UMass Memorial Health Care, Inc.
DoN #UMMHC-22042514-HE

APPLICANT RESPONSES

Responses should be sent to DoN staff at DPH.DON@State.MA.US

While you may submit each answer as available, please
- List question number and question for each answer you provide
- Submit responses as a separate word document, using the above application title and number as a running header and page numbers in the footer
- When providing the answer to the final question, submit all questions and answers in one final document
- Submit responses in WORD or EXCEL; only use PDF's if absolutely necessary. If "cutting and pasting" charts, provide them in a PDF so they can be clearly seen
- **Whenever possible, include a table with the response**

If information cannot be provided for each campus separately, provide the information for both campuses combined and include an explanation in the response.

FACTOR 1

1. **The application states that the Patient Panel does not include Harrington Hospital, which was acquired by UMMH effective July 1, 2021. (pg.2). In order to obtain an understanding of patients seen by all of the Applicant's entities, provide patient population information (total number of patients) for Harrington Hospital separately, for FY19-21, if possible.**

   See attached Excel workbook.

2. **The Application states that the 6-story building on the University Campus will contain shell space for future build out to accommodate clinical services. How much shell space is part of the Proposed Project? Please amend the square footage chart to distinguish the space planned for use to be renovated and the shell space.**

   See attached Excel workbook.

3. **Confirm that Year 1 of project implementation is 2025.**

   Project will be completed in late FY24, with the first full year beginning with FY25.

Patient Panel Need: M/S Beds

The number of UMMH and UMMMC patients from Eastern Mass increased by 41% and 35% respectively, between FY20 and FY21, the highest increase of all regions (pg.3 and pg.5). To what do you attribute this increase?

   UMMH experienced an increase in Eastern Mass patient panel primarily due to its vaccination programs at the various UMMH vaccine clinic locations.

Patient Origin

UMMH	FY19	FY20	% Change	FY20	FY21	% Change
Central Mass	334,998	313,051	-7%	313,051	352,496	13%
Eastern Mass	14,363	13,932	-3%	13,932	19,587	41%
Western Mass	8,434	7,650	-9%	7,650	8,881	16%
Out of State	13,693	11,231	-18%	11,231	12,465	11%

UMMMC	FY19	FY20	% Change	FY20	FY21	% Change
Central Mass	248,964	230,632	-7%	230,632	262,968	14%
Eastern Mass	11,167	10,295	-8%	10,295	13,865	35%
Western Mass	8,042	7,345	-9%	7,345	8,519	16%
Out of State	10,746	9,054	-16%	9,054	10,065	11%

4. **The application provides an overview of the UMMH Patient Panel by region (pg.3). To better understand Patient Panel origin and Patient Panel utilization of UMMMC inpatient services please complete the tables below. Provide patient origin for FY21 for University and Memorial campuses (Massachusetts patients only). If the count is < 11 use Other and specify which towns are aggregated in that category.**

See attached Excel workbook.

Patient Origin University Campus (FY21)

			Patient Panel		M/S Discharges	
Zip Code of Residence	City/Town	Region[1]	Count	%	Count	%

Patient Origin Memorial Campus (FY21)

			Patient Panel		M/S Discharges	
Zip Code of Residence	City/Town	Region[2]	Count	%	Count	%

[1] Central Mass, Eastern Mass, or Western Mass.
[2] Central Mass, Eastern Mass, or Western Mass.

5. **To better understand Patient Panel need for inpatient capacity at University and Memorial Campuses, please complete the tables below for FY21.**

   See attached Excel workbook.

	University Campus	Memorial Campus	Total
Licensed Beds			
Operational Beds			
Single Occupancy Rooms			
Double occupancy Rooms			

	University Campus	Memorial Campus	Total
Average Length of Stay			
Case Mix Index			
Patient Days			
Discharges			
M/S Discharges			
Occupancy			
Total number of Transfer Requests[3]			
Number of Transfers Received			
Number of Transfers Declined			

6. **Please provide the DoN program with the Emergency Department data for 2021 using the most current definitions for both the Memorial and University campuses.**

   See attached Excel workbook.

Emergency Department Data CY21[4]

ED 1: Number of ED visits per month		ED 2: Median time (in minutes) from ED arrival to ED departure for admitted ED patients, per month (NQF measure ED-001-08).		ED 3: Median time (in minutes) from ED arrival to ED departure for discharged ED patients, per month (NQF measure ED-002-08).		ED 4: Total number of all patients remaining in the emergency department for 12 or more hours from ED arrival to ED departure including ED observation-stay (where "departure" is defined as admission, transfer, or discharge).		ED 5: Total number of patients identified in ED 4 with a behavioral health diagnosis.	
University	Memorial	University	Memorial	University	Memorial	University	Memorial	University	Memorial

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7. **The Application states that the provision of secondary medical/surgical inpatient care is often the result of age-related chronic diseases/conditions (pg.7). Define secondary medical/surgical inpatient care, and how you distinguish that from other levels of care.**

Secondary care is that which could be provided in a community hospital. Using the Center for Health Information and Analysis' ("CHIA") definitions, Academic Medical Centers ("AMC") are a "subset of teaching hospitals, characterized by extensive research and teaching programs, comprehensive resources for tertiary and quaternary care, being principal teaching hospitals for their respective medical schools, and being full-service hospitals with case mix intensity greater than 5% above the statewide average". Conversely, Community Hospitals are all other hospitals that do not meet the definition of a teaching hospital[5].

AMCs are able to provide tertiary care that involve conditions with a high frequency of complex co-morbidities and/or requires rare and complex procedures, interdisciplinary decision-making across multiple modalities, and complex treatment decisions.

8. **The Application states in FY21, total ED boarder hours amounted to 282,600 hours, representing a 91% increase from FY19 (pg. 7).**

   a. **How is total ED boarder hours calculated?**

   Total ED boarder hours are calculated by totaling the number of hours each patient boarded in the ED from decision to admit to departure, minus two hours. In FY21, 282,600 hours represents the total boarding hours of 21,459 patients. The 91% increase should have reflected the increase in total ED boarder hours from FY18 to FY21, not from FY19 to FY21.

   b. **Provide ED boarder hours for FY20 and FY21.**

   Total ED boarder hours for UMMMC (University and Memorial Campuses) are as follows:

   FY18: 147,651
   FY19: 208,711
   FY20: 201,924
   FY21: 282,600

9. **Define Average Case Weight (pg.7).**

   UMMH takes a traditional approach in defining average case mix. Case mix intensity is determined by totaling the CMS Diagnoses Related Group (DRG) weight for all discharges and dividing the sum by the total number of discharges.

10. **The Application states that University Campus requires 72 additional M/S beds and Memorial Campus requires 19 new M/S beds to meet Patient Panel need (pg.6). In addition, the Applicant determined need for the Proposed Project based on the historical utilization metrics, including patient days, ED boarding, and declined transfers, as well as projected growth of its existing Patient Panel (pg.20).**

    a. **What methodology was used to determine that 72 and 19 beds were required at the University and the Memorial Campuses respectively?**

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[5] Teaching hospitals are those with at least 25 full-time equivalent medical school residents per one hundred inpatient beds.
https://www.mass.gov/doc/hospital-teaching-status-report-2010-2011/download

As further described below, UMMMC's need for additional medical/surgical capacity is greater than 91 beds. UMMMC determined the most expedient and efficient process to add beds at UMMMC would be to build within its existing footprint, including a newly acquired building immediately adjacent to University Campus and in available space at Memorial. Available space at the facilities limits the number of beds that can be physically added. In total, UMMMC determined there was space for 91 additional single-occupancy medical-surgical beds.

b. **Explain why Patient Panel need is best addressed at UMMMC campuses versus other hospitals in the UMMH system?**

Based on current and projected need for inpatient services across UMMH's services areas, UMMH determined that the greatest need for additional capacity is at UMMMC. First, medical/surgical occupancy is the highest at UMMMC compared to other UMMH community hospitals. In addition, ED boarding is highest at UMMMC, further compounding high occupancy rates. In order to alleviate excessive ED boarding and high occupancy rates, additional capacity is needed at UMMMC that cannot be accomplished through the addition of capacity at UMMH's community hospitals.

c. **The additional 72 M/S beds will provide UMMMC additional capacity to focus on lower acuity patients (pg.9) How did you determine the new building on University Campus was the optimal place to add new beds to accommodate lower acuity patients? What factors did you take into consideration?**

To clarify, patients of the new building on University Campus will not necessarily be lower acuity but rather tertiary patients with certain exclusions to ensure appropriate care teams are available. UMMMC determined the proposed location would be the optimal place for the new beds due to its close proximity[6] to University Campus which will ensure ease of transportation and convenient access to the support services available through the Campus.

d. **What plans do you have for staffing the new M/S beds?**

UMMH has a number of interdisciplinary teams focused on recruitment and retention of key clinical roles. First, UMMH is partnering with labor unions to agree on competitive contracts with extended period lengths to help support cohesion among leadership and staff. Second, UMMH is partnering with area schools to support program and student growth in areas such as nursing, allied health, respiratory therapy, and others. Third, UMMH is expanding recruitment efforts outside of Massachusetts and expanding throughout New England and a number of key metropolitan areas across the country, increasing marketing campaigns, and focusing on UMMH's history and mission of high reliability and zero harm providing quality care in the communities in which UMMH serves.

11. **The Application states UMMMC anticipates the prevalent diagnoses of patients admitted to the new inpatient building will be Septicemia/Severe Sepsis, Chronic Obstructive Pulmonary Disease, respiratory infection, pneumonia, heart failure, and pulmonary edema (pg.9).**
    a. **How did you determine these diagnoses were the appropriate ones to use?**

    UMMMC used an analysis of patients awaiting bed placement in its emergency departments and current team structures. Based upon demand and patient need, these diagnoses were determined to be the most urgently needed cohorts for the inpatient units.

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[6] Approximately .25 miles from University Campus Emergency Department.

12. **The Application states that based on historical utilization trends as well as an aging population, the Hospital anticipates that demands for inpatient care will continue to grow (pg.9)**
    a. **Explain why there is no projected change in M/S utilization measures from Year 1 to Year 5 of project implementation, and why occupancy is still projected to be above industry standards, which is currently 85%.**

    Based on current and projected need for inpatient services, UMMMC would need an additional 318 medical-surgical beds to adequately address community need. However, as noted earlier, there is only room within the campuses physical footprint to create an additional 91 beds. As such, utilization growth is capped because demand will outpace need beginning with Year 1 of operation.

    UMMMC Medical/Surgical Projected Utilization with Proposed Project (pg.10)

	Year 1	Year 2	Year 3	Year 4	Year 5
ALOS	5.8	5.8	5.8	5.8	5.8
Days	178,756	178,756	178,756	178,756	178,756
Discharges	31,439	31,439	31,439	31,439	31,439
Occupancy	89.8%	89.8%	89.8%	89.8%	89.8%
ADC	759	759	759	759	759

13. **The Application states that with improvements to ED crowding, patients will be able to receive more timely treatment in the ED, reducing the number of patients who leave without being seen (pg.10).**
    a. **What percentage of patients left without being seen in FY21?**

    7.3% of patients left without being seen in FY21.

14. **The Applicant states that the Proposed Project will plan for the demands of an aging population (pg.1), and that older age cohorts account for a higher percentage of M/S discharges, require a higher level of care and have longer lengths of stay (pg.9).**
    a. **What age-friendly measures will be incorporated into the design of the building?**

    The new inpatient building will be designed for 72 single bed patient rooms. The goal for families to be an integral part of the patient's care management, particularly with older patients of varying health challenges. To that end, patient rooms will be family focused, with adequate space and amenities for family members to be present for the duration of patient's hospital stay. Part of this design will include innovative technologies that will assist with ease of information for the patient's condition, patient's appointments, and patients medication/care routine.

    Within the room, the location of the patient toilet will provide direct access for patient transfer to the room. The door to the bathroom will be sliding to mitigate interference with equipment and prevent fall risks from displaced equipment and cords. Three of the patient floors will have ceiling mounted patient lifts for safe transfer of patients. The uppermost will have a mobile lift due to the existing roof structure. Additional fall risk mitigations will include handrails throughout the facility, restrooms and hallways, and technology built into room components such as intelligent cameras, to detect patient movement.

    Other age-friendly measures we plan to implement are related to noise mitigation and control of environment. Wall construction and ceiling tile treatment that will provide substantial sound mitigation for a more restful, quiet environment. The in-room technology will allow the patients to control lighting levels, window blinds, and an integrated monitor that will be a vehicle for information sharing from the bed.

All surfaces in the patient room and corridors will allow for safe passage, particularly if walkers or other assistive devices are required.

In summary, providing a safer, quieter, family-focused environment with enhanced patient control are the measures we are providing for our diverse patient population.

Patient Panel Need: Computed Tomography (CT)

15. **To better understand CT capacity at both campuses, please complete the table below.**

	University Campus	Memorial Campus	Total
Current CT Units	3	2	**5**
Recently DPH Approved Units*	1	0	**1**
Proposed CT Units	1	0	**1**
Proposed Total CT Units	**5**	**2**	**7**

16. **The application provides historical utilization of CT services at University Campus (pg. 10). To better understand CT utilization, please complete the tables below.**

University Campus Historical CT Volume[7]

	CT Volume FY21	Unique Patients FY21
Emergency	37,648	16,636
Inpatient	9,644	4,081
Outpatient	10,708	6,630
Total[8]	**58,002[9]**	**27,349**

Memorial Campus Historical CT Volume

	CT Volume FY21	Unique Patients FY21
Emergency	11,585	7,692
Inpatient	3,275	1,954
Outpatient	12,858	9,663
Total	**27,728[10]**	**19,316**

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[7] Unique patient counts are specific to each campus. Therefore, patients may be counted twice if they received CT services at each campus.

[8] Between FY19 and FY21, seven (7) scans were not categorized as emergency, inpatient, or outpatient, therefore scans (7) scans appear in the "Total" column, but are not represented as an emergency, inpatient, or outpatient scan.

[9] Includes two (2) unlisted scans by two (2) unique patients.

[10] Includes 10 unlisted scans by seven (7) unique patients.

17. To better understand Patient Panel need for CT services, please respond to the following questions:

    a. Provide the hours of operation of existing CT units (weekdays, weekends, 24 hours a day).

The emergency and inpatient CT units at University Campus are available to scan 24 hours per day, seven days per week in order to ensure that the hospital is able to meet the needs to stroke and trauma patients. However, the prime time use for these units is between the hours of 7am and 7pm. The outpatient/procedure CT unit operates Monday through Friday from 7a-6p and Saturday from 7am-5pm.

Similarly, the Memorial Campus emergency/ inpatient CT unit operates24 hours per day, seven days per week. The outpatient/procedure CT unit operates Monday through Saturday 7a-8p.

    b. Provide the current capacity of existing units, and the number of scans needed to reach full capacity on the proposed units, and projected hours of operation.

A straight capacity calculation does not consider the multiple types of scans performed and the unique circumstances involved those results in the scanner being in use for shorter or lesser periods of time depending on the type of study performed and patient condition. While the Hospital's CT units each have a primary use, they also are used interchangeably depending on demand. In addition, as noted above the prime time hours for the inpatient and ED units are 7am to 7pm. This is because peak utilization of the ED occurs during this time. In addition, it is not ideal from a patient care perspective to scan inpatients overnight. Accordingly, while these units are and must be available 24/7 to support emergent patients due to the Hospital's status as a Level 1 trauma center, primary stroke center, and acute cardiovascular center, calculating capacity of the units that are available 24/7 is not appropriate because these units must always be available and as such, 24/7 operations with peak times of demand artificially depresses the capacity of the ED units. With that additional context, in total, UMMMC's five (5) CT units have the capacity to provide 67,288 scans each year. In FY21, UMMMC performed 85,730 scans, 27 percentage points above maximum capacity.[1] We also need to emphasize that as a level 1 Trauma Center, Stroke Center, and Acute CV Center we essentially need to have capacity on the main CT scanners to do an immediate study on patients immediately upon arrival – often times taking the patient directly on arrival to the CT scanner before anything else is done. That requires some "built in extra capacity" to allow that to occur quickly and safely.

With respect to the proposed new unit, it also will be available 24/7 to accommodate emergent needs of inpatients in the building, with the majority of inpatient scans being performed between the hours of 7am and 7pm. With this unit 8-10 inpatient CT transports to main campus per day (2500 pr year) will be avoided by having a CT on site. The remaining capacity will be utilized for expansion of access to outpatient scans (8a-8p M-F and 8a-4p on Saturday) for the identified categories in the application. Maximum capacity for the proposed CT unit is 9,256 [calculated by using the available capacity during 7a-8p M-F, 7a-7p Saturday and Sunday as this covers outpatient and peak inpatient hours].

    c. Provide wait times for imaging units by patient status: inpatients, outpatients, and emergency patients. How will the Proposed Project impact wait times for CT services?

The current wait time for outpatient scans at the Hospital (both campuses) is 15 days based on the 3rd available appointment.

At Memorial Campus, the current wait time for emergency patients is 125 minutes. Inpatient wait time is 8.4 hours.

At University Campus, the current wait time for emergency patients is 161 minutes. Inpatient wait time is 7.7 hours.

The proposed addition of a CT unit at the new building will primarily be used to support inpatients in the facility so patients will not have to be transported back and forth to University Campus, which is not ideal. This would also reduce the burden of having one CT unit supporting the needs of two campuses leading to unnecessary delays. In addition, the proposed CT unit will help alleviate the current wait times for outpatient CT across UMMMC and support expanded community needs outlined in the DoN application such as lung cancer screenings, cardiac care, same day CTs, and firefighter cancer screenings.

i. **What systems do you have in place to support appropriate imaging and reduce low-value and overutilization of imaging?**

The Hospital uses American College of Radiology Clinical Decision Support software to meet Protecting Access to Medicare Act ("PAMA") guidelines to reduce low-value and unnecessary care by delivering real-time and relevant analytics that are used to guide physician decisions and patient outcomes

Public Health Value: Health Equity

18. **The Application states that the Proposed Project is an integral component of UMMH's mission to provide equitable care to its Patient Panel and the community it serves (pg.18). In order to understand how the Proposed Project will contribute to health equity, provide responses to the following:**
    a. **What health/health care disparities relating to this Proposed Project has the Applicant identified?**
    b. **How will the Proposed Project address these disparities?**

The Proposed Project seeks to improve health care access to both emergency and inpatient services by creating additional capacity within the UMMH system where it is most needed. As noted in question 14, 7.3% of patients left UMMMC's emergency department without being seen. As more patients continue to use the ED as a result of difficulty accessing primary or urgent care, or unfamiliarity with the healthcare system, hospitals must be able to accommodate the growing number of patients requiring inpatient level of care. Coupled with the fact the new inpatient beds will provide care for the most prevalent diseases triaged through the ED, the Proposed Project will create access for all patients in the Hospital's diverse patient panel.

Patients will be triaged to the new building based on their need for an inpatient medical bed, regardless of race, ethnicity, language, or other factors. All rooms will be private, in contrast to many other beds at the Medical Center.[11] Additionally, UMMMC will implement new technology to allow for embedded telehealth (which will allow medical professional or family to "call" into the patient's room). There will be ample access to remote interpreters via the in-room smart TVs. Further, entertainment and education options will be available in multiple languages. If this is successful, the Hospital plans to implement this

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[11] Currently, 42% of all beds are single-bedded rooms.

technology in other areas in the hospital. The new building will also have new environmental controls at the bedside (e.g. temperature control, curtain control) so the patient may not need to leave bed to improve their comfort and have autonomy to do so. This will be especially helpful for patients who are disabled or who lack the ability to ambulate.

FACTOR 2

Delivery System Transformation

19. **UMMH strives to screen all patients for Social Determinant of Health ("SDOH") needs through its primary care practices at least once per year. Currently, 38 UMass Memorial Medical Group practices are screening patients during office visits (pg.22). In addition to primary care office screening, case managers in the inpatient setting also screen for SDOH needs and assess patients for referrals to community services (pg.22).**
   In order to understand Patient Panel access to SDoH screening and referral, please respond to the following questions:
   a. **What percent of the Patient Panel are screened for SDoH needs?**

      With respect to patients of UMass Memorial Medical Group practices, 45,28 patients have been screened for SDoH needs through July 31, 2022, representing 21.3% of all UMMMG patients.

      All adult inpatients are screened using a nursing assessment as well as a nurse case manager admission assessment. If an SDoH need is identified, these groups of staff will consult the social worker. The social worker will then do a complete social work assessment and use an SDoH flowsheet to document the categories of need and then the type of need in a narrative note. As of today, screenings done inpatient are not tracked in the same manner as those performed in UMMMG practices.

   b. **How are patients with a PCP outside the UMass system and those without a PCP screened for SDoH needs? Explain referral and tracking processes for patients with positive SDoH screens.**

      SDoH screening is conducted regardless of PCP and payer. Patients that screen positive for SDoH needs are connected to resources via CommunityHELP, UMMH's resource and referral platform. Resources are provided based on patient preference via printed, email, text or e-referral to CBO. Additionally, UMMH has the ability to track analytics from CommunityHELP regarding caregiver activity to address patient's identified needs.