The grading modifications are included as part of the site and landscaping plans in the Schematic Design package. While substantial, these modifications are necessary for safe vehicular, pedestrian and ambulance flow across the campus.

The helipad was originally planned to be relocated closer to the new Emergency Department, but this relocation added cost due to additional grade changes. The helipad will remain in its current location and patients will be transported.



Fig. 1: CONCEPTUAL SITE PLAN

Parking

A comprehensive parking study was performed by Dubois & King Engineering to determine parking lot utilization rates per lot for each hour of the day during 2019. This data was reviewed against Institute of Transportation Engineers (ITE) Parking Manual Utilization estimates for hospitals and medical office buildings proportionately based on building use on the CVMC campus. Projections for future parking needs were developed based on square footage, comparable facilities and staffing models for the proposed addition.

The team revisited the parking study to focus solely on the impacts of this project. This analysis does not support any new development of ambulatory programming in vacated areas of the existing building. The team identified the need for an additional 140 spaces on the CVMC campus to support the project. This parking space count addresses both the parking loss associated with the footprint of the new building and new parking needed for the additional services on the campus.

Plans for new parking include expansion to the other side of Fisher Road. This parcel was not considered during the earlier work on the project due to other potential long-term uses of the site, as well as concerns about creating a safe pedestrian crossing. Once the team identified the need for cost savings and decided to eliminate the parking garage and associated power line relocations, this site was reconsidered and deemed the best possible option for the project.

Other additional surface parking to meet the needs of the project will be created on Lot D, following the demolition of the existing building. The demolition was already deemed necessary due to the condition of the existing building. UVMHN will be completing a review of that proposed demolition and will advise the Board if, pursuant to the Board's Rules, it meets the jurisdictional thresholds for CON review.

The additional surface parking will meet the needs of the project, but the team still needs to address the safe pedestrian crossing of Fisher Road. Another concern is the patient travel distance to the main entry. Valet parking and/or shuttles may be required for staff and/or patients upon completion of the project.



Figure: PARKING AND LANDSCAPE PLANS

Permitting

We engaged in preliminary conversations with the Town of Berlin, the Central Vermont Regional Planning Commission, and the Act 250 Regional Coordinator during 2019. In the interim, we have worked with the Town of Berlin in support of their application to the Vermont Downtown Board for a New Town Center Designation. While their application was approved, the CVMC main campus and parcel on the south side of Fisher Road are not included in the designation. The parcel on the south side may be added to the New Town Center Designation in the future, pending CVMC master planning efforts. The Town of Berlin approved a zoning amendment during this process to allow for taller buildings on the CVMC campus, which will support our bed-replacement plans outside the scope of this project.

The proposed building and site design follow the requirements set forth in the Town of Berlin zoning requirements for the Town Center District, which includes the main campus and the parcel on the south side of Fisher Road. Our plans for this project also incorporate connections to the New Town Center through sidewalk improvements and the completion of a small portion of a proposed multiuse path on our parcel to the south of Fisher Road in support of the Town's project.

Since restarting the project in 2021, we have reintroduced the project at meetings with the Town of Berlin Select Board, the Town of Berlin Planning Commission. We plan to hold additional meetings with Act 250, CVRPC and our neighbors in the coming weeks. Following these meetings, CVMC will submit the zoning application to the Town of Berlin for review by the Design Review Board (DRB). We expect one or more DRB hearings will be conducted. Concurrently, we will undertake state permitting for water, waste water, storm water and a wetlands permit for the small expansion of impervious surface into a Class II wetland buffer area.

Upon successful completion of the Town of Berlin permitting process, we will submit an ACT 250 application to enable the project. We hope to have all necessary permits in place by October 2022, with permits for site improvements in advance of this date, depending on enabling project needs.

Appendix C: Inpatient Psychiatry Bed Determination and Programming Analysis

1. Identify the Appropriate Number of Additional Beds

Current State Analysis

Our initial analysis to identify the number of additional beds needed to improve access to inpatient mental health services was conducted in 2018 utilizing the following data sources: 2017 Vermont Uniform Hospital Discharge Data (VUHDDS), DMH reports, 2018 VAHHS Mental Health report and summarized inpatient mental health data for the period September 2017 through February 2018 (the time period with complete data for all psychiatric beds in the state), and UVM Health Network data for the period May 1, 2017 through April 30, 2018. These data enabled us to identify key information which shaped our approach to an arrival at an estimate of additional adult inpatient psychiatric bed need.

- At present, Vermont has 137 general adult inpatient psychiatry beds available to serve the needs of any high-acuity mental health adult patients, located in six facilities around the state. Nearly 50% of these beds (63) are subject to the IMD reimbursement rules and current waiver. There are additional ‘focused’ beds available for patients in special units at the Brattleboro Retreat and at the VA Hospital in White River Junction.
- Our current general adult inpatient psychiatry beds are effectively at 100% capacity. Aggregate patient discharges for the UVMMC, CVMC, Rutland, and Springfield Psychiatry units have remained essentially level, while aggregate patient days have risen slightly. This increase in patient length of stay is being driven by an increase in patient acuity.
- The VAHHS report highlighted a higher statewide average length of stay for psychiatric patients around the state—23 days—but also reported on length of stay for patients who were not discharged during the study period; the average length of stay for those patients was 151 days.
- 2017 midnight census data for EDs at Rutland, Springfield, CVMC, UVMMC, and Brattleboro indicate that these EDs are functioning as the primary front door to those hospitals’ inpatient psychiatry units and to the Brattleboro Retreat.
- All EDs around the state are impacted by the growth in need for higher acuity mental health care; even at our smaller hospitals, there are consistently one or more patients with a primary mental health diagnosis present in the ED at midnight.
- UVMMC data for May 2017 through April 2018 shows that the ED was the source of 80% of inpatient Psychiatry admissions at UVMMC during this time period. Another 10% of inpatient Psychiatry patients were transferred from a medical/surgical bed within UVMMC, with 10% of admissions coming directly from the community. CVMC reports a similar breakdown of their inpatient admissions.

The supply of inpatient psychiatric beds for adults during the 12 month period from May 2017 through April 2018 is summarized in the table below:

Adult Inpatient (IP) Psychiatric Capacity: Current State 200 Adult Beds in Vermont

| Location | Type | Age | Subject to IMD Waiver | Capacity |
|--|-------------------|------------|-----------------------|------------|
| Brattleboro Retreat Osgood 2 (LGBT) | In-Patient | Adults 18+ | ✓ | 15 |
| Brattleboro Retreat Osgood 3 (Emerging Adult) | In-Patient | Adults 18+ | ✓ | 14 |
| Brattleboro Retreat Tyler 1 (Co-Occurring) | In-Patient | Adults 18+ | ✓ | 22 |
| Veterans Affairs – White River Jct | In-Patient | Adults 18+ | | 12 |
| Brattleboro Retreat Tyler 2 (Acute Adult) | In-Patient | Adults 18+ | ✓ | 24 |
| Brattleboro Retreat Tyler 4 (Level 1 Adult) | In-Patient-Level1 | Adults 18+ | ✓ | 14 |
| Central Vermont Medical Center | In-Patient | Adults 18+ | | 15 |
| Rutland Regional Medical Center PSIU (acute care) | In-Patient | Adults 18+ | | 17 |
| Rutland Regional Medical Center PSIU South Wing (Level 1 acuity) | In-Patient-Level1 | Adults 18+ | | 6 |
| University of VT Medical Center Shep 3 | In-Patient | Adults 18+ | | 12 |
| University of VT Medical Center Shep 6 | In-Patient | Adults 18+ | | 16 |
| Windham Center (Springfield) | In-Patient | Adults 18+ | | 10 |
| Vermont Psychiatric Care Hospital | In-Patient-Level1 | Adults 18+ | ✓ | 25 |
| TOTAL | | | | 200 |

63 Focused Beds

Brattleboro Retreat: 65% VT

137 General Beds
45 Level One
92 General IP Psych

63 beds under IMD Waiver

A Deeper Look at Inpatient Psychiatry Admission Sources

We focused the next phase of our analysis on understanding the issues for patients coming from the three sources identified above: hospital EDs, transfers from an inpatient medical/surgical bed, and direct admissions from the community.

In hospital EDs, we identified two types of problems: First, for those patients who ultimately received inpatient Psychiatry care, some waited a long time in the ED before an inpatient Psychiatry bed was available. Second, other ED patients remained in the ED for lengthy periods, received treatment while waiting for an inpatient psychiatry bed to be available and were sufficiently stabilized, and were discharged directly from the ED without admission.

The patients in Medical/Surgical units, i.e., patients who would have been transferred to an inpatient psychiatry bed had one been available, were also in one of two groups: the first group included patients who were eventually transferred to an inpatient psychiatry bed, but waited in their medical/surgical bed for an inpatient psychiatry bed to become available. The second group involved similar patients for whom an inpatient psychiatry bed was not available, and like their counterparts in the ED, received some psychiatric care on the medical/surgical unit setting and were eventually discharged.

In order to identify these medical/surgical patients in the first group, we looked for patients who were discharged to an inpatient psychiatry bed and compared their length of stay to the average length of stay for patients with the same primary diagnosis. For the second group, we identified patients who received psychiatric consults while on medical/surgical units. This review resulted in a small number of patients in both of these groups. While our intention had been to return to further estimate the size of this patient group to include in our analysis, there was little point in refining the model to include this patient population given the initial recommendation of the model and the results of the IMD analysis, which are described below.

We had not been able to establish a reliable estimate of the number of patients needing inpatient care who are currently waiting in the community for an inpatient bed. Our discussion with leaders at the Howard

Center indicates that presently, a significant majority of those patients waiting in the community for an inpatient bed were likely represented in the ED data. To avoid a chance that we would duplicate patient need, we determined that there should be no addition to the model for this category of patients.

We took a three-pronged approach to determine the appropriate number of beds needed and evaluated three areas: the number of beds needed to reduce delays in the ED for patients requiring admission to inpatient psychiatry; the number of beds needed to support individuals who presented to the emergency department for psychiatric care and never received an inpatient admission because a bed was not available; and the numbers of beds needed to support forecasted 10-year growth. We discuss each in turn.

Additional Beds Needed to Reduce Delays

In order to calculate the number of additional beds necessary to substantially reduce delays for ED patients who ultimately receive inpatient psychiatric care after waiting for more than eight hours, we divided our analysis into two parts. First, we estimated the number of additional beds needed to reduce delays for patients who wait longer than eight hours for admission to an inpatient psychiatry bed in the same facility; second, we separately estimated the additional beds needed to reduce delays beyond eight hours for patients who received inpatient psychiatric care at another facility. In both cases, we assumed that a patient’s actual inpatient length of stay would have been the same had the patient been admitted without a delay. Therefore, the analysis focused on the number of additional beds needed to ensure that a bed was available for each of these patients at the right time. The model was run using actual patient arrival dates and inpatient lengths of stay where possible.

The results of the model are shown below:

| | Additional Beds to Reduce Delays: |
|---|-----------------------------------|
| Delays for Admit to Inpatient Psychiatry in Same Facility | |
| UVMHC | 1 – 3 beds |
| CVMC | .5 bed |
| Rutland (estimate) | .5 bed |
| Springfield (estimate) | .5 bed |
| Total | 3 -4 beds |
| Delays for Transfer to Another Inpatient Psychiatry Facility | |
| Total for all VT Hospitals | 2 – 5 beds |
| Additional Beds to Reduce Delays | 5 – 9 beds |

Additional Beds for Unmet Need

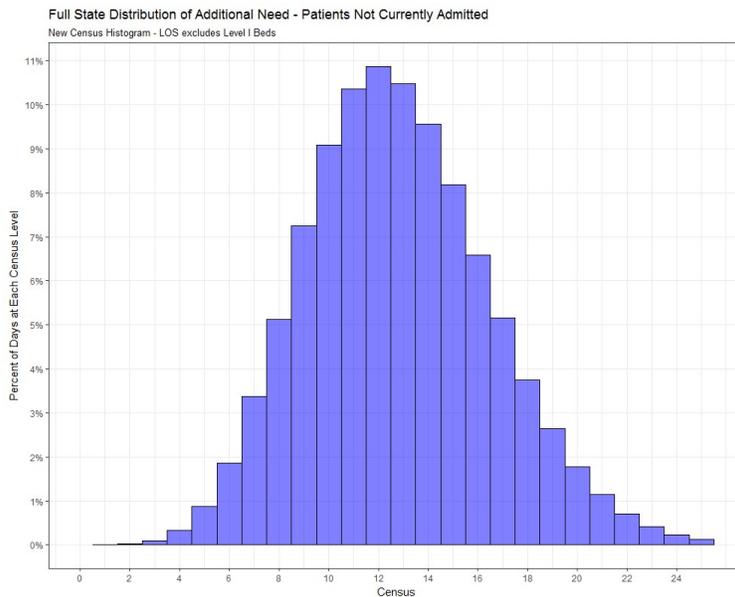
To estimate the number of additional beds needed to meet the needs of patients who stayed in the ED and received some treatment while waiting for an available inpatient psychiatry bed but were ultimately discharged before such admission, we used the following approach:

1. From the population of patients discharged from the ED, identify patients who would have been admitted to an inpatient psychiatry bed, had one been available
2. Estimate the length of stay for these patients

3. Model the additional bed need using actual arrival dates and estimated length of stay for these patients over the 12-month period

The goal of this part of our analysis was to determine a reasonable approach to identify the sub-group of patients who come to the ED with a mental health diagnosis and would have been admitted to an inpatient psychiatry bed had one been available, and to exclude those patients who come to the ED with an emergent acute mental health need that can be treated appropriately in the ED and/or through referral to community-based treatment programs throughout Vermont.

Through a combination of statistical analysis, in-depth reviews of a sample of 200 actual patient chart analysis of crisis clinician reports, and analysis of statewide actual lengths of stay for adult psychiatry inpatients, we created a simulation model that produced a synthetic patient daily census. The model was run 1000 times, with each run producing different results due to the model's statistically designed selection of different patients and different lengths of stay. Summing the results over 1000 runs of the simulation model produced the graph below. While most of the time, the additional census of this Unmet Need population ran between 10 and 16, there were times when 24 or more additional patients needed an inpatient psychiatry bed. From a cumulative perspective, adding 20 beds for the Unmet Need population means a bed would be available 97% of the time. Based on this analysis, our estimate of the additional need for this group was 18-20 beds.



Forecasted 10-year Growth

UVM Health Network partners with a healthcare forecasting and intelligence consulting group known as Sg2. Sg2's current forecast for adult inpatient Psychiatry growth for Vermont shows a 4% increase in patient days over the next 10 years. The forecast factors in regional demographic changes, changes in care delivery for Psychiatry, expected future innovations and improvements in treatments, as well as shifts in care settings and the impact of economic, regulatory and policy changes. Notably, Sg2 has forecasted significantly larger 10-year growth rates for other care settings; the 10-year forecast for mental health ED visits is 19%, with a 9% growth forecast for outpatient mental health visits as healthcare organizations continue to work on effective alternative delivery models for mental health care.

Applying the 4% forecast to both current and additional beds, we estimate the need for six additional beds to meet expected future growth.

Community Impacts on Length of Stay

In our discussions with stakeholders, we fielded questions about the impact on length of stay due to potential patient placement delays in the community following an inpatient stay. Posed various ways, stakeholders asked whether these types of delays impact the need for acute care beds. We ran the model, decreasing each patient’s length of stay in the “Unmet Need” group by one day. The results indicated that a one-day overall reduction in length of stay would result in a reduction of an estimated 1.5 beds. In other words, the “Unmet Need” group would require approximately 17-19 beds, rather than the 18-20 in the original model results.

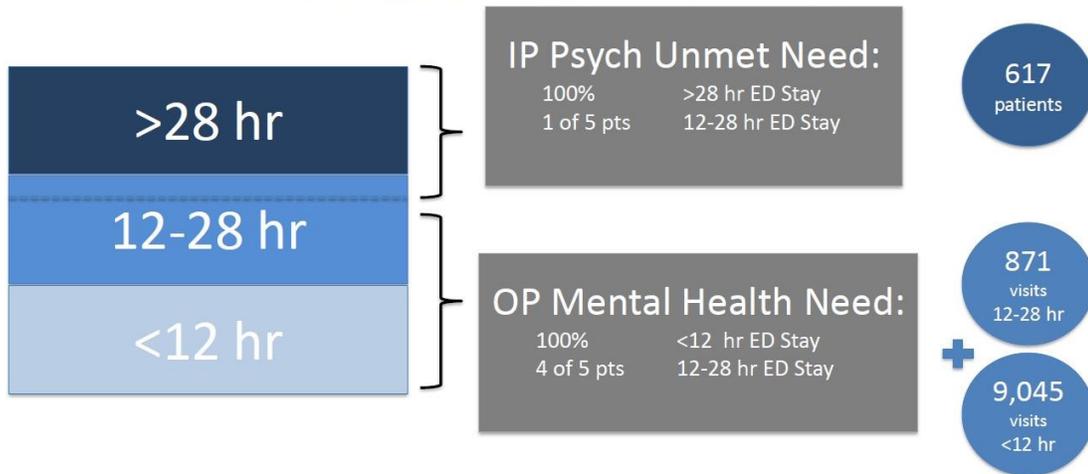
Total Additional Inpatient Psychiatry Bed Need Estimate Prior to IMD Analysis: 29-35 beds

Summing together our estimated bed needs to reduce delays, address current Unmet Need, and to address forecasted growth, we estimated that the total number of additional adult inpatient Psychiatry beds needed lies in the range of 29 to 35 beds. Further, we assume that these beds are provided in a private room setting to maximize their availability.



Along with the analysis results above, we estimated the impact on patients of adding 26 beds during the model’s 12-month timeframe. We concluded the additional beds would have reduced lengthy wait times for 617 patients—removing a combined 50,000 hours of patient ED boarder time—and would reduce the statewide ED hours of care for this patient population by roughly 55%. While the results of this analysis is significant, it is important to remember that adding inpatient beds is just one component of addressing the vital need for services in our community, now resulting in nearly 10,000 ED visits annually, as illustrated below.

Vermont ED Patients with Mental Health Needs



ED patient visits with primary psych diagnosis or secondary diagnosis = suicide ideation or suicide attempt, with or without a psych assessment

2019 Update

In late 2019, we revisited the bed need model using updated data from CVMC and UVMMC Emergency Department (ED) visits and adult inpatient psychiatric length of stay (LOS) from July 1, 2018 through June 30, 2019 from the Vermont Uniform Hospital Discharge Data (VUHDDS). To our knowledge, there were no changes to the supply of general inpatient psychiatric beds for adults that would impact the analysis.

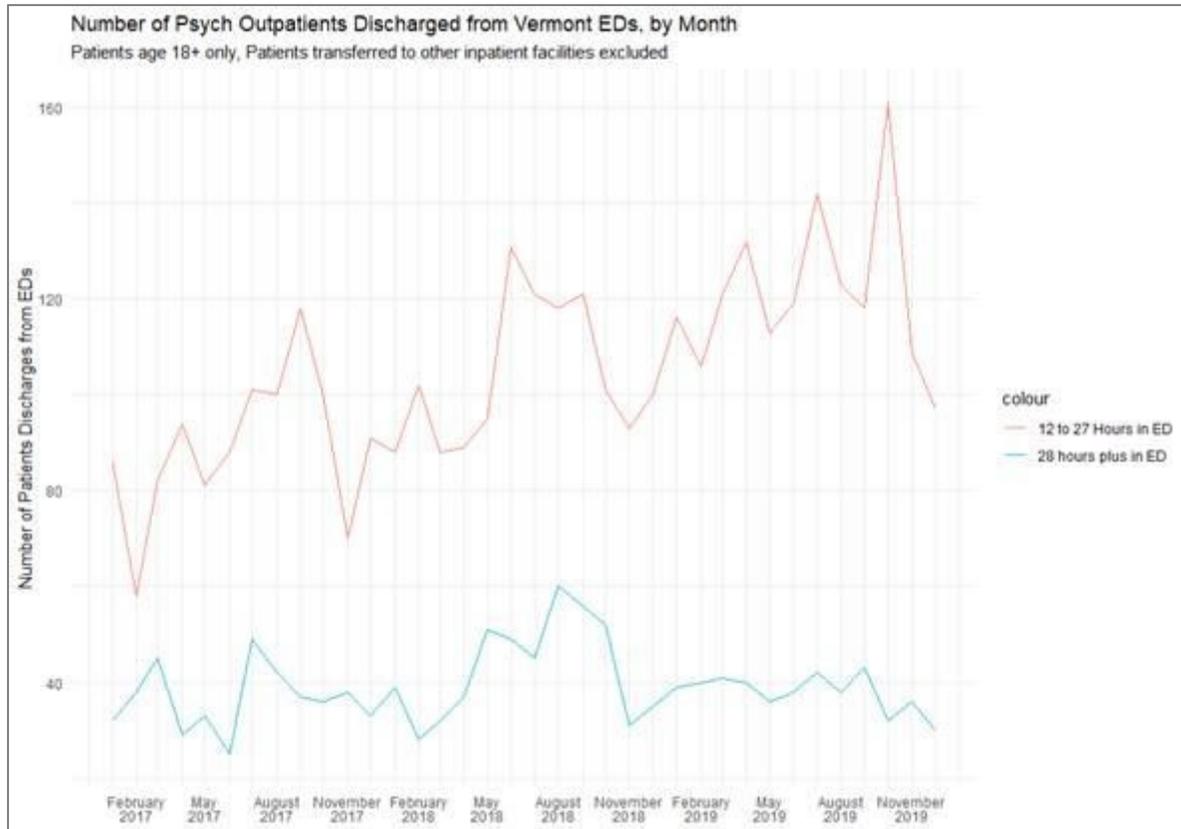
Our updated analysis, notwithstanding an increase in the volume of mental health ED visits, confirmed our original findings and estimated total bed need. The number of additional beds needed to reduce delays decreased from the original estimate, while the number of beds to address unmet need rose, driven by an increase of 25% in the number of patients in the Unmet Need group. The LOS distribution (recall this distribution excludes Level 1 patients for a better reflection of the relative acuity of the Unmet Need patients) was also updated; in addition, the updated model restricted the random selections from this distribution to values under 30 days. We shared the results of our updated analysis at a stakeholder meeting in February 2020.



Based on LOS

In the Fall of 2021, we again revisited the bed need model and examined ED data for the 12 months of calendar 2019, the most recent 12-month period when the existing supply of inpatient psychiatric beds was operating in “normal” mode. We again saw an increase in the number of patients in the Unmet Need group from our original model. The graph below illustrates the trends from early 2017 to the end of 2019.

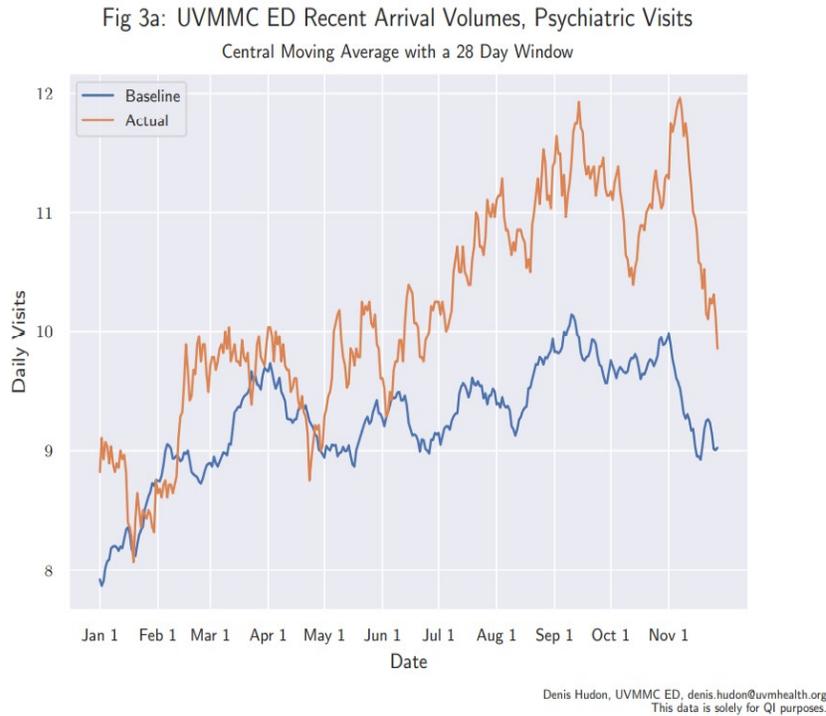
Given that we again saw increased numbers in these sources of inpatient bed need for our model, we remain confident that we have not overstated the number of additional inpatient psychiatry beds needed in the state, particularly given that CVMC is limited to 25 additional inpatient beds (as discussed below).



Finally, since early 2020 and throughout the pandemic, reductions in bed availability in response to infection control and staffing challenges have resulted in further increases in mental health ED boarders. These increases have occurred despite funding from the Department of Mental Health (DMH) for additional Level One beds at the Brattleboro Retreat (BR), which should not be considered as a comprehensive or long term response to address the shortage of inpatient psychiatric beds, as indicated by our modeling and in DMH projections of bed needs.³ The most recent breakdown of mental health ED

³ Under Act 26 of 2019, DMH provides an annual evaluation of mental health bed needs for residential programs across the state. In its report to the legislature in February 2020 (and revised February 10, 2021), DMH indicated a planned capacity increase of twelve new beds at the Brattleboro Retreat, in addition to 25 new beds at CVMC. ⁴

boarders is illustrated in the VAHHS data, below, showing average numbers by month of adult patients who are waiting in EDs or medical/surgical beds for inpatient bed placement.⁴



Institution for Mental Disease (IMD) Analysis and Impact on New Bed Capacity at CVMC

By itself, our analysis to determine the statewide need for additional adult inpatient capacity does not determine the number of additional psychiatric beds that can be built on CVMC’s campus. The number is also limited by federal reimbursement restrictions for care provided to Medicaid eligible patients. Federal funding under Medicaid, or federal financial participation (“FFP”), is generally not available for any services—including non-psychiatric services—provided to a Medicaid-eligible adult while the adult is an inpatient at an Institution for Mental Disease (“IMD”). As a result of this limitation, the UVM Health Network has engaged experts to help determine how the addition of inpatient psychiatry beds at CVMC may impact the risk of CVMC being designated an IMD.

An IMD is defined under the Social Security Act as “a hospital, nursing facility, or other institution of more than 16 beds, that is primarily engaged in providing diagnosis, treatment, or care of persons with mental diseases, including medical attention, nursing care, and related services.” Federal Medicaid regulations provide that “[w]hether an institution is an institution for mental diseases is determined by its overall character as that of a facility established and maintained primarily for the care and treatment of individuals with mental diseases, whether or not it is licensed as such.” In other words, even facilities not expressly licensed as psychiatric hospitals could be designated as IMDs if their “overall character” suggests that they are primarily for psychiatric care.

The State Medicaid Manual guidelines, issued by the Centers for Medicare & Medicaid Services (CMS) instruct states to consider the following five factors in determining whether the overall character of a facility is that of an IMD:

1. The facility is licensed as a psychiatric facility;

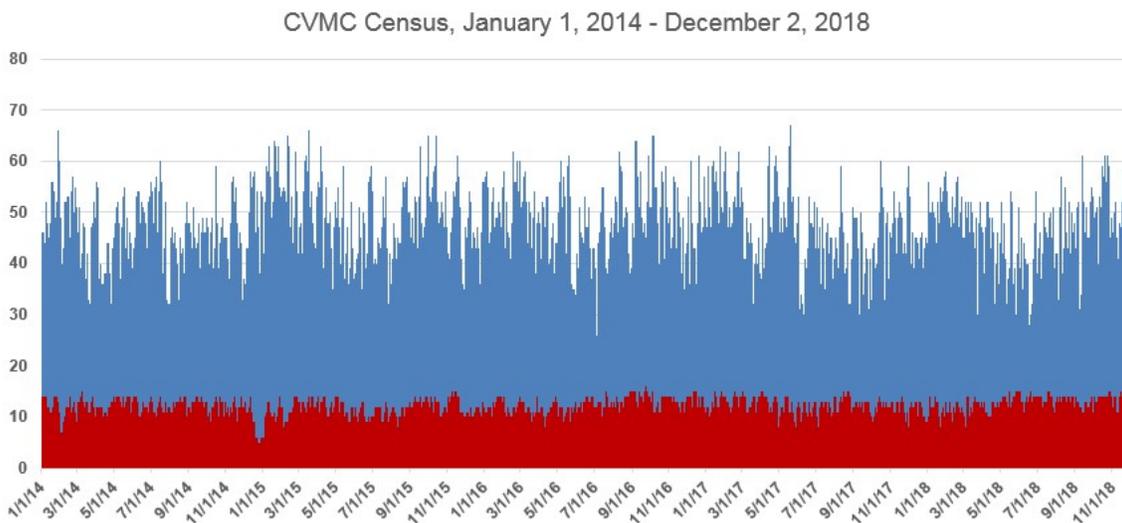
The average monthly census is not an indicator of the *total* number of patients per month who waited for an inpatient bed placement.

2. The facility is accredited as a psychiatric facility;
3. The facility is under the jurisdiction of the state’s mental health authority;
4. The facility specializes in providing psychiatric/psychological care and treatment. This may be ascertained through review of patients’ records. It may also be indicated by the fact that an unusually large proportion of the staff has specialized psychiatric/psychological training or that a large proportion of the patients are receiving psychopharmacological drugs; and
5. The current need for institutionalization for more than 50 percent of all the patients in the facility results from mental diseases.

The Manual provides that when applying the 50 percent guideline, reviewers should determine whether each patient’s current need for institutionalization results from a mental disease. For purposes of this assessment, the term “mental disease” includes diseases listed as mental disorders in the International Classification of Diseases (“ICD”), with limited exceptions. The Diagnostic and Statistical Manual of Mental Disorders (“DSM”), a subsection of the mental disorder chapter of the ICD, may also be used to determine whether a disorder is a mental disease. Under the ICD system, mental diseases include alcoholism and other chemical dependency syndromes. Chemically dependent patients admitted for medical treatment provided by medical professionals under a psychiatric model of care should be counted as institutionalized due to mental disease.

The 50 percent guideline is not determined by the number of beds in a facility or their intended use. Rather, it is determined based on the facility’s actual patient census on the day the determination is made. The denominator is the number of inpatients in the facility on the day the determination is made, and the numerator is the number of inpatients whose current need for institutionalization is due to mental disease. If the resulting percentage is more than 50 percent, the facility will be at risk of being determined to be an IMD.

With these rules in mind, we conducted a complex process that involved modeling future occupancy in both the inpatient psychiatry beds and the inpatient medical/surgical beds. As basis for the modeling, we incorporated factors including past CVMC census data (see graph below), trends affecting future inpatient and outpatient care, and the UVM Health Network’s care delivery optimization processes. Based on our modeling, we concluded that CVMC can build up to 25 additional adult inpatient psychiatric beds on its campus, in addition to the existing 15 beds, without risking its ability to secure federal funding for the care it provides to Medicaid-eligible patients.



CVMC census data from 2014 – 2018. General inpatient medical/surgical census in blue, and inpatient psychiatry census in red. Using the 50% guideline, this graph indicates how often the general inpatient medical/surgical census drops below its average daily census of 57.

2. Bed Programming

Concurrent with the IMD analysis described above, a team comprised of clinicians (physicians and nurses) from regional institutions providing inpatient psychiatric care, as well as individuals and consultants with expertise in facility planning, healthcare quality, and business planning and analysis, convened to identify the type and acuity of patients that will be cared for in the new bed capacity at CVMC, along with the number of beds to be allocated for each acuity level. The guiding principles for this team included: (1) minimizing the number of people who wait more than four hours in the emergency department for admission, following a determination that inpatient care is necessary; (2) maximizing the capability to manage any psychiatric or medical presentation; (3) ensuring highly efficient and cost effective operations; and (4) minimizing the risk of harm to other patients, families and staff. The bed programming was vetted through the PIPS stakeholder engagement process.

Process

The team engaged in a structured approach, breaking down the work into the following components:

1. Stratify patient need by behavioral control and risk of aggression
2. Identify the security level of the newly configured beds
3. Identify the number of beds needed for each behavioral category, without compromising availability of beds for challenging presentations

1. Stratify patient need by behavioral control and risk of aggression

To begin identifying the behavioral categories of patients that will be served by the new bed capacity, several members of the team conducted a literature review on hospital bed configuration. Other than identifying specialty services, no published studies revealed bed configurations that did not simply stratify patients by behavioral manifestations. In addition to the literature review, a query was conducted with Vizient membership, a national network that includes more than 90% of the nation's academic medical centers, which resulted in very similar findings.

To determine dividing parameters for patients that will be served by the new beds, the team first considered the inverse relationship between inpatient unit specialization and the capacity to admit the next patient identified for hospital care. For example, in large metropolitan areas, it is possible to create specialty units (mood disorder units, psychotic disorder units, eating disorder units, personality disorder units, etc.) and with large numbers of beds in aggregate, there is a high probability that the needs of any particular patient can be met in some part of the array. In contrast, areas with small populations and fewer beds can increase the probability of having an inpatient bed available when the beds are configured to manage broad groups of problems across the full adult age range, rather than by specialty unit. Accordingly, the planning group agreed to configure the beds as broadly as possible with respect to diagnosis as general psychiatry inpatient beds, to increase potential availability to the next identified patient.

A second potential dividing parameter is the degree of behavioral dyscontrol, aggression, or violence exhibited by the patient. The level of aggression drives the level of security—more aggressive patients need heightened security— as well as provision for emergency involuntary procedures and separation of patients to ensure safety. This level also correlates with treatment programming; aggressive patients are more likely to suffer from mania or psychosis, where treatment emphasis is on restoring internal control through medication and behavioral interventions. Non-aggressive patients are more likely to have personality disorders or mood disorders, where treatment emphasis relies more on psychotherapy.

Most regional hospitals have adopted a three-tier stratification system, with Tier 3 being the least acute and Tier 1 being the most acute. Tier 1 patients often are designated by the Department of Mental Health as Level 1 patients in their reimbursement model. We have adopted this three-tier model as a conceptual framework, with each tier detailed below:

Tier 3: Patients with suicidality, depression, personality disorders, and anxiety disorders (with or without associated substance use disorders or medical problems). Patients being cared for in Tier 3 tend to have the following characteristics:

- Good behavioral regulation
- Ability to interact socially and interact in verbal group therapeutic interventions
- Engagement in treatment
- Interest in psychotherapy, reflection, mindfulness, and anxiety management techniques

Tier 2: Patients with psychotic disorders, mania, and brain injury (with or without associated substance use disorders or medical problems). Patients being cared for in Tier 2 tend to have the following characteristics:

- Diminished behavioral regulation (loud, mildly threatening, agitated)
- Diminished social interaction (intrusive, belligerent, loud). Group therapy interventions and activities are often modified to accommodate verbal interest and tolerance of the group.
- Not necessarily engaged in treatment
- Greater focus on restoring locus of control to the patient

Tier 1: Patients with psychotic disorders, mania, and brain injury (with or without associated substance use disorders or medical problems). Patients being cared for in Tier 1 tend to have the following characteristics:

- Poor behavioral control
- Threatening and violent tendencies, posing significant risk to other patients and staff
- Potential for sexual aggression or very limited personal boundaries
- Social interaction that is very distorted or frightening
- Not necessarily engaged in treatment
- Greater focus on restoring locus of control to the patient
- Greater focus on ensuring safety of other patients, staff, and the public
- Increased staff attention required during phase of inpatient treatment

2. Identify the security level of the newly configured beds

As stated above, the level of aggression drives the required level of security, provision for emergency involuntary procedures, and separation of patients to ensure safety. The team concluded Tier 1 and Tier 2 units will be configured to the highest security level to include a mechanism to separate aggressive patients, while Tier 3 unit will be designed to a lower acuity level. We believe this configuration allows the most flexibility to admit patients waiting in Emergency Departments across the State for an inpatient

psychiatric bed, and supports the goal to design the new bed space to offer the greatest flexibility to care for patients as they move through the tiers described above.

3. Identify the number of beds needed for each behavioral category, without compromising availability of beds for challenging presentations

Utilizing the expertise of our business planning team and our modeling software, our preliminary analysis concludes that if the State were to build 35 new beds, fifteen of the 35 are needed for Tier 3, with the remaining 20 beds needed for Tiers 1 and 2.

Using length of stay as a proxy for degree of aggressive behavioral presentation (*i.e.*, shorter length of stay correlates with a less aggressive behavioral presentation), we analyzed patients in the “Unmet Need” group identified during our bed capacity modelling work. We identified diagnoses that would require either Tier 3 or Tier 1/Tier 2 care, and then calculated the probability that a patient with a given length of stay would be in one group or the other. For example, when we look at all patients with five-day lengths of stay, more are hospitalized for depression (Tier 3) and fewer for schizophrenia (Tiers 1 or 2) than we see in patients who are hospitalized for 30 or 40 days. Applying these probabilities to the simulation data generated in the phase I modelling, we were able to estimate the number of patients who would need Tier 1/Tier 2 care, versus the number who would need Tier 3 care. This resulted in the identification of 15 beds needed for Tier 3, and 20 beds needed for Tier 1/Tier 2.

As the results of the IMD Analysis emerged, we applied the outcome of the analysis above to the total number of beds possible for the CVMC inpatient Psychiatry facility. Applying the approach above to the 40-bed facility, recommendations for bed allocations by tier were as shown below, and guided by consultant Halsa Advisors’ direction for unit size to make most efficient use of unit staffing:

- Tier 1: 8 beds
- Tier 2: 16 beds
- Tier 3: 16 beds

Facility Programming: With the new facility sized at 40 inpatient beds (15 existing plus 25 new), planning work moved to how the facility would be stratified to best serve patients at their level of need. A relocated ED was identified as necessary to allow for clinically appropriate patient care and flow for all persons arriving at the hospital in need of care, especially those in need of mental health care. The overriding objective has been to maximize community access to inpatient psychiatric care, once a thorough clinical evaluation concludes that inpatient treatment is medically necessary. To this end, we set the following goals to guide the facility programming phase of planning:

- Provide high quality care in a trauma-informed environment
- Provide a person-centered, therapeutic environment to support recovery and reinforce patient autonomy
- Minimize risk of harm to self, to other patients, and to staff
- Minimize the number of people who wait >4 hours in the ED for admission, once the determination has been made that inpatient care is necessary
- Maximize the capability to manage any psychiatric or medical presentation
- Ensure efficient and cost-effective operation

To achieve these goals, the planning process included the following:

- Stratification of patient need by behavioral control and risk of aggression (e.g., designation of units as Tier 1, Tier 2, and Tier 3) as described above
- Clinical programming that correlates with measures of behavioral control
- Unit designs that provide a therapeutic environment, ensuring safe management while maximizing personal independence and freedom from restraint

- Consideration of the number of beds needed for each behavioral category, without compromising availability of beds for challenging presentations

We believe that this planning process, which utilized the best available information and data and has been informed by consultation with a variety of experts and community stakeholders, support the project's overall goals and objectives.

Appendix D: Emergency Department Bed Need Analysis

A multi-disciplinary team comprised of peer advocates, emergency department clinicians and staff, security, care management, facilities, UVM Network leadership, business planning and quality convened in September through December of 2019 to create the facility program for the new emergency department (ED). The group leveraged the recommendations of the ED User Group facilitated by Halsa Advisors in early 2019 regarding ED-based receiving, assessment, and transition process and spaces as described in our May 15, 2019 quarterly report. The work of the User Group, combined with an assessment of CVMC's current ED space, led to the decision to locate the ED directly below the new inpatient psychiatric facility; the contiguous ED space would accommodate the department's programming and space needs, and provide an efficient flow for moving psychiatric patients admitted from the ED to the inpatient psychiatry units.

To determine the appropriate number of ED beds required to meet the current and future needs of patients in the Berlin hospital service area, the review included an assessment of current visit volumes by day of the week and arrival times, as well as volume forecasts from Sg2 for mental health and non-mental health visits. In addition to volume and flow data, the team explored the various care needs of mental health patients who arrive in the ED and how this relates to the mix of room types in the ED program, with the overarching goal to provide an adequate supply of general treatment beds and beds that can be flexed to serve as transitional care space. Pediatric patient needs were also considered during this assessment.

In addition to determining the optimal number of beds to meet current and future patient need, the workgroup addressed the need for flexibility in the ED's design so that it will be able to accommodate a variety of patient care needs for both general and psychiatric ED patients. The workgroup recommended creation of four-transitional beds and an adjacent area that includes four "swing" rooms, two of which are for psychiatric patients. The design of the two remaining swing rooms allows them to be used for emergent medical/surgical cases or to serve the needs of an emergent psychiatric case, when a high level of safety is required.

Given the lengthy pause in this project due to COVID-19, a refresh of the CVMC Emergency Department bed need analysis and assessment was conducted in the early fall of 2021. This updated assessment included updated CVMC ED data and an updated forecast for mental health ED visit volumes from Sg2. As a result of the update, projected growth in mental health ED visits was updated to reflect a 13% increase over 2019 baseline volume by 2029, while non-mental health ED visits showed a 10.5% increase in visits for the same timeframe. Forecasted total ED visits for 2029 were higher than the original visit forecast. The table below summarizes the growth in number of ED visits based on the updated model:

| Projected CVMC ED Visits | | | | |
|---------------------------------|-------------|-------------|-------------|---------------------------------|
| 2019-2029 | | | | |
| | 2019 | 2025 | 2029 | 2019-2029 % Increase |
| Mental Health Visits | 1,725 | 1,947 | 1,947 | 12.9% |
| Non-MH Visits | 23,680 | 24,790 | 26,176 | 10.5% |
| Total ED Visits | 25,405 | 26,737 | 28,123 | 10.7% |

Comparing these volumes to facility benchmarks provided to us by Halsa Advisors, we believe that the number of proposed ED beds and treatment spaces, as shown in the table below, will serve the 2029 volume projections, and should serve projected volumes into the decade following. Our renewed

modeling also confirmed that the original program was sufficient to meet the updated need forecast using a model that focused on those times of day when the highest number of patients are present in the ED.

In addition, we revisited our initial analysis to ensure that the number of general treatment rooms was right-sized to the forecasted number of general treatment patients, including psychiatric patients who did not require a TCA or swing room. Our analysis, which included consideration of demographics and other drivers of ED utilization, confirmed the results of our prior work and determination of bed need. In addition to the TCA and the four ‘swing’ rooms, the ED will include 27 spaces to accommodate the needs of other patients who come to the ED with mental health and non-mental health emergencies, as outlined in the table below:

| CVMC ED PROGRAM | | |
|--|----------------|-----------------------|
| ED Patient Beds (all in single rooms unless noted otherwise) | | |
| Type of bed | Current | Proposed |
| General Treatment | 14 | 14 |
| Vertical Treatment Chairs | | 4 |
| Critical Care | 4 | 4 |
| Code/Trauma | 2 | 2 (in single room) |
| Airborne Infection Isolation Rm | 1 | 2 |
| Sexual Assault Nurse Exam Rm | 1 | 1 |
| Med/Psych Swing | 2 | 2 |
| Subtotal ED | 24 | 29 |
| PCA | 3 | 4 |
| PCA/ED Swing | | 2 |
| Subtotal PCA | 3 | 6 |
| TOTAL | 27 | 35 |