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
- Whenever possible, include a table with the response
- Responses must be available in PDF and source document (Excel preferred for data and Word for narrative).

Factor 1

Factor 1a. Patient Panel and Need

1. **Appendix 3 does not include data at the service level. In order to understand Patient Panel need for services across the different patient categories, please replicate the data in Appendix 3a for FY19 for each of the services listed below. Please provide counts and percentages. Combine and clearly label all data with 11 or fewer patients. Define the inclusion criteria for the category "Other" listed under race/ethnicity.**
    a. **Historical Inpatient Discharges – Unique Patients (accompanies smaller chart on pg.17)**
        - **Cancer**
        - **Heart and Vascular**
        - **Med/Surg all Other**
    b. **Historical Cardiovascular Procedures - Unique Patients (pg. 22.)**

See Excel Attachment

2. **How were patients with multiple races captured in the Appendix 3a tables?**

Patients are given the option to select as many or as few races as applicable. For the purposes of the information populated the Appendix 3a tables, each patient's primary race (the race selected first) was pulled. For reference, approximately 2% of patients chose to select a second race, and only 0.02% choose three.

3. **To better understand the distribution of beds and services after the proposed changes please complete the tables below on Inpatient (Table a) and other project related services (Table b).**
    a. **Complete the table below. If there are no changes in bed numbers for a service line, the columns to the right of the Operating Beds column do not need to be completed for that service line.** See Excel Attachment

All beds are licensed for medical/surgical use and are fungible and are not held for certain services. The Hospital attempts to cohort patients by specialty but on any given day could be used for and as a result a

particular bed is not specifically designated to care for certain conditions or specialties. Therefore, the data requested for oncology and cardiac dedicated beds is not available. As licensed med/surg beds, their utilization is only tracked at that level and cannot be further refined. Additionally, while the beds will predominantly be used for oncology and cardiac patients, the Hospital will utilize all med/surg beds as demand dictates and will not limit the use of the new beds for specific conditions if there is an available bed in the new building for a patient requiring admission. Lastly, patients are not discharged from ICU beds, but rather from med/surg beds. Therefore, certain ICU metrics are embedded in the med/surg metrics and would be duplicative if provided in addition to the med/surg metrics.

Please confirm that the M/S data are for all MGH patients. Separately, add the data for Oncology and Heart/Vascular. Please provide a year for the data, including a date or time interval for projected data (i.e., Year 1).

As noted above, MGH does not maintain separate data based on the specialty use of its licensed Medical/Surgical beds. The data provided in the DoN for FY2019 was projected and not actual data; Projections are for FY2029.

b. Complete the table below. See Excel Attachment.

Please note that we have completed the chart to reflect the manner in which interventional cardiology rooms are designated by DPH. In doing so, the chart design makes it appear as though the hospital is adding 19 ORs. However, it is important to understand that the Hospital's existing cardiac catheterization and electrophysiology rooms were erroneously included in the cardiology OR count in the DoN application. Historically DPH Plan Review considered cardiac catheterization and electrophysiology rooms to be imaging procedure rooms and they are not designated as ORs. Accordingly, the existing imaging procedure rooms for cardiology should not have been included in the total existing cardiology OR count shown in the DoN application. When the imaging procedure rooms are excluded from the original OR count provided in the DoN, the Hospital currently has 5 ORs that primarily perform cardiology cases, not 14 existing ORs. In addition, Plan Review requirements have changed to provide for multi-purpose cardiology ORs in that they will be able to perform cardiac surgery, cardiac catherization and electrophysiology. Accordingly, through the Proposed Project, the Hospital will have 6 conventional ORs dedicated to cardiology and 17 hybrid cardiology ORs that will perform image guided cardiac surgery, cardiac catherization and electrophysiology. To that end, we have added a row in the chart to reflect the distinction between OR types to be consistent with DPH Plan Review.

4. **What are the plans for the existing space currently occupied by the Cancer and Cardiac services that will be moving to the proposed site?**

It is important to recognize that the current space represents only 6% of the hospital's total outpatient space. The future use of the space has not been determined given that the space will not be available until 2027 and 2030. The final plan would take into consideration clinical needs for decompression or growth noting many of the Hospital's current outpatient settings are dense and not well configured for the space planning needs following the pandemic to ensure appropriate social distancing. The future use of this space may also allow the hospital to consolidate services into this owned building, eliminating the need to lease space for existing services and providing cost savings.

5. **To distinguish between the volume and the number of patients served, provide the number of unique patients represented in the Inpatient Discharge Volume for FY19 (chart on pg.17).**

   The following table details the number of unique patients represented in the Inpatient Discharge Volume for FY19.

	VOLUME	UNIQUE PATIENTS
Cancer	9,675	5,130
Heart and Vascular	6,718	5,661
Med/Surg, all other	25,585	20,526
Total	**41,978**	**31,317**

   a. **The Application states a need for additional inpatient capacity, but the number of cancer inpatient discharges decreased from FY17 to FY19 (pg.17). Provide an explanation for the decrease in discharges for this period and why the data still support need for additional capacity.**

      While cases declined 3.6% from FY16 to FY 18, acuity, as measured by Case Mix Index increased 8.1% in the same time period, which is significant. This resulted in longer LOS for patients and the patient days for this same population increased from 62,212 days to 64,083 or 3%. Therefore, while there were fewer patients, the occupancy in the hospital increased. This aligns with our strategy and expectation that we are seeing increasing utilization (as measured by days instead of cases) as well as seeing a higher acuity population that requires the services of a major academic hospital.

6. **While the Massachusetts General Hospital (MGH) patient population increased between FY17 and FY19, the age 65 and older patient population decreased, and the 0-17 patient population increased[1]. The Application states the Proposed Project is intended to address future demand for healthcare services by the 65+ age cohort. Provide an explanation for the changing age demographic of the MGH patient population. Has there been a shift in patient origin in these age cohorts?**

   The number of unique patients, as reported in the patient panel data, is not a full representation of actual utilization or the intensity of services needed and provided. While MGH did experience a 1% decrease in this age cohort, including patients whose age is unknown, this data does not take into consideration the nature of services provided, which has required more time and resources per patient, in turn leading to a slight decrease of patients served. Accordingly, solely looking at unique patient counts does not reflect the true need for services by the age 65 and older population.

   b. **Explain (with data) how projected changes in older age groups will impact Patient Panel need for the Proposed Project, and Cancer and Cardiac services in particular.**

      Based on Sg2 age and utilization projections for MGH's service area, MGH determined the Proposed Project is necessary to meet future demand for Cancer and Cardiac services. In addition to new technologies that improve health outcomes and contribute to longer life expectancies, the 65+

[1] Table 2 in Exhibit 3a

age cohort is projected to increase across the state, driving an increased demand for specialized and high-acuity services such as those offered by MGH through the Proposed Project.

c. Explain how the projections were calculated. Which factors went into the calculation?

MGH relied on Sg2 IP Market Demand Forecast. Sg2 forecasts demand for health care services over the next decade, examining the cumulative effects and interdependencies of key impact factors driving change in utilization. Using both disease-based and DRG–based analyses, the forecast provides a comprehensive picture of how patients will access inpatient and outpatient services along the continuum of care. While the forecast is strategy agnostic, it enables MGH to project how utilization of health care in its specific market will change over time. Leveraging state hospital data, Sg2 applies proprietary impact factors (including population, epidemiology, economy & consumerism, policy, innovation & technology, and systems of care) to quantify volume each year over the next decade.

7. To better understand the impact on volume of aging populations by sub-cohorts, provide the volume projections by age cohort (0-17, 18-54, 55-64, 65-74, 75-84, 85+). Include data, source and methodology used for projections.

- **Projected Inpatient Discharge Volume (pg.18)**
- **Projected Outpatient Oncology Services (pg.21)**
- **Projected Cardiovascular Procedures (pg.22)**
- **Projected CT Scan Volume (pg.24)**
- **Projected MRI Scan Volume (pg.25)**
- **Projected PET/CT Scan Volume (pg.26)**
- **Projected PET/MR Scans (pg.26)**

	Projected Inpatient Discharge Volume (pg.18)				
	FY25	FY26	FY27	FY28	FY29
Age 0-17 18-54 55-64 65-74 75-84 85+					

In determining the need for the Proposed Project, MGH did not consider projections by the age cohorts noted above and below. However, age projections are embedded into the forecast provided by Sg2, as explained in Question 6.c.

a. Has COVID-19 impacted these projections?

Yes. As the COVID-19 pandemic progressed, the hospital has noted that patients are sicker and in worse health upon admission, resulting in patients requiring higher intensity services compared to patients admitted to the hospital prior to the pandemic. Data from MGH has found that patients are experiencing poorer health outcomes and thus require a higher level of need

following the pandemic. Further, this data indicates the need for MGH to continue to focus on vulnerable populations to provide the full spectrum of services for the communities for which it is the local hospital.

b. Where do you anticipate new patient volume will originate (e.g., local, regional, national and international; and within the MGB system or new patients)? If local, where are these patients being treated now?

MGH anticipates that new patient volume will primarily originate from its existing service area as the population ages and as new technologies and treatment that both increase life expectancies of existing patients result in referrals for this type of advanced care that is available in an AMC setting. MGH anticipates that new patient volume will primarily originate from its existing service area as the population ages. In addition, as new technologies and treatment that both increase life expectancies, it is anticipate that such advances will result in regional, national and international referrals for this type of advanced care that is available in an AMC setting.

8. The Application states the top two reasons for bed blocks, to better understand the patients whose needs will be better served with the transition to single beds, provide the top five reasons for beds blocks in general at MGH (pg. 11).

The top five reasons for bed blocks are (1) staffing shortages, (2) vancomycin-resistant enterococci (VRE), (3) contagious infections other than VRE and Methicillin-resistant staphylococcus aureus (MRSA)(e.g., varicella), (4) MRSA, and (5) disruptive patients.

9. The Application states anticipated Med/Surg inpatient discharge volume is expected to decrease, and this is due in part to medical advancements shifting care from the inpatient to outpatient setting (pg.18).

a. **By specialty, describe the types of medical advancements causing these shifts for MGH.**

Surgical care, across all service lines, has been migrating from inpatient to outpatient settings over the past few years as both technology and reimbursement structures advance. CMS has historically required certain surgical procedures be performed at hospital locations but as CMS policy is updated, procedures are shifting to the outpatient setting as both technology and reimbursement allow. This is evident in areas like joint replacement, weight loss surgery and many other low intensity surgical procedures. In addition, lower acuity medical cases (e.g. COPD, dehydration, etc.) are being redirected to appropriate community sites (e.g. NWH) and innovative programs like Home Hospital to care for patients in appropriate lower cost settings.

b. **As care shifts from MGH inpatient to outpatient settings, to which sites in the MGB system will these shifts in care be directed?**

The new building was designed in anticipation of some inpatient cancer and cardiac care transitioning to high acuity outpatient. It would remain at the Main campus in order to have immediate access to higher level of care if needed (e.g., higher intensity cardiac procedures, patients at greater risk). Similarly, and if clinically appropriate, other lower-level outpatient procedures and patients will migrate to MGB outpatient and freestanding sites.

c. **Have you used projection models of these shifts to alternative sites of care? If so, please provide them.**

The projection model included a variety of assumptions to address shift in care including a) transitioning lower acuity inpatient care to more appropriate settings (e.g., Home Hospital, community hospitals) b) shifts to outpatient facilities, and c) existing capacity constraints.

d. **If care is expected to shift to the outpatient setting, describe the types of inpatients that will continue to utilize the MGH main campus, including acuity level and types of diagnoses.**

Technological and clinical advances, combined with an improved ability to systematically assess clinical appropriateness at the patient level, facilitate our ability to move certain case types to the outpatient and community settings. Costs are lower and the patient experience is enhanced due to the ease of accessing these settings. However, there are certain case types for which the technological and clinical supports (e.g., imaging, blood supply, pathology, inpatient care, provider expertise) are only achievable in the academic medical center environment. Even as we advance the care we provide with investments in technology (both at the facility level and patient level), we expect that case lengths will rise and the complement of patient needing general inpatient & ICU care and postoperative services will increase. As an Academic Medical Center, MGH will continue to provide services to tertiary patients, as further described in Question 10 below. These patients represent clinically complex needs and require specialized and sub-specialized treatment planning through interdisciplinary care teams. Due to the complex care needs of tertiary patients, they will continue to be most appropriately cared for as inpatients at MGH. In addition, MGH serves as a community hospital for patients in its primary service area. Patients from these communities use MGH's ED and will be admitted to MGH for inpatient care as appropriate.

10. **The Applicant states that in FY19, high acuity or tertiary patients utilized 15% of the Hospital's beds, experienced longer lengths of stay and represented more bed days than any other patient cohorts (pg.18).**
    a. **To understand the remaining patient needs, provide data on case mix, average length of stay, and beds days for high acuity patients (the 15%) and lower acuity patients (the 85%), for the cardiac, oncology and med/surg service lines. Include a definition for high acuity and low acuity patients, including what factors are included (i.e., CPT or diagnostic codes).**

MGH uses Sg2's classification system for high acuity or tertiary patients. Sg2's tertiary classification system is based on DRGs and generally include:

- Rare and complex procedures where volume-based experience impacts outcomes and quality
- Care pathways which require interdisciplinary decision making across multiple treatment modalities (operative intervention, non-operative ablative therapies, medical therapy, conservative care focused on lifestyle choices, behavior modification, non-physician interventions, etc.)
- Complex treatment decisions which are dependent on unique diagnostic, staging or sub-selection capabilities (anatomic imaging for pre-surgical planning, functional

imaging, specialized pathology, lab analysis molecular imaging, genomics, proteomics, metabolomics, etc.)

- Regionalized care requiring coordination across a system of care (tele-medicine, air ambulance transfer, dedicated on-call teams, etc.)
- Conditions with high frequency of complex co-morbidities and/or risk for complications (requiring specialized anesthesia, critical care, medical consultation and nursing)

The remaining DRGs are split between secondary (0%-59% of volume) and high-end secondary cases[2] (60%-69%) based on volume at Massachusetts' Academic Medical Centers.

Actual[3] FY19 MGH IP Discharges: CMI and LOS by Acuity & Service			
Service Line	**Average CMI**	**Average LOS**	**Count of Bed Days**
High Acuity (Tertiary) Overall	**4.48**	**9.48**	**72,799**
Cancer	3.66	8.54	20,764
Cardiovascular	5.97	11.51	21,021
Med/Surg	4.45	9.32	28,323
Low Acuity Overall	**1.63**	**5.57**	**258,824**
Cancer	1.93	5.95	42,030
Cardiovascular	1.87	6.08	29,276
Med/Surg	1.92	5.91	137,750
Total	**2.03**	**6.13**	**331,623**

b. You state that 15% of beds used were for high acuity tertiary patients. Among the remaining 85% of non-tertiary patients treated:

i. What percentage of the remaining 85% of non-tertiary patients could potentially be treated in the community setting? How does the Community Hospital Transfer Program (CHTP) impact this percentage?

In FY19, 94 patients were transferred from the MGH ED to NWH as inpatient admissions. In FY20, 196 patients were transferred and in FY21 YTD (June), 133 patients were transferred. About 80% of these patients were considered secondary care medicine patients; the remaining 23% were psychiatric patients. Accordingly, the CHTP has not yet had a significant impact on the need for beds for non-tertiary patients. It is important to recognize that MGH is the community hospital for some of these non-tertiary patients and transfer to NWH would not be preferred due to distance from home.

[2] High end secondary cases are those patients whose diagnosis related group could be treated in the community hospital if the hospital had the capability to do so (e.g., access to cardiac catheterization). Secondary cases are patients with acuity levels that typically are treated in a community hospital.

[3] Updated from projections in DoN and Chart for Question #3 that were based on partial year.

11. **To better understand the scope of impact this project will have on Transfers from Community Hospitals (pgs. 13-14)**
    a. **What hospitals does MGH have transfer agreements with? See Excel attachment.**

    b. **Provide number of transfers received and transfers lost in CY17 and CY18.**

    Beginning in August 2019, MGH implemented a new system for reviewing and tracking transfer requests given the volume of requests. Prior to this system, transfer intake and triage was performed manually and therefore transfer information is only available for those transfers handled through the new system.

    c. **Of the 5,229 transfers received in CY19, and 457 transfers lost, provide a breakdown by transferring hospital. See Excel attachment.**

        i. **Were these patients part of the MGB Patient Panel or from non MGB providers and out of state?**

        Transferred patients include MGB and non-MGB patients, as well as from in-state and out-of-state residents.

        ii. **In order to understand patient transfers received at MGH in CY19, provide the number of transfers received by specialty and average case mix index for oncology, cardiac, and med/surg patients, by completing the following chart:**

	Inpatient Only	CMI	Outpatient	Lost
Cardiology	376	3.89	4	8
Oncology	62	7.95	2	4
Med/Surg	1044	2.71	54	172
Total	**1482**		**60**	**184**

    d. **Say more about how the Community Hospital Transfer Program (CHTP) applies to this Proposed Project (pg.28).**
        i. **When did this program begin?**

        NWH started accepting transfers from the MGH ED on M-F, 7a-7p on 1/25/2017. NWH accepted transfers 24/7 on 2/27/2017.

        ii. **How many transfers were made in FY19 through this program?**

        In FY19, 94 patients were transferred from the MGH ED to NWH as inpatient admissions.

        iii. **Provide criteria for assessing patients for eligibility to transfer through this program.**

        Patients must be non-ICU medicine patients who require admission to the Hospital. Ophthalmology, Plasma exchange, and transplant patients are not currently eligible for

transfer through this program. Additionally, the patient must consent to the transfer. Patients are often resistant to transferring to another hospital either due to location from their home, expectation of needing AMC level care, or being where their specialist practices. Therefore, not all eligible patients are transferred. Efforts are underway to counter this resistance (e.g., specific conversations with patients, streamlining the process, redirecting patients before they get to the ED) but will take time.

12. **The Application states (beginning on pg.17) that MGH requires 94 additional inpatient beds to meet Patient Panel need. Explain (with data) how you calculated the need for 94 new beds (54 additional medical/surgical beds and 40 additional ICU beds), including the need analysis, and which factors went into the calculation. Include the data, source and methodology used. How did you factor in the bed blocks, ED wait times for M/S patients boarding, and volume/utilization patterns into the number of additional beds?**

    The Hospital's MIT PhD trained Clinical Data Scientist collected data by service line and utilization of resources across the continuum of care including ED boarding time, routine and ICU bed stays by time spent as billing data reflects a point in time (midnight census) versus hours of actual occupancy. This data was incorporated with closed head wall and projection data to determine that the Proposed Project meets needs including space, financial, operational and patient care.

    a. **Provide data used to determine an increase of 91 new dedicated cancer care beds (pg.21) and 23 new designated cardiovascular care beds (pg.23).**

        The addition of new specialty beds was based on demand for current dedicated specialty beds; however, because the dedicated specialty units historically have been overwhelmed, these patients are admitted to any available bed when the specialty unit is at capacity. By increasing the number of dedicated specialty beds, MGH will be able to ensure more cancer and cardiac patients receive services within the unit designed for their needs with the specialized care team and equipment readily available.

13. **The Application states Code Help increased from 5% in FY17, to 10% in FY18, and then to 20% in FY19 (pg.13). To understand the volume represented by the percentages, please answer the following:**
    a. **How is the percentage of time spent in Code Help Calculated? (i.e., denominator, and 24 hour day or shifts?)**

        The percentage of time spent in Code Help is calculated by dividing the number of hours the ED spent in Code Help status divided by total hours during the same time period (e.g., the fiscal year). As of August 2020, Code Help status is defined as ED patient census (acute and urgent) greater than 52 and 20 or more patients waiting to be admitted. Previously, Code Help was triggered with 46 or more patients.

    b. **Share more data on stated increases in FY18 and FY19. What factors contributed to the increase. Were there any changes in training or procedures?**

        Increases in Code Help were driven by increased censuses in the ED, particularly for high acuity patients waiting for admission to an inpatient bed at MGH. In addition to increased ED

volume, MGH also experienced high inpatient capacity levels, longer inpatient stays, closed inpatient beds (e.g., due to infection control), and delays in testing and moving patients to the floor. These increases are not attributed to a change in training or procedures within the ED.

To identify areas in need of improvement, a capacity taskforce identified several initiatives to improve ED capacity, focusing on inflow (i.e., collaboration with community hospitals to keep low acuity admission at community site, reassessing transfer criteria, increasing ambulatory access), throughput (i.e., lab and radiology turnaround times, consult turnaround times, care team handoffs) and outflow (transfers to alternative pathways like Home Hospital and community hospitals).

14. **To better understand the impact of ED visit volume (pg.12) on Patient Panel need, please provide the following:**
    a. **What percent of patients presenting to the ED are admitted? Provide data for FY17-19. Provide a breakdown by behavioral health patients and non-behavioral health patients.**

ED Admission Rate	FY17	FY18	FY19
Behavioral Health	1.10%	1.15%	1.18%
Non-Behavioral Health	23.06%	23.90%	24.11%
Total Admission Rate	24.16%	25.05%	25.28%

    b. **The Application provides the average length of stay in the ED for cardiology patients (pg.12). Provide the average length of stay in ED for oncology patients awaiting admission (FY19) and the average length of stay in the ED for Med/Surg patients (excluding cardiac and oncology patients).**
        - ALOS oncology patients in ED: 10.9 hours
        - ALOS for Med/Surg patients in ED, excluding cardiac and oncology: 13.0 hours

    c. **Provide the expected reduction in length of stay (from ED to Inpatient) for cardiac patients, oncology patients, and other med/surg patients (pg.12).**

    As noted in the Application (pg. #55), the Hospital will monitor ED Boarding and Length of Stay (LOS) following the implementation of the Proposed Project. Additionally, MGH will determine the baseline measure for LOS one year prior to implementation as well as determine projections for the three years following implementation. However, at this time, the Hospital is unable to provide projections as to the reduction of LOS given the length of time before implementation. In addition, the Hospital anticipates that the ED initiatives (as detailed in Question #13.b.) will also work to reduce ED Boarding and LOS prior to implementation. Accordingly, projections at this point would not be appropriate.

15. **The Application states for FY20 through February, patients boarded in the Post Anesthesia Care Unit (PACU) for an average of 10,233 hours per month waiting for an available inpatient bed (pg.13). To better understand PACU boarding and its impact on patients,**
    a. **Provide more information on what this number represents (i.e., number of patients, and hours, average length of stay) and how it was calculated. When does timing start and end?**

This number represents a total of 2,344 patients; an average of 22.8 patients per day; and an average wait in the PACU of 19.9 hours per patient. Timing is calculated starting with when the patient is determined to be "Ready to Depart" and when the patient leaves the PACU. The average number of boarding hours was calculated by totaling all boarder hours for each month and dividing by five (October – February).

b. With respect to patients requiring Med/Surg beds, the average monthly PACU boarder hours for FY19 were 18 hours (pg.13). How many patients were boarded in the PACU waiting for an inpatient bed during this period?

5,292 patients were boarded in the PACU waiting for an inpatient bed in FY19.

i. **How did you calculate the average number of hours that patients boarded?**

The average number of hours that patients boarded was calculated by determining each patient's total hours boarded using the calculation noted in 15.a., adding all boarder hours for the month and dividing by the total number of patients who boarded in the PACU.

16. To better understand the projected increased need related to Infusion Therapy please address the following (pg.20):

a. The Application states that the number of infusion bays will increase from 79 to 100. How did you calculate the need for additional infusion bays? Include data, source, and methodology used.

Historical infusion center volume information was assessed along with projections based on population and other factors from Sg2. There were also assumptions for decanting to networks and virtual care, as well as case mix.

MGH Future Outpatient Infusion Bays

Cancer Infusion Areas	Operational Assumptions	Actual	FY28 Plan	Comments
Infusion (General Infusion (Yawkey) and Observation	10 peak hrs/open 16 hr, 70% to 75% utilization (General)	60	60	Flexible and Modular
Infusion (Observation)	10 peak hrs/open 24x7/70% to 75% utilization	9	15	Will be used to avoid ER
Infusion (Phase I Clinical Research/Complex Phase II)	10 peak hrs/open 16 hr, 65% to 70% utilization	10	25	Flexible and Modular
Total Cancer Center Infusion Rooms		**79**	**100**	

MGH Future Anticipated Volumes and Operational Assumptions

Cancer Infusion Areas	FY18	FY23	FY28	% Growth 18-23	% Growth FY18-28
Infusion (Yawkey)	38,968	49,291	57,141	26.5%	46.6%
Infusion (Observation)	6,000	7,688	9,600	28.1%	60.0%
Infusion (Phase I Clinical Research/Complex Phase II)	3,575	4,755	6,256	33.0%	75.0%
Total Cancer Center Infusion Visits	**48,543**	**61,734**	**72,997**	**27.2%**	**50.4%**

Notes:
Above Infusion fully occupies the planned floor for ambulatory in CSP; Heart Center an Vascular OP exam and noninvasive diagnostics will be included in backfill

SG2 Used to Model Projections in Volumes:
FY18: Actual infusion visits by type based on Cancer Center data
Observation & Urgent Care were estimated based on current short stay & ED obs who could be seen in infusion setting (~500 per month)
FY19 - FY28, each type was based on Sg2 5- and 10- year growth projections (Termeer estimated at 75% 10-year growth)

i. Describe any changes in infusion regimens that is requiring additional bays.

The 21 additional bays in the new center will be allocated to the expansion of Oncology Urgent Care and Symptom Management (6 bays) and Phase I /Complex Phase II Clinical Research (15 bays).

Oncology Urgent Care and Symptom Management: Today, the Cancer Center has 4 infusion bays within the practice setting that are used as "short stay" for patients requiring unscheduled care related to complications of cancer. The unit is only open between 7 am-6 pm. The cancer center also has 5 bedded outpatient bays on the Inpatient Units on Lunder 9/10 which can be used for short stay, but it is not easy to access due to the separation from the ambulatory cancer unit. The Lunder bays have been used for supporting urgent care or short treatments on the weekend as well.

Patients in need of care after these hours in the ambulatory center are transferred to the Infusion Center, which is open until 8:30 pm or the Emergency Department, which is not ideal due to the lack of subspecialty trained nurses.

With the advent of oral therapies where patients are not being seen as frequently in the Infusion Center and immunotherapies that have an unpredictable toxicity profile, comprehensive cancer centers across the country have been developing Urgent Care

and Symptom Management Centers as a way to avert ED admissions and provide access to specialized oncology care. Furthermore, MGH has a large CAR-T and Blood and Marrow Transplantation Program which will heavily utilize this setting as these treatments move towards earlier discharge.

The MGH Cancer Center conducted several site visits including Hopkins and Yale, where these models have been implemented with successful outcomes. In the new Infusion Center, the Hospital will have 15 urgent care bays that will operate 24x7.

Phase 1 Clinical Research: The Cancer Center currently has a 10 bed Phase 1 Clinical Research Center ("the Termeer Center"). Phase 1 clinical research is one of the core missions in the Cancer Center and MGH's research has led to the development of 4 FDA approvals in the past year and 22 approvals since the inception of the Termeer Center in 2011. These treatments are life-saving and due to new molecular driven targets, some patients may access these trials for first line therapy. Phase 1 Clinical trials can only be conducted at MGH due to the need for access to its clinical research infrastructure, as well as the inpatient units and ICU. The new center will have a total of 25 Phase 1 Clinical Research infusion bays, which is an expansion of 15 bays

ii. **What are the operating hours for the bays?**

The Hospital anticipates a 16-hour day for general Standard of Care Infusion/Phase 1 clinical research (7 am-11 pm) and 24x7 operation for the Urgent Care and Symptom Management.

b. How did you determine the new building was the optimal place in the MGB system to situate the infusion bays? What factors did you take into consideration?

Phase 1 clinical trials as well as the participating patients who require sub-specialized multi-disciplinary care (e.g., complex surgery, proton beam, intra operative radiation therapy, interventional radiology), additional capacity is needed with access to MGH's core departments, inpatient units and research facilities.

Over the past decade, MGH has developed a distributed network and has added infusion capacity at several sites that it directly manages or co-manages, including sites in Waltham and Danvers, and at Newton Wellesley Hospital and Emerson Hospital. MGH also has an affiliated network of provider services. The focus of these community sites is for the provision of standard cancer infusion; primarily for less complex breast, GI, prostate, gynecological, and thoracic cancers along with some hematologic malignancies. Tertiary care and quaternary care are the focus of the Boston campus given the access to the clinical research and advanced multi-disciplinary care.

MGH is working closely with its networks to ensure that routine cancer care is seen in the community and that the more complex care requiring phase 1 clinical trials, complex regimens such as theranostics, should be performed at MGH.

c. Provide further explanation on the utilizing of infusion bays for IV hydration.

This is mainly for symptom management or urgent care related to side effects of infusion therapy or disease. By providing hydration in the infusion center, MGH is able to divert a number of patients from accessing care through the Emergency Department. By providing this care in the appropriate setting and not in the ED, patients will have more convenient access to the service and the ED will be able to focus its resources on other patients in need of urgent and emergent care.

17. Historical Cardiovascular Procedure Volume (pg.22). In order to further understand Patient Panel need, provide the following for historical procedure volume for cardiovascular patients:

a. For tables 8 and 9 in the application (p.22), please provide for each column:

i. **Number of unique patients. Include count and percent of repeat patients.**

Table 8: Historical Cardiovascular Procedure Volume						
	FY17		FY18		FY19	
Total Procedures	39,779		41,810		42,092	
Unique Patients	26,344		27,835		29,651	
Repeat Patients	Count	Percent	Count	Percent	Count	Percent
	5,480	21%	6,195	22%	6,604	22%

ii. Wait times for inpatients, emergency patients, and outpatients.

Please note the below chart also includes wait times for Post-Procedure Recovery patients whose care requires an inpatient bed be available in order for their procedure to be performed. These patients are seen in the office by an MGH cardiologist and whom typically need a catherization due to an abnormal stress test and/or symptoms of coronary artery disease. While the goal is typically same-day discharge, the majority of these patients clinical condition require that an inpatient bed be available in order for the procedure to be performed. Due to inpatient bed capacity constraints, these patients are waiting over a month to be seen in the EP Lab.

Table 8: Historical Cardiovascular Procedure Wait Times												
Wait Times (days)	IP	OP	ED	PPR	IP	OP	ED	PPR	IP	OP	ED	PPR
Cath Lab	1.4	11.5	0.1	14.9	1.4	16.9	0.2	23.9	1.9	12.5	0.1	31.4
EP Lab	1.5	12.6	2.0	40.7	1.6	11.4	0.2	42.2	1.3	9.3	0.2	58.2

b. Provide current measures to demonstrate capacity constraints on the existing procedure rooms, including utilization/occupancy, and how the Proposed Project will address them.

In addition, the wait times provided above representing the average time a patient waits for a cardiac procedure, cardiac patients are also spending a significant amount of time waiting in the Emergency Department waiting for an inpatient bed to become available as demonstrated in the charts below.

Median Hours	Time Between Request and Inpatient Bed is Ready	Bed Request to ED Departure	Total Stay In ED
FY17	3.24	4.43	7.58
FY18	3.06	4.32	7.58
FY19	4.01	5.20	7.99

Average Hours	Time Between Request and Inpatient Bed is Ready	Bed Request to ED Departure	Total Stay In ED
FY17	5.71	7.03	9.72
FY18	5.63	6.82	9.50
FY19	7.30	8.28	10.71

c. **The number of perioperative bays is increasing from 13 to 68 to support the additional procedure rooms. How did you calculate number of bays needed to support the procedure rooms? Include data, source, and methodology used for projections.**

The original 13 perioperative bays, which includes one (1) in EP and twelve (12) in the cath lab, is sub optimal to support the overall total of 9 procedure rooms. The current number of perioperative bays results in a ratio of 2.9:1. Through the Proposed Project, the Hospital will have a combined total of 68 perioperative bays that will not only support the EP and cath procedure rooms, but will also support all cardiac OR/Procedure rooms in the Proposed Project and allow for a ratio in line with FGI and DPH requirements as discussed in 17c.ii.

i. Are any changes in treatment requiring additional bays?
Yes, the perioperative bays in the Proposed Project are designed to be three-sided, which improves patient privacy and satisfaction, thus aiding in post-operative recovery. Moreover, the care model being implemented will provide for the use of all perioperative bays for all procedural spaces (procedure rooms and ORs). Furthermore, some bays will be used for Short Stay or Extended Recovery patients. These patients require longer period of post-operative care but do not need inpatient care. Taking these patients into consideration, MGH requires at least 68 bays to support all post-operative patients.

ii. Provide contextual data on industry standards for these measures.

FGI and DPH Plan Review require at least two bays per OR and Class 2-3 Imaging room. The increase of perioperative bays is needed to support the 2:1 ratio when taking into consideration the care models and patients described above.

18. The Application states MGH's main campus has severely limited imaging capacity, resulting in delayed and fragmented care (pg.23). Provide a list of existing imaging capacity (DoN-required Equipment) at MGH. Provide the hours of operation and staffing for the equipment (weekdays, weekends, 24 hours a day).

The following table provides the hours of operation for the DoN-required imaging units at MGH.

CT	HOURS OF OPERATION	
ED	24 X 7	
ED	24 X 7	
Cardiac/Inpatient	M-F 8a-12a	SS 8a-8p
Inpatient	M-F 8a-12a	SS 8a-8p
Inpatient/Outpatient	M-F 8a-12a	SS 8a-8p
Inpatient/Outpatient	M-F 8a-12a	SS 8a-8p
Outpatient	M-F 8a-8p	
Outpatient	M-F 8a-8p	
Inpatient	M-F 8a-12a	SS 8a-8p
OR (IntraOperative)	M-F 8a-12a	
Portable	M-F 8a-5p	
PET/CT	**HOURS OF OPERATION**	
Inpatient/Outpatient	M-F 7a-5p	
Inpatient/Outpatient	M-F 7a-5p	
MRI	**HOURS OF OPERATIONS**	
ED	24 X 7	
Inpatient/Outpatient/ER	M-F 7a-11:30p	SS 7a-730p
Inpatient/Outpatient/ER	M-F 7a-11:30p	SS 7a-730p
Inpatient/Outpatient/ER	M-F 7a-11:30p	SS 7a-730p
Outpatient	M-F 7a-11:30p	SS 7a-730p
Outpatient	M-F 7a-11:30p	SS 7a-1130p
Outpatient	M-F 6a-11:30p	
Outpatient	M-F 6a-630p	
Outpatient	M-F 6a-630p	
OR (IntraOperative)	M-F 8a-4:30p	

a. Describe how existing imaging will be utilized after the new project is complete, including how it will be utilized to meet the needs of other patients?

Existing imaging will continue to support MGH's Main Campus and the patients who will continue to be seen at the Main Campus. The Proposed Project seeks to ensure MGH has the

infrastructure and resources to provide more expeditious and efficient care, as well as ensuring patients are receiving that care in the location within the facility most appropriately suited to their needs. With the implementation of the Proposed Project and its dedicated Cancer and Cardiac units, MGH will be able to dedicate existing imaging at the main campus to the departments remaining at the main campus.

b. Need for imaging (pgs. 23-26)

i. Provide the rationale used to determine number of each type of imaging equipment, including 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.

The current number of imaging units (supply) will not be adequate to meet the forecasted level of clinical need (demand). There are several factors used to rationalize the proposed imaging equipment: historical utilization, growth projections for services that utilize MRI as a diagnostic imaging tool, backlog (unmet demand), and imaging throughput (efficiency). The proposed imaging units will allow MGH to fully serve its patients and improve access for the cancer center and cardiac services. The current prime time utilization of MR, CT, and PET are saturated resulting in significant wait times for imaging.

ii. What systems do you have in place to support appropriate imaging and reduce low-value and overutilization of imaging, especially for scans related Cardiac and Cancer services?

Physician orders for MRI tests are placed through electronic Radiology Order Entry forms in Epic, which utilize a programmed clinical decision support mechanism to guide physicians in determining the most appropriate exam based on a patient's medical history and indication. Specifically, upon order placement in the EHR, a validation check is performed using the American College of Radiology's ("ACR") "ACR Select" tool. Founded in 1923, the ACR represents nearly 40,000 diagnostic radiologists, radiation oncologists, interventional radiologists, nuclear medicine physicians and medical physicists. The ACR is guided by its core purpose to serve patients and society by empowering members to advance the practice, science and professions of radiological care, and through its core areas – economics, informatics, education, quality and safety, research, and membership value — is leading the transition to value-based, patient-centered care. Today, the ACR is at the forefront of radiology evolution, is considered the premier source of radiology information and resources.

ACR Select is a comprehensive, national standards-based, clinical decision support database that uses evidence-based decision support for the appropriate utilization of all medical imaging procedures. More specifically, the tool delivers Appropriate Use Criteria ("AUC") authored by leading medical specialty societies directly into the EHR workflow at the point of care. This capability improves performance and efficiency by guiding clinicians to the right exam and reducing the number of exams needed to reach a diagnosis, and ultimately empowers quality improvement efforts through improved patient care and population health.

Finally, it is important to recognize that most private payers require pre-authorization for high-cost imaging exams to validate appropriateness, control costs and regulate utilization.

iii. How has the implementation of DoN approved imaging across the MBG system since 2018 impacted imaging wait times and access at MGH's main campus? Was the need used to justify the project met?

It is important to recognize that the imaging units in the Proposed Project will primarily serve inpatients in the new building on the MGH main campus in order to provide comprehensive co-located care for high-acuity inpatients. As a result, the impact of new units that are utilized for outpatient purposes, particularly at satellite locations will not address the need for inpatient imaging capacity at MGH. The following is an overview of the status of the recently approved units and anticipated impact on outpatient wait times and access for patients of the MGH main campus.

MRI

In 2018, BWH added a 7T MRI unit which is a ultra-high field MR scanner that is currently utilized for brain and knee imaging. The addition of this unit has had no impact on 1.5T and 3T MRI wait times and access at MGH's main campus.

In 2019, BWH received DoN approval for an additional MRI unit at its Foxborough satellite. This unit is not yet online; however, it is not anticipated that it will have an impact on wait times and access for MGH's main campus due to the geographic distance of the unit and its dedicated use for outpatients.

In 2019, MGPO received DoN approval to add 2 MRI units at its existing Waltham Clinic, which is not under the Hospital's license. These units became operational in early 2021 and wait times at main campus have decreased from a 7 week backlog (Jan 21) to 3 weeks of backlog (May 21) for the hospital's outpatient MRIs. This has also resulted in increased patient and referring physician office satisfaction with the additional access and more convenient location access. By decanting ambulatory MR patients to the ambulatory sites which are under reimbursed at the lower physician fee schedule, MGH has also effectively reduced imaging cost to the healthcare system.

In 2020, MGPO received DoN approval to implement 3 MRI units at a new Clinic in Somerville, not under the hospital license. These units are projected to open in late 2021 and as such, the impact on access and wait times is unknown. As stated in the DoN for the project, MGPO anticipates that wait times for outpatients originating in Somerville and Boston will decrease with convenient access to outpatient MRI imaging at this location.

In 2017, NWH received approval to add a second MRI unit at its main campus. This unit began operating in 2019 and wait times have decreased from 3-4 weeks to 2 weeks. The impact of this unit on MGH wait times and access has not been demonstrated as patients of NWH continue to experience a 2 week wait time for outpatient MRI.

CT

In 2019, BWH received DoN approval for an additional CT unit at its Foxborough satellite. This unit recently opened in March 2021. This unit has allowed Foxborough to meet

demand. It is not anticipated to have any impact on wait times and access for MGH's main campus due to the geographic distance of the unit and its dedicated use for outpatients.

In 2019, BWFH received DoN approval for a Cone Beam CT, which is a specialized unit to allow for scanning in a weight bearing position for orthopedic cases. This unit began operating in November 2020. Previously the only unit of this type in the system was at MGH and with access now at BWFH, patients in that geography no longer have to travel to MGH for this highly specialized scan. This unit has no impact on the wait times and access for the units in the Proposed Project which will serve MGH inpatients in the new facility.

In 2019, MGPO received DoN approval to add 1 CT unit at its existing Waltham Clinic, which is not under the Hospital's license. This unit became operational in March 2021. The addition of this unit has improved wait times for outpatients at the Waltham Clinic. This unit has no impact on the wait times and access for the units in the Proposed Project which will serve MGH inpatients in the new facility.

In 2020, NWH received DoN approval to add 1 cardiac CT unit at its main campus. This unit is not yet operational. It is not anticipated that this unit will impact wait times or access at the MGH main campus because the CT units in the Proposed Project will serve inpatients in the new facility.

PET/MR

In 2019, MGH received DoN approval for the first of its kind PET/MR unit at its main campus. This unit is not yet operational. It will be utilized for research, PET/MR clinical scans and MRI overflow. The Proposed Project's PET/MR will be located in the new facility and provide co-located service access for inpatients, while the previously approved part time unit will serve the rest of the campus.

19. Historical CT Scan Volume and Unique Patients (pg.24). In order to better understand Patient Panel need for services, provide the following:

a. Historical CT scan volume and unique patients broken out by cardiac, oncology, and med/surg.

Specialty Volume	FY18	FY19	FY20
ONCOLOGY	29,395	33,021	31,140
CARDIAC	3,734	4,032	3,619
INTERNAL MEDICINE	14,268	16,067	13,918
SURGERY	5,155	5,939	5,171
TOTAL EXAM	103,733	113,195	106,328

b. Wait times for inpatients and emergency patients.

	FY18	FY19	FY20
Inpatient *(hrs)*	7.15	6.79	6.87
Emergency *(mins)*	114.47	123.06	126.68

c. Data on scans volumes by type (diagnosis, intervention/treatment, or monitoring), if possible.

MGH tracks scan volume by interventional or diagnostic CT as shown in the following table.

	FY18	FY19	FY20
Interventional CTs	3,433	3,670	3,049
Diagnostic CTs	100,300	109,525	103,279
Total CT Exams	103,733	113,195	106,328

d. **An estimate of how much the additional capacity will reduce wait times for CT imaging. What is the optimal wait time?**

The Proposed Project is expected to reduce wait times for outpatients at main campus from the current wait of 23 days to 10 days. Generally, the exam should be completed as soon as possible after the order is received. However, depending on clinical acuity and medical necessity as determined by referring clinician and radiologist judgement, a wait time of seven days is the outer limit of clinically acceptable.

20. Historical MRI Scan Volume and Unique Patients (pg.25). In order to better understand Patient Panel need for services, provide the following:

a. Historical MRI scan volume broken down by specialty broken out by cardiac, oncology, and med/surg.

Specialty Volume	FY18	FY19	FY20
ONCOLOGY	10,989	13,968	12,874
CARDIAC	1,392	1,945	1,454
INTERNAL MEDICINE	9,017	11,163	9,990
SURGERY	1,321	1,639	1,520
TOTAL EXAM	73,212	77,431	78,264

b. Wait times for inpatients and emergency patients.

ED Turn Around Time	2018		2019		2020	
	Volume	*Percent*	*Volume*	*Percent*	*Volume*	*Percent*
0 - 2 Hours	755	10.40%	881	10.00%	590	8.70%
2 - 4 Hours	2890	39.60%	3021	34.50%	2403	35.50%
4 - 6 Hours	2137	29.30%	2549	29.10%	1916	28.30%
6+ Hours	1510	20.70%	2316	26.40%	1864	27.50%

Inpatient Turn Around Time	2018		2019		2020	
	Volume	*Percent*	*Volume*	*Percent*	*Volume*	*Percent*
0-6 hours	3311	30.50%	2371	25.40%	3246	28.60%
6-12 hours	2132	19.70%	1812	19.40%	2577	22.70%
12-18 hours	723	6.70%	721	7.70%	855	7.50%
18-24 hours	895	8.30%	768	8.20%	860	7.60%
Greater than 24 hours	3780	34.90%	3678	39.30%	3824	33.70%

c. Data on scans volumes by type (diagnosis, intervention/treatment, or monitoring), if possible.

MGH tracks scan volume by intraoperative or diagnostic MRI as shown in the following table.

	FY18	FY19	FY20
Intraoperative MRI	127	134	136
Diagnostic MRI	73,085	77,297	78,128
Total MRI Exams	73,212	77,431	78,264

d. The Application states the Proposed Project will provide more timely access to MRI scans and seeks to provide a 7-day turnaround time from order to imaging exam. What is the optimal wait time for an MRI scan?

Generally, the exam should be completed as soon as possible after the order is received. However, depending on clinical acuity and medical necessity as determined by referring clinician and radiologist judgement, a wait time of seven days may be medically acceptable.

21. Historical PET/CT Scan Volume and Unique Patients (pg.25) To better understand Patient Panel need for PET/CT imaging services.

a. **Describe why PET/CT imaging demand is rising the most rapidly and for which uses? Provide data on scans volumes by type (diagnosis, intervention/treatment, or monitoring), if possible.**

There are 42,750 prostate cancer ("PCa") diagnoses annually in Massachusetts according to ACS data. In addition, there are currently approximately 52,745 prostate cancer survivors in Massachusetts according to SEER database. The estimated death from prostate cancer is

12,540. On average, at a given time there are approximately 82,950 PCa patients in the State. According to new modeling data approximately 54% of patients benefit from PSMA based imaging (i.e., 44,793 patients annually). Patients require PET/CT imaging for staging, re-staging and PRRT planning for PMSA therapies. For Massachusetts alone, this equates to 187 PSMA pet scans in a working day (20 working days per month). Given MGB serves around 10% of the State's population (700,000 patients), this comes out to 19 scans across all MGB sites.

b. Provide wait times for inpatients and emergency patients.

Generally, emergency patients requiring PET/CT imaging are admitted to an inpatient bed, therefore emergency department patients do not receive PET/CT imaging. MGH does not currently track wait times for inpatients but estimates that it is generally 3 days.

i. What is the projected wait time for PET/CT after project implementation? What is the optimal wait time?

Generally, the exam should be completed as soon as possible after the order is received. However, depending on clinical acuity and medical necessity as determined by referring clinician and radiologist judgement, a wait time of fourteen days may be medically acceptable.

c. Provide PET/CT scan volume and unique patients by specialty.

Specialty Volume	FY18	FY19	FY20	FY21*
TOTAL ONCOLOGY	3205	3898	3579	2767
TOTAL CARDIAC	0	23	54	65
TOTAL RESEARCH	1045	619	371	233
TOTAL EXAM	4250	4540	4004	3065

d. The Application states that between FY17 and FY19, unique patients requiring a PET/CT scan increased by 15.6% and PET/CT scan volumes increased by 28.3% (pg.25). To better understand increasing demand for PET/CT services, explain why volume is increasing faster than number of unique patients.

Exam volume growth will generally trend higher than unique patient growth as patients frequently require multiple PET/CT exams over the course of their episode of care. For example, protocols may require monitoring (future exams), or restaging exams for treatment purposes. Therefore, volume will typically represent multiple scans per patient.

22. PET/MR (pg.26) In order to understand Patient Panel access to PET/MR imaging services, provide projected wait times for PET/MR after project implementation? What is the optimal wait time?

As a new imaging modality, not only at MGH, but nationally, an optimal wait time has not been established. As with other modalities, exams should occur as soon as possible once ordered by the treating clinician.

a. **How will the Proposed Project impact imaging projections on the PET/MR that is in the process of being implemented.**

It is important to recognize that the previously approved PET/MR unit was approved for part-time clinical PET/MR use with the balance of the time being used for research and MRI imaging overflow. Accordingly, the unit that is in the process of being implemented is not dedicated full time. The PET/MR unit in the Proposed Project is needed to provide access to the inpatient cancer and cardiac services in the new facility

23. **The Application includes other renovation projects at MGH to improve access to and quality of existing services and facilities (pgs.4-5). Describe the specific renovations at the ambulatory care center in Danvers.**

The Danvers project is for the replacement of major moveable equipment. As the cost of major moveable equipment is not counted for DoN purposes, this project should not have been listed in the DoN.

Factor 1b - Public Health Value

24. **The Application states the Proposed Project will address the future demand for healthcare services by the 65+ age cohort. (pg.16). Further, certain features make for a calmer atmosphere for patients, including an environment that is easy to navigate (pg.47).**
    a. **What steps will be taken to ensure appropriate care for the aging population?**
        i. **What age-friendly measures will be incorporated into the design of the building.[4] Will there be any modifications to the hospital setting to ensure it is age-friendly?**

The building is designed to provide a caring environment for an aging population in the following ways:

- Immediate access to assistance (greeters, information, wheelchairs) will be available at each building entry point, and upon exiting elevators on every patient care floor.
- Patients can reach the entry point to every patient care service in a direct line upon exiting elevators. The intent is to minimize the number of steps that a patient needs to take to arrive a place of care and/or place of assistance.
- Lighting is designed to assist patients in finding their destinations, illuminating signage and not producing glare.
- Entry vestibules and light-filled lobbies provide a transition space for aging eyes to adjust from bright exterior to interior lighting

[4] Becoming Age-friendly means reliable practice of four evidence-based interventions, known as the 4Ms: asking what **m**atters to older adults; making sure **m**edications are helpful, not harmful to patients; attending to **m**entation, including delirium, depression, and dementia; and ensuring **m**obility so older adults can maintain their function. Institute for Healthcare Improvement Announces New Age-Friendly Action Community. https://www.businesswire.com/news/home/20200129005105/en/Institute-for-Healthcare-Improvement-Announces-New-Age-Friendly-Action-Community#:~:text=Becoming%20Age%2Dfriendly%20means%20reliable,mobility%20so%20older%20adults%20can

- Spacious corridors provide space for patients to navigate with mobility assistance devices.
- Corridor flooring materials are selected to not require polished finishes (which causes glare) and without deep contrasts in color (which can lead to depth perception challenges for aging eyes).
- All patient care areas are amply supplied with space for family members, so that family can accompany and assist a patient in all patient care or consult areas.
- Monitors are available in all patient rooms and clinic exam rooms to be able to include families remotely thru telepresence in patient care conversations.

ii. **In addition to age-related issues, how were variations in patient mobility, vision, hearing and cognition factored into the design of the building to make it accessible, safe and convenient for users?**

Many of the design strategies for an aging population assist patients with a full-range of abilities and challenges. In addition to the design elements above, the building design includes:

- All doors into any patient care area are a minimum of 4' wide, allowing for the full range of wheelchair widths and mobility devices.
- Every patient, procedure, imaging, and treatment room is equipped with ceiling lifts to assist in transferring patients safely from bed to chair, or from stretcher to procedure table.
- Doors to patient rooms and clinic exam rooms are sliding doors with long pulls; allows people of all mobilities to easily open the door with whichever extremity has the greatest strength (hand, arm, foot, leg).
- Every patient care room is equipped with devices that connect patients to translating services for ease of communication.
- Patient treatment areas are designed with materials (e.g., rubber flooring and well-insulated partitions) to limit the travel of noise into/between rooms which will provide better acoustic privacy and ability to hear/participate in conversations with caregivers.
- Building is designed with a sophisticated wayfinding system that provides multiple cues responding to multiple cognition conditions to assist people in their navigation (e.g., large, clear text; color; lighting).

iii. **What plans are there to address transportation concerns to MGH by this population**.

MGH has a robust, free shuttle system to offset concerns related to transportation of its older patient population. Moreover, MGH has a well-resourced team of navigators and social workers who can help address the unique need of older adults. In addition to helping patients navigate MGH's shuttle system, including requests for accessible vans, navigators and social workers are able to work with patients to access other programs that provide free and low-cost transportation.

b. The Application states integrated care models also allow for the management of patients with complex health and social needs, including aging populations (pg. 48). Does this include Gerontology?

MGH offers Geriatrics and Palliative Care consultative services at this time and will continue to do so following project implementation. Additionally, MGH physicians will coordinate with the primary team as needed to ensure appropriate care.

25. The Application states, hospitalization frequency increases near end-of-life and allows for consistent palliative measures (pg.36). Further, as more people are being diagnosed with cancer, necessitating cancer treatment, the need for inpatient rooms is also necessary, whether patients are being admitted for recovery post-surgery, for purposes of treatment and monitoring of side effects of treatment, or for palliative measures near end-of-life (pg.36).

a. **Provided the Proposed Project will support future demand for healthcare among older adults aged 65 and older, will Gerontologists be available to work with aging populations expected to be in these beds? If so, at what point in their care?**

As noted above, MGH offers Geriatrics and Palliative Care consultative services at this time and will continue to do so following project implementation. These services are always available and coordinated with each patient's primary care provided to ensure time-appropriate delivery.

b. What steps are in place to ensure that treatment is in line with patients' health care goals at various stages of treatment as patients age?

MGH developed and implemented the Continuum Project in 2015 as part of a comprehensive strategy to care for patients and families facing serious illness. The Continuum Project is a hospital-wide education and training initiative to facilitate "Serious Illness Conversations" for patients and their families. Through the Continuum Project, MGH clinicians are trained to have conversations with their patients so that patients both have the information needed to direct their treatment and care planning and the opportunity to engage with their care team in a meaningful way.

c. **How do you do determine how and when to engage hospice (at various locations – home, hospice, hospital)?**

MGH refers appropriate patients for home hospice program as well as the opportunity to enroll in GIP (Inpatient hospice at MGH) when needed. Hospice referrals may also be made by the primary medical team with support for coordination of care and eligibility from Inpatient Case Management.

26. Pages 52-54 of the application describe population health management (PHM) strategies for improving patient experience and ensuring high quality outcomes.

a. How will the Proposed Project specifically utilize these strategies to improve outcomes and/or patient experiences particularly for the aging population?

It is important to recognize that PHM strategies typically are implemented in the physician office setting and are not directly utilized by the hospital.

The Applicant is committed to the use of PHM strategies. As such, the efficacy of the strategies is tracked at the MGB level. Accordingly, the information presented below is not specific to MGH. The metrics used to assess quality outcomes and patient experience vary by PHM strategy.

The following are examples to demonstrate how PHM strategies have improved outcomes and patient experiences.

Patient Reported Outcomes Metrics (PROMs): The PROMs program seeks to improve the care of individual patients through deeper and more meaningful engagement in the patient's reported symptoms, functional status and quality of life. The ideal example of this approach is demonstrated by a 2017 study by Basch et al that collecting PROMs (in this case, for chemotherapy oncology patients) extended patients' life expectancy. While dramatic, this illustrates the effect that Mass General Brigham believes PROMs will bring participating providers and patients. To support this, Mass General Brigham has initiated an internal incentive program based on providers achieving desired levels of paired pre- and post-operative patient reported outcomes data for patients having knee, hip and back surgery. A local example of such an approach is the use of the Preoperative PROMIS 10 physical function score to predict opioid dependence after lumbar fusion surgery.

Shared Decision-Making Program: Over the years, MGB has received patient and clinician feedback on the utility of several decision-aid tools, used to assist patients when making decisions to pursue complex therapies, interventions, and procedures:

Patient feedback

- "Thank you very much for the web site you sent me, I read its catheterization section with great interest. I understand the process better."
- "He gave me info to feel more comfortable with the decision. I felt having something to take home and review with my family, was a good way for me to ensure I was making the right decision and understanding my options."

Clinician feedback

- "Using the decision aids helps to document preferences asked in a standardized way in the chart."
- "This has completely changed my conversations with patients about their back pain—from one driven by fear to one focused on what we can do to help with their pain."

Measurement of Shared Decision-Making Program, generally, has been based on usage: MGB tracks how many patients are prescribed a decision aid by hospital, specialty area, and provider. MGB can also track how many patients open the decision aid and how many complete the tool, if active on the patient portal (Patient Gateway). MGB's plan for measuring the success of the Patient Driven Decision Aid Ordering program includes clinical outcomes measurements, such as increase in screening numbers, intervention effectiveness, patient responsiveness, and by patient and provider focus groups. The goal of the Shared Decision-Making Program is to

ensure that patients are well informed, meaningfully involved in decision making and receive treatments that reflect their goals and preferences.

Integrated Care Management Program (iCMP): The iCMP has been formally evaluated for cost and utilization impact upon Medicare, Medicaid and commercial health plan patients. PHM has published the 12 months impact results for the Medicare population in Health Affairs, May 2017 and is in the process of publishing the impact results for Medicaid and commercial health plan patients. The iCMP has achieved a significant reduction in TME compared to similar patients not enrolled in iCMP:

- Medicare: Patients enrolled > 13 months have a 27% reduction in TME
- Commercial: Patients enrolled for 7-12 months: 45% reduction in TME
- Medicaid: Patients enrolled for 7-12 months: 21% reduction in TME

The Applicant generates an iCMP dashboard with targets that is reviewed on a quarterly basis with local iCMP leadership and bi-annually with the broader Performance Advisory Committee. Examples of metrics include length of time from patient identification to iCMP to enrollment and percentage of iCMP patients with a care plan. Local leadership meets weekly with the care team managers to review iCMP metrics and patient cases to ensure progress of patient goals. PHM monitors the percentage of iCMP patients who graduate and meet all of their goals. On average, patients are enrolled in the iCMP for 28 months, with some patients enrolled for greater than 5 years.

b. How will the Proposed Project specifically utilize these strategies to improve outcomes and/or patient experiences particularly for the aging population?

It is important to recognize that PHM strategies typically are implemented in the physician office setting and are not directly utilized by the hospital. The Applicant is committed to the use of PHM strategies. As such, the efficacy of the strategies is tracked at the MGB level.

c. How will quality outcomes and patient experience be assessed?

As noted above, PHM programs are not implemented within the hospital. Accordingly, these strategies will not be utilized as part of the Proposed Project specifically. However, as noted in the application at pages 54-59, the hospital will track and report the measures listed to demonstrate the Proposed Project's impact on outcomes and patient experience.

i. The Application states that the PHM programs at MGH that impact health outcomes and patient experience include virtual visits (54). The Proposed Project will continue to offer these to patients. What efforts are MGH taking to ensure equitable access to this platform (and/or alternative option) for those experiencing barriers due to lack of access to technology? How will MGH support the variation in access to technology and digital literacy among its patients? What languages will these be offered in?

MGB has widely adopted the appropriate use of virtual visits for patients in ambulatory settings. MGH is supporting this mode of access by assessing the status and need of our pre-discharge patients. Goals of MGB include:

- Understanding the digital access and literacy needs of our patients across the spectrum of care is critical.
- Ensuring all modes of care for patients are safe, effective, patient-centered, timely, efficient and equitable, whether upon hospital discharge or with virtual care.
- Virtual care equity matters if it helps us achieve health equity.

27. There are several initiatives and campaigns noted in the application focused on eliminating health and healthcare disparities (pgs. 59-64). In order to understand how the Proposed Project will contribute to health equity, provide responses to the following:

a. What health/health care disparities exist relating to this Proposed Project?

The disparities in health outcomes for Black and Latinx individuals relative to White individuals are well known and documented both nationally and when exploring the data included in MGH's Community Health Needs Assessments.

In particular, chronic disease mortality and indicator data show stark differences in BIPOC communities as compared to White individuals. MGH will continue to stratify its quality and safety metrics by race and ethnicity. MGH has a long-standing commitment to measure and address any disparities found. One example of this is through the implementation of the cancer navigation program.

b. How does the Proposed Project plan to leverage these initiatives to address these disparities?

MGB's United Against Racism objectives are at the core of its ability to impact existing disparities. These objectives include:

- Rolling out universal screening of SDOH
- Working to achieve less than 5% missingness of REaL data for patients
- Expanding access to care through payer contracting, translation services, and digital health
- Eliminating racism in clinical protocols
- Developing equity improvement goals across all clinical departments

c. The Application lists initiatives focused on enhancing workforce diversity. What are the 'diversity' characteristics that are considered? Provide data on the diversity (based on your definition) of current faculty, staff and trainees. (pg. 62)

Through MGB's UAR plan, MGB is committed to increasing the racial diversity of its providers to be reflective of the diverse patient populations MGB serves.

MGB is assessing the current composition of its physician leadership and will seek to put initiatives in place in FY22 that are aimed at increasing the diversity of new hires and the retention of existing faculty.

d. The Application states that you launched the United Against Racism initiative which includes a roadmap for achieving equality within the Applicant's system, and eliminating racism and oppression faced by the Applicant's patients, communities, and staff." Please provide an explanation of this program including:

i. When did the program launch?

The United Against Racism (UAR) effort launched in November of 2020 as a system-wide priority of MGB.

ii. A description of the roadmap for achieving equality, including how it will be implemented at MGH and performance measures.

As part of this effort:

- MGB is investing in cross-cutting infrastructure - like translation services and translated materials - that will be deployed in all patient-facing activities across the enterprise.
- MGB is rolling out a staggered implementation of SDOH screening and referral across all primary care practices and supporting a robust community health worker initiative to respond to identified needs.
- In specialty care practices, MGB is providing grants for department level projects that will reduce inequities or disparities in the field, examples include:
    - Increasing access to prostate cancer screening, diagnosis and treatment for underserved populations
    - Reducing disparities in birth outcomes through cultural- and language- concordant doula care, and
    - Applying process improvement principles to characterize and mitigate racial disparities in emergency psychiatry

Additionally, all new initiatives are required to articulate how equity and community will be embedded in their development, and there is a leadership level directive to embed equity in all organizational processes.

e. The Application states the #123 Equity Pledge Campaign is focused on eliminating health and healthcare disparities

i. Describe your progress to date and how it has been applied at MGH.

The AHA #123Equity Pledge provided an important framework towards MGB's commitment to equity and was foundational to the development of UAR. The UAR strategies being implemented are aligned with the 4 AHA areas.

Some concrete examples of progress include:

- REaL data: MGB created standardization in definitions and developed trainings for staff who collect these data. The Year 1 goal is less than 5% missingness for MGB's 1.1M patients.
- Increasing cultural competency training: MGB is working to move from cultural competency to Cultural Humility education. Spaulding Rehabilitation Network is utilizing Cultural Humility as an approach to working more effectively cross

culturally. MGB provides cultural competency education to all new employees during New Employee Orientation. With a goal of moving to Cultural Humility in the next few years, MGB is also re-envisioning what employee orientation looks like in a remote/online setting.

- Increasing diversity in leadership and governance: First, through the UAR strategy, MGB has created the goal of increasing racial diversity on the MGB and Institution Boards by 30% over five years starting in FY21[5]. With respect to hiring, promoting and retaining leaders of color, MGB's UAR goals are to:
    - Establish hiring and promotion metrics & build diverse leader talent pools
    - Generate transparency through development/sharing of diversity dashboards/ scorecards
    - Diversity goals in executive compensation

f. The Application states MGH has established an equity and diversity program with a focus on patient populations that frequently have higher cancer mortality rates (pg. 65).

i. When was this program started?

While equity in cancer care has been a top priority for the MGH Cancer Center for several decades, the Cancer Care Equity Program was formally established in October 2016.

ii. How are you assessing that these programs are being effective? Provide metrics used to assess the program, including information on any improved outcomes.

Several metrics are incorporated to assess the various Cancer Care Equity Program initiatives. These include analyses of the MGH ECOCH Health Equity Dashboard metrics, including proportion of racial/ethnic minority patients, Medicaid patients, and non-English speaking patients seen at the Cancer Center, wait-times to new patient appointments, and percentage of patients enrolled into Patient Gateway. MGH closely follows the rates of underrepresented minority participation in cancer clinical trials.

Recently, MGH demonstrated that its patient navigation program has reduced the missed appointment rates of newly diagnosed cancer patients from our community health centers from a historical rate of 15% to 3%.

Factor 1c - Operate Efficiently and Effectively

28. The Application states Massachusetts health care providers must appropriately plan for future age-related health care demands (pg.16). Complexity of care increases with age, including increasing incidence of chronic conditions and disability.

a. In addition to what you have stated above in response to question 23 and 24 explain how the Proposed Project will improve the care experience for older adults to ensure that the care being delivered aligns with their goals and in an age-appropriate manner as patients age, including discharge planning and coordinating transitions in care?

[5] MGB is currently on track to meet this goal.

There are a number of ways that the Proposed Project supports the safest, most appropriate care for our patients, including oncology and cardiac patients. First, the larger, more private rooms being proposed for the Cambridge Street building support the presence of patient companions. Having loved ones involved in care promotes understanding of patient education and successful adherence with periprocedural instructions. Moreover, family participation supports building a care plan that is in line with the patient's goals. It also has been associated with patient safety.

Additionally, geriatric assessment considers the whole patient in a way that is targeted for this age group. It requires a multidisciplinary process to build a coordinated plan aimed at maximizing health and quality of life. The assessment considers that the goals of care of a patient may be quite different as they age. A multidisciplinary team including case management can support this as well as they can provide a link between the hospital-based care team and the patient's community care team. The connection with care providers who are more longitudinally familiar with a patient than can strongly support individualizing care to be in line with the patient's care goals.

a. **The Application states co-locating Cancer and Cardiac services is important for the provision of timely and efficient, patient-centered care. However, the Cancer Center's radiation therapy and surgical services will not be relocated (pg.17, footnote 28). Why are radiology and oncology surgical services not moving to the proposed site? How will this support efficiency and coordinated care? As described in Question 3, MGH does not have dedicated oncology ORs.**

   Radiation therapy is not moving to the new facility due to the substantial costs that would be incurred due to the equipment transportation and the construction of the required infrastructure to support these services. Oncology surgery is currently performed in the hospital's mixed use ORs and this will continue.

Factor 1e – Community Engagement

29. **The Application states that several of MGH's Patient and Family Advisory Councils were engaged during the development of the Proposed Project (pg. 71) How many people that were engaged during the development of the Proposed Project are on each of the PFACs? Describe how the PFACs engaged for the purposes of the Proposed Project are representative of the Patient Panel (e.g., demographics—age, race/ethnicity, gender/gender identity, veterans status, disability status)?**

    A total of 43 PFAC members participated in the development of the Proposed Project: 20 from the General PFAC; 11 from the Cardiac PFAC; and 12 from the Cancer PFAC. Each of the PFACs is representative of the Hospital's patients and community; However, demographic information is not collected and therefore not available.

Factor 1f - Competition

30. **The Application mentioned several strategic initiatives to reduce operational costs and costs of care (pgs.27-30). In order to understand how the Applicant has monitored and controlled costs, can you provide data quantifying cost savings achieved through these programs?**

    MGH has instituted alterations to care paths to improve patient experience and contain costs. Lastly, MGH continuously evaluates the availability of secondary services at community hospital such as Newton

Wellesley Hospital to provide lower cost options for the community. These programs are relatively new and have been challenged in full implementation due to the pandemic. In addition, programs such as Home Hospital have not been reimbursed by certain insurers and have been provided to patients regardless; however, as insurers are beginning to recognize the value of such programs, the Hospital anticipates that it will be able to measure cost savings.

With respect to PHM initiatives, the following is an example of how one such program has positively impacted TME.

Program Name	Evaluation of Impact
Adult Commercial iCMP	$916.35 or 24% lower [p=0.05] Total Medical Expense per member per month over the 12 months post enrollment driven by reductions in ED visits (13% fewer ED Visits over 12 months post [p=0.08]) and hospitalizations (14% fewer Hospitalizations over 12 months post [p=0.20]).
Adult Medicaid iCMP	$310.51 or 12% lower Total Medical Expense per member per month over 12 months post [p=0.07] driven by reductions in ED visits (20% fewer ED Visits over 12 months post [p<0.01]) and hospitalizations (16% fewer Hospitalizations over 12 months post [p=0.07]).
Adult Medicare iCMP	Medicare ACO: $125 average pmpm based on 24 months of post data

a. How will you track and evaluate decreases in healthcare spending and cost savings that you state will result from implementation of the Proposed Project?

In its current operational state, MGH's lack of adequate beds and private rooms has resulted in inherent inefficiencies such as inefficient staffing and longer length of stay due to the inability to move patients to the most appropriate setting (e.g., boarding in ED and PACU). Through the Proposed Project, capacity will be more consistent with demand and as such will allow providers to focus on moving patients to the appropriate setting within the hospital, thereby decompressing the ED and PACU. The Hospital anticipates that it will be able to track decreases and healthcare spending and cost savings as demonstrated through care being provided in the right location.

Factor 2

31. Public Health Outcomes

a. To better understand how the Proposed Project will improve health outcomes, describe measures used to evaluate the Cardiovascular Disease Prevention Program, and its programming (Heart Attack Primary Prevention Program, Cardiac Rehabilitation Program, Cardiac Metabolic Syndrome Program) (pgs. 51-52)?

The Cardiac Rehab Program evaluates the following patient outcomes:

1. Improvement in Functional Capacity
2. Blood Pressure<130/80

3. Improvement in Depression Score (measured by PHQ9)
4. For smokers, evidence of smoking cessation counseling

The Cardiac Metabolic Syndrome Program, now the Cardiac Lifestyle Program, evaluates the following patient outcomes:

1. Weight Loss
2. Improvement in Lipids
3. Improvement in HbA1C
4. Improvement in Functional Capacity

b. In addition to facility improvements, what other measures are being taken to enhance disaster preparedness? (Regional Resource, pgs.14-16)

The following measures have been implemented to enhance disaster preparedness:

- Updated mass casualty incident protocol and systems and routine testing;
- Enhancements to the Hospital's information systems downtime planning and response protocols and procedures;
- Improvements to the Hospital's emergency notification and mass communication systems;
- Updates to the Hospital's ICU, general care, and ambulatory surge plans and systems to codify lessons learned and best practices from COVID-19; and
- Testing of cybersecurity systems and response procedures.

32. Delivery System Transformation

a. To better understand how the Proposed Project will contribute to Delivery System Transformation, describe any efforts at MGH to increase participation from public payers and underserved populations.

As part of the UAR initiative, MGB is evaluating its system participation in government programs to ensure equitable access to MGB hospitals for all individuals.

b. The Application provides a description of the Social Determinants of Health (SDoH) screening process and states SDoH screens are conducted via iPads (pg.66). What support services are available for those patients who may not be comfortable or able to use this technology?

MGB is deploying multilingual digital access coordinators that build bridges to clinical care as well as providing cellular enable iPads to patients lacking devices.

Moreover, MGB's workflows include many potential touchpoints to collect these data to ensure access and completion. Pre-visit via Patient Gateway, at the time of appointment via iPad or paper, and verbally during the appointment.

c. In some cases, patients are referred back to their PCP for further assistance with SDoH needs (pg.78). Describe this referral mechanism.

i. **What is the mechanism for patients within the MGB system and those with PCPs outside the MGB system?**

The SDOH screening results feed directly into the EHR for PCPs to view during appointments. Based on need, PCPs can make a referral to a community health worker or other support staff at the practice. Additionally, all patients who screen positive for a health-related social need are provided with Tip Sheets that are auto-generated as part of the after-visit summary. These Tip Sheets provide patients with up-to-date listings of resources available in the community.

ii. **For patients without a PCP, how are their SDoH needs met? What is the referral process for these patients?**

MGB's SDOH screening and referral program is currently only for patients with an MGB PCP. Patients without a PCP may be connected to care and coverage by a Certified Application Counselors. Once connected to care, a SDOH assessment will be assigned. Patients without a PCP may also receive assistance with various SDOH through MGB's community benefit programs. Lastly, in response to COVID-19, MGB launched community based mobile testing and vaccine vans that also screen individuals for SDOH and can provide tip sheets with resources available and food assistance.

d. **The Applicant states the Applicant and MGH have been thoughtful about the implementation of a universal SDoH screening program, recognizing that there is a limited amount of capacity within the community-based organizations that patients will be "linked" to for services and understanding a staggered approach to implementation is best, so that available community resources are not overwhelmed by referral (pg.66). Describe the staggered approach and timeline for implementation of universal screening.**

MGB currently screens all Medicaid ACO patients across all practices, and 23 practices have implemented universal screening.

Given the funding available, MGB's approach leverages CHNA and internal data to identify the communities with highest need so that MGB practices serving those communities are rolled out first. As these sites are assessed for success/impact, additional funding will be allocated to support rollout to additional sites.

i. **Given the limited capacity with CBOs, how do you address the needs of those patients that are not able to get linked to services, particularly if there is a more immediate SDoH need?**
As part of MGB's commitment to the communities it serves, MGB and its member hospitals align their efforts to address the SDOH of our patients through the programs and organizations supported as directed by each hospital's CHNA and CHIP. Through MGB's community benefit programs, MGB provides substantial support to social service organizations that help to sustain these organizations and build capacity. Examples include: My Brother's Table (Lynn), Community Servings (Boston), The Innovative Stable Housing Initiative (ISHI), and LISC.

Factor 5

33. In order to better understand the alternatives considered, provide a description of the quality, efficiency, capital expense, and operating costs of the eight alternatives to support their dismissal (pg.80).

All alternatives were considered for the achievement of the project's functional goals, outpatient and inpatient efficiency, ease of construction, and effectiveness. The Hospital did not analyze the operating costs of these alternatives, as the Hospital determined the alternatives did not meet the project's goals on the merits; however, the Hospital anticipates that the operating costs for many of the alternatives considered would meet or exceed the operating costs associated with the Proposed Project.

Alternative 1 would result in fewer total beds, therefore not meeting the projected demand for inpatient beds at MGH. Further, this alternative would result in a smaller footprint and outpatient inefficiencies whereby the ambulatory care would be disconnected from core services. Additionally, this project would cost approximately $760,000 more per bed than the Proposed Project. The capital expense would be approximately $1,750,000,000.

Alternative 2 would result in fewer total beds, therefore not meeting the projected demand for inpatient beds at MGH. This option involved a greater construction undertaking, with significant phasing complications, and posed both inpatient and outpatient inefficiencies as compared to the Proposed Project, such as fewer bed tower options. Additionally, this project would cost approximately $630,000 more per bed than the Proposed Project. The capital expense would be approximately $1,700,000,000.

Alternative 3 would result in fewer total beds, therefore not meeting the projected demand for inpatient beds at MGH. This alternative did not meet functional efficiency goals for the inpatient elements of the project, as the inpatient services would be disconnected from the core of the project, resulting in limited effectiveness. Additionally, this project would have cause significant construction difficulties and would cost approximately $1.25 million more per bed than the Proposed Project. The capital expense would be approximately $2,200,000,000. Finally, this alternative also would have significantly fewer parking spots, thereby diminishing access for patients and their families.

Alternative 4 would result in only 252 beds, therefore not meeting the projected demand for inpatient beds at MGH. This alternative would have been highly efficient for inpatient beds, as it they would be connected to core services, but would have resulted in significant operational disruption and difficult construction, and therefore may not be feasible. Moreover, this project would cost approximately $3.5 million more per bed than the Proposed Project. The capital expense would be approximately $1,850,000,000.

Alternative 5 would result in fewer total beds, therefore not meeting the projected demand for inpatient beds at MGH. This alternative would have been highly efficient for inpatient beds, as it would allow for an ideal connection to core services. However, the project would result in significant operational disruption and may not have been feasible. Additionally, this alternative would cost approximately $1.4 million more per bed than the Proposed Project. The capital expense would be approximately $1,880,000,000.

Alternative 6 would result in fewer total beds, therefore not meeting the projected demand for inpatient beds at MGH. This alternative would have been highly efficient for inpatient beds, as it they would be connected to core services, but would have resulted in significant operational disruption and difficult

construction phasing. Therefore, this alternative may not be feasible. Additionally, this alternative would cost approximately $500,000 more per bed than the Proposed Project. The capital expense would be approximately $2,000,000,000.

Alternative 7 would result in approximately 50 more inpatient beds than the Proposed Project. This alternative would be less efficient than the Proposed Project, specifically for the inpatient bed component, as it would cause significant operational disruption and involve difficulty with construction phasing. Additionally, this alternative would cost approximately $462,736 more per bed than the Proposed Project. The capital expense would be approximately $2,300,000,000.

Alternative 8 would result in fewer total beds, therefore not meeting the projected demand for inpatient beds at MGH. This option would maximize the number of private single bedrooms at MG but would be a larger scale project than the Proposed Project and would be overall more difficult to implement. This alternative would cost approximately $886,000 more per bed than the Proposed Project. The capital expense would be approximately 1,830,000,000.

Accordingly, these alternatives do not match the quality or efficiencies that will be achieved through the Proposed Project. When inpatient demand exceeds physical capacity, as the Hospital is experiencing today and would in most of the alternatives above, resources must be added in inappropriate locations like the Emergency Department and PACU to board patients. Despite best efforts, boarding time often is not progressing patients *to a typical or expected length of stay but additive and thus not ideal for cost, efficiency or patient satisfaction.*

34. How did you determine MGH was the appropriate location in the MGB system to expand inpatient capacity, especially for Oncology and Cardiac services? How did you determine MGH was the appropriate location in the MGB system to expand inpatient capacity, especially for Oncology and Cardiac services?

MGB utilized external market data, including SG2, to understand the future of health care and population, where disease trends were headed and what the societal health needs would be to determine the appropriate services.

MGB also conducted an internal system wide bed analysis to determine the future bed needs of the system, taking into account acuity, service mix, geography, and other factors matched it against current bed capacity. The resulting analysis determined that the level of bed growth requested through the Proposed Project would meet future demand as well as provide care in the most appropriate setting based on population, service and acuity needs. Additionally, the Proposed Project will result in 88% of MGH's med/surg beds in private rooms. Currently only 38% of MGH's med/surg beds are located in private rooms and therefore the majority of med/surg beds are frequently subject to bed blocks, which decreases utilization. Moreover, such constraints on inpatient capacity reduce ED throughput resulting in increased ED boarders and lost tertiary transfers.

Lastly, MGH remains committed to providing high-quality care to the residents of Boston who rely on MGH as their closest source of health care, including emergency care. While the Proposed Project seeks to expand on MGH's specialized service lines, it also builds on MGH's commitment to providing emergency services and secondary care within the community. The current capacity constraints on inpatient beds are most acutely felt by patients who are admitted through the ED and who are most likely to be from the

city's more vulnerable neighborhoods, including Everett, Chelsea, Revere, and East Boston. By increasing inpatient capacity, MGH is ensuring more equitable care to the community it serves.

a. Why is the Patient Panel best served at the main campus setting versus a lower cost setting within the MGB system?

b. How did you assess MGB Patient Panel need for Academic Medical Center (AMC) level care?

As the Proposed Project primarily seeks to expand and improve clinical services for Cancer and Cardiac patients, MGB determined that care for these patients required a facility capable of providing high acuity services as well as extensive interdisciplinary care teams.

The Proposed Project includes 201 designated cancer inpatient beds in order to accommodate patients throughout their cancer treatment. Patients may be admitted to MGH as a result of severe reactions or side effects of treatments, during treatments to monitor for reactions, and for end-of-life care. For example, MGH provides CAR T-cell therapy, a complex cellular immunotherapy, for patients with lymphoma. This therapy can only be administered in the hospital due to the possibility of severe side effects and depending on each patient's reaction, length of stay can range from one week to one month. Other cancer treatments, such as chemotherapy, may cause symptoms or side effects so severe as to require hospitalization for management of symptoms. Patients with a cancer diagnosis experiencing severe pain or other symptoms, or those who are at end-of-life and are receiving palliative care, will also require hospitalization. High acuity cancer patients must have access to AMC level of care in order to receive clinically appropriate care.

The same reasons are present with respect to MGH's need for additional cardiac inpatient beds. As part of its multidisciplinary approach to cardiovascular care, MGH offers numerous condition-specific programs including: Adult Congenital Heart Disease Program, Atrial Fibrillation Program, Cardio-Oncology Program, Cardiovascular Genetics Program, Cardiovascular Performance Program, Complex Coronary Intervention Program, Heart Failure and Cardiac Transplant Program, Heart Transplant Program, Heart Valve Program, Hypertrophic Cardiomyopathy Program, and Marfan Syndrome and Related Conditions Program. The ability of MGH to continue to offer these programs in dependent on adequate capacity. Moreover, MGH is one of the few hospitals in the region to provide the dual heart-lung life support mechanism, ECMO. MGH also performs heart and heart-lung transplants and is one of five hospitals in the nation to participate in a clinical trial utilizing Donation after Circulatory Death donor hearts. The Proposed Project will address the needs of its cardiovascular patient population and, as such, MGH must have the capacity to perform cardiovascular procedures that are a necessary component of the myriad diagnoses and treatment plans associated with its patient panel.