MGB-20121612-HE

Project Overview

As outlined in the DoN application, Massachusetts General Hospital (MGH) does not have adequate inpatient capacity to meet the current and future needs of its patient panel. This is due to the main campus's physical plant, which ultimately inhibits MGH's ability to provide timely and efficient care to its patients. The Proposed Project will meaningfully contribute to a resolution of current capacity challenges by decompressing existing multi-bedded rooms and relocating them to the proposed 482 bed new facility, resulting in more single bed rooms across the campus and a total increase of 54 med/surg and 40 ICU beds at MGH. By relocating beds from existing aged buildings to construct the new facility, MGH will be able to cohort patients with the two most prevalent diseases experienced by its patient panel- cancer and cardiac, eliminating current conditions that impact throughput across the campus and providing better care coordination for cancer and cardiac patients.

Current Challenges That Project Will Address

MGH lacks adequate single bed capacity, with only 38% of all beds in single-bedded rooms. Multi-bed rooms result in blocked beds, ultimately lowering the hospital's capacity on a daily basis. In addition, patient length of stay and acuity is increasing, making less beds available for new patients. This will increase as the patient panel ages. The lack of adequate inpatient med/surg bed capacity at MGH is evidenced by overcrowding in its ED and PACU, and the inability to accept transfers from community hospitals that do not have the capabilities that MGH has to care for high acuity patients. Without adequate bed capacity, MGH is unable to move patients to the most appropriate location for their condition causing delays in care and care delivered in less than optimal settings. Finally, MGH is a resource for providing complex care to patients, but also serves as a community hospital for residents in Boston, Revere and Chelsea, providing secondary care to its primary service area patients coming through the ED.

MGH, like other hospitals, attempts to cohort patients with similar clinical needs on inpatient care floors where they can be matched with teams that have sub-specialty expertise. MGH has 20 inpatient floors focused on the following sub-specialty populations: burns, cardiology, gynecology, neurology, oncology, orthopedics, transplant, vascular, and urology. In addition, there are 13 floors that are less specialized and intended for general medicine and surgery inpatients.

Bed Need Analysis

In order to determine the bed need for the future MGH combined two views. The first was the overall discharge/patient days volume for three distinct areas: Cancer Center, Heart Center and all other Med/Surg patient populations (excludes OB, Newborn, Psych and Pediatrics). Annual growth projections were developed for each of these three areas using outside market research firms (SG2, Truven) market growth projections, internal historical volume growth patterns and strategic initiatives (e.g., decant to lower cost of care sites, Home hospital, changes in care patterns). These growth projections were then laid over current operational realities. While the discharges and length of stay (LOS) reflect total time in the hospital and patients' location at midnight, it does not accurately capture time spent in other care areas, e.g. boarding time in the ED, overlap of patients waiting in a medical/surgical bed for an ICU bed or vice versa etc. These operational lenses were applied to determine MGH's bed needs for the three areas identified (Cancer, Heart, all other).

When looking at MGH's current occupancy rates detailed in the Utilization Charts below, it is important to note the following:

1) While the majority of licensed beds are occupied by inpatients, there are a subset of beds that are occupied by outpatients. These patients that occupy inpatient beds when another setting is more

appropriate include (1) observation patients who cannot be placed in observation units because those units are at capacity, (2) patients who require a slightly higher level of care, but do not meet inpatient level of care criteria, and (3) post-procedure recovery patients (post-surgery or cardiac procedure) who require generally an overnight stay and so utilize an inpatient bed. These patients account for approximately 5% of MGH's overall occupancy levels.

2) Using the operational bed count underrepresents the challenges MGH faces related to semi-private rooms and that due to a variety of reasons (infection control, gender, end of life), the hospital has to close a number of beds each day. MGH's current rate of bed blocks of approximately 40 beds per day results in a 4% increase to occupancy rates bringing it from 84% to 88%.
3) These figures represent patient location at midnight and do not adequately reflect the time spent in other areas of the hospital represented above.
4) This occupancy rate reflects an average that includes lower occupancy rates on weekends and holidays.

The above issues bring MGH's overall Med/Surg occupancy rate from a reasonable 83% occupancy to a high-water mark of 92%, which is not sustainable and implies that there are many periods during the weekday that MGH is operating beyond 100% capacity and patients are not in the appropriate setting waiting for a bed. A reasonable occupancy rate for ICUs is lower than the industry standard 85% capacity for medical/surgical beds due to the higher level of acuity, care and attention required for these patients in the ICU. As such, the reasonable occupancy rate for ICU is generally accepted to be closer to 75%. An average greater than 100% means that patients are in ICUs not dedicated to their disease area.

The below charts demonstrate the following:

1) MGH's medical/surgical bed count is detailed in the Bed Summary chart below. With the project, the current licensed but non-operational beds (+24) and future requested (+94) beds will result in a total increase in licensed and operating of 118.
2) As shown in the first Utilization Chart below, there are beds that are dedicated to a service line ("Designated Beds"). However, because of higher volume, particularly in Cancer, cancer patients are occupying beds in other general care Med/Surg units. Thus, the chart includes utilized beds to demonstrate the number of beds needed *today*.
3) The beds that were projected for the new building are based on the future demand expectations and industry standard occupancy rates outlined above.
    a. The bed numbers quoted in the DoN application did not allocate ICU beds to the service line. The charts below show the incremental ICU beds that would be assigned to each service.
    b. There is overlap between Cancer and Med/Surg use of beds (e.g., Cancer patient who contracts pneumonia). Therefore, some Cancer patients will utilize general Med/Surg beds – thus a higher occupancy rate on the Cancer bed line but an artificially lower number on the Med/Surg bed line in the first Occupancy Chart below.
    c. In addition, as the year being used for projection is only Year 2 after the building opens, the goal is NOT to be at occupancy max targets (85% Routine, 75% ICU) at this point but to allow capacity to meet demand in all areas in the future.

In summary, the 94 incremental licensed beds will address this aggregate operational capacity challenge and provide the flexibility necessary to respond to peaks in utilization (by day of week, time of day, and level of care) while the construction and relocation of beds into a new tower will enable the clinical and operational benefits of a geographic cohorting strategy as outlined in the DoN application.

Bed Summary

Beds	Current			Change	
	Operational	Licensed	Projected	Proj. vs Operational	Proj. vs. Licensed
Routine	765	789	843	78	54
ICU/CCU/SICU	101	101	141	40	40
Coronary Care	16	16	16	0	0
Burn Unit	7	7	7	0	0
Total M/S	889	913	1007	118	94
(Excludes OB, Pedi, Psych, NICU)					

Utilization

	FY '19							FY '29				
	Discharges	Patient Days	LOS	Designated Beds	Utilized Beds	Utilized Bed Occupancy		Discharges	Patient Days	LOS	Proposed Beds	Occupancy
Cancer	**9,675**	**66,901**	**6.92**	**110**	**216**	**85%**		**11,283**	**79,550**	**7.05**	**219**	**100%**
Routine		*62,385*		*110*	*202*	*85%*			*74,180*		*201*	*101%*
ICU		*4,517*		*-*	*14*	*88%*			*5,370*		*18*	*82%*
Cardiac	**6,718**	**48,971**	**7.29**	**157**	**157**	**85%**		**7,757**	**58,519**	**7.54**	**226**	**71%**
Routine		*38,027*		*123*	*123*	85%			*45,442*		*180*	*69%*
ICU		*10,944*		*34*	*34*	88%			*13,077*		*46*	*78%*
All other Med/Surg	**25,194**	**154,616**	**6.14**	**622**	**516**	**82%**		**22,215**	**149,922**	**6.75**	**562**	**73%**
Routine		*132,207*		532	*440*	*82%*			*127,108*		*462*	*75%*
*ICU**		*22,408*		90	*76*	*81%*			*22,814*		*100*	*63%*
Total Med/Surg	**41,586**	**270,488**	**6.50**	**889**	**889**	**83%**		**41,255**	**287,991**	**6.98**	**1007**	**78%**
Routine		*232,619*		*765*	*765*	*83%*			*246,729*		*843*	*80%*
*ICU**		*37,868*		*124*	*124*	*84%*			*41,262*		*164*	*69%*
**Includes 7 Burn Bed licenses/patients that are not Med/Surg*												
Bedded OP Days		13,443							13,443			
Total Days		283,931			889	**88%**			301,434		1007	**82%**
Closed Head walls		283,931			849	**92%**						

	10 Year Growth Impact								
	Discharge Growth FY'29 vs. FY'19	Total Discharge Growth % FY'29 vs FY'19	Discharge Avg % growth per year	Patient Days Growth FY'29 vs. FY'19	Total Patient Days Growth % FY'29 vs FY'19	Patient Days Avg % growth per year	LOS Change FY'29 vs FY'19	FY '29 Beds vs. FY '19 Designated Beds	FY '29 Beds vs. FY '19 Utilized Beds
Cancer	**1,608**	**17%**	**1.7%**	**12,649**	**18.9%**	**1.9%**	**0.14**	**109**	**3**
Routine				*11,795*	18.9%	1.9%	-	91	*-1*
ICU				*854*	18.9%	1.9%	-	18	*4*
Cardiac	**1,040**	**15%**	**1.5%**	**9,548**	**19.5%**	**1.9%**	**0.25**	**69**	**69**
Routine				*7,415*	19.5%	1.9%	-	57	*57*
ICU				*2,134*	19.5%	1.9%	-	12	*12*
All other Med/Surg	**-2,979**	**-12%**	**-1.2%**	**-4,694**	**-3.0%**	**-0.3%**	**0.61**	**(60)**	**46**
Routine				*-5,100*	-3.9%	-0.4%	-	(70)	*22*
*ICU**				*406*	1.8%	0.2%	-	10	*24*
Total Med/Surg	**-331**	**-1%**	**-0.1%**	**17,504**	**6.5%**	**0.6%**	**0.48**	**118**	**118**
Routine				*14,110*	6.1%	0.6%	-	78	*78*
*ICU**				*3,394*	9.0%	0.9%	-	40	*40*
**Includes 7 Burn Bed licenses/patients that are not Med/Surg*							*(78 = 24 existing, 54 new licenses)*		