SpaceMed Case Study

Planning a Medical Procedure Unit: Breaking Down Department Boundaries

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See the room-by-room space program at www.spacemed.com/mpu

Background

Historically, same-day medical procedures at Midwest Medical Center (MMC) have been provided by a variety of different departments and scattered throughout the hospital with redundant patient reception/waiting, preparation, treatment, and recovery spaces. As demand for same-day medical procedures continued to grow, the hospital leadership was concerned that outpatient satisfaction was being compromised while operational costs were increasing dramatically. Department staff were inpatient-focused and reluctant to alter pre-established protocols and processes. They were also reluctant to consider any changes to their existing "turf."

After several failed attempts at operational redesign, the serendipitous retirement of several key managers allowed MMC leadership to recruit a new manager who shared their vision. A variety of same-day medical procedures would be consolidated in an area that would function as the equivalent of the same-day surgery center and include flexible space for:

- Prep and post-procedure recovery for endoscopy, invasive radiology, and other departments/procedures using conscious sedation.
- Intravenous (IV) therapies such as transfusions, antibiotics, and hydrations.
- Diagnostic procedures such as bone marrow aspirations/biopsies, liver biopsies, and paracentesis/thoracentesis.
- Injections, allergy skin testing, and other similar procedures.

It was decided to refer to the new same-day medical service as the "medical procedure unit" or "MPU" to facilitate outpatient wayfinding. A business plan was prepared and operational processes were established and new job descriptions were developed in conjunction with facility planning.

Planning Approach

A detailed analysis was initially undertaken to identify the current and projected workload volumes and corresponding treatment spaces required:

- **Current workload volumes.** Data on the current number of patients to be prepped, treated, and recovered in the new unit was collected along with the corresponding number of minutes. A total of 10,100 outpatients would qualify for the new unit (based on 2007 workload data) resulting in an average of 40 patients per day and an average length of stay of 106 minutes. However, 37 percent of the visits/procedures would be less than an hour.
- **Projected workload volumes.** Future workload volumes were projected through 2012 for each treatment category. For example, endoscopy recoveries were projected to increase 5% per year consistent with the outpatient endoscopy growth assumptions while IV therapies were projected to increase 20% per year and pain clinic procedures were projected to remain constant at the 2007 volume. A projected average of 55 patients per day would receive treatment in the MPU by 2012.

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- **Estimating the number of treatment spaces.** Once the future workloads were projected for each procedure category, the current average minutes per procedure were used to estimate the number of treatment bays to be programmed. The projected annual minutes were divided by 250 days per year to determine the average number of treatment minutes required per day. This figure was then divided by 360 minutes per day (assuming an eight-hour shift with 75% occupancy) to estimate the number of treatment bays required. The analysis indicated that an average of 16.7 patients would be treated in the MPU at any given time, in addition to those undergoing an endoscopy procedure.

Analysis of Current Workload (2007)

Procedure	Annual Visits	Annual Minutes	Minutes/ Visit	Daily Visits
IV Therapy	1,252	179,595	143	5
Blood Transfusion	772	253,865	329	3
Pain Clinic	697	25,280	36	3
Para/Thoracentesis	72	12,565	175	<1
Liver Biopsy	58	18,110	312	<1
Phlebotomy	131	4,325	33	<1
Other Visits	310	28,390	92	1
Imaging Prep	1,920	153,250	80	8
Imaging Recovery	1,964	244,385	124	8
Endoscopy Recovery	1,610	86,790	54	6
Other Recovery	1,314	60,155	46	5
Total	**10,100**	**1,066,710**	**106**	**40**

Projected Workload (2012) and Treatment Bay Calculation

Procedure	Annual Visits	Annual Minutes	Daily Visits	Required Bays
IV Therapy	3,115	446,836	13	5.0
Blood Transfusion	772	253,865	3	2.8
Pain Clinic	697	25,280	3	0.3
Para/Thoracentesis	120	20,942	<1	0.2
Liver Biopsy	90	28,102	<1	0.3
Phlebotomy	210	6,933	<1	0.1
Other Visits	500	45,790	2	0.5
Imaging Prep	2,485	198,347	10	2.2
Imaging Recovery	2,485	309,214	10	3.4
Endoscopy Recovery	2,055	110,779	8	1.2
Other Recovery	1,314	60,155	5	0.7
Total	**13,843**	**1,506,242**	**55**	**16.7**

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- **Configuration of prep/treatment/recovery spaces.** The following patient prep, treatment, and recovery spaces were programmed to optimize flexibility:
  - 3 major procedure rooms (scoping procedures)
  - 1 minor treatment/exam room (flexible, multipurpose room)
  - 4 prep/holding bays (adjacent to the procedure rooms)
  - 8 prep/treatment/recovery bays (three walls with curtain closure)
  - 2 private prep/treatment/recovery rooms
  - 6 prep/treatment/observation recliner chair bays
- **Space requirement.** A total of 4,550 net square feet (NSF) was programmed including: a patient reception/intake area; prep, treatment, and recovery spaces (mix of enclosed rooms, partially enclosed, and open bays); and related support space. Applying a factor to accommodate internal corridors and the width of walls, columns, and utility shafts resulted in a total of 6,800 department gross square feet (DGSF).
- **Facility layout and location.** Alternate facility layouts were evaluated to promote efficient staffing patterns and patient flow. An ideal location was selected on the first floor of the hospital adjacent to the emergency department's nonurgent care (or fast track) area to facilitate use of the MPU space after-hours if needed for emergency care during peak workload periods. The new MPU would also be adjacent to the central imaging department and immediately accessible from the new customer service center that is planned near the main hospital entrance. An adjacent office suite (that could be relocated off the first floor) would provide future expansion space for the MPU as required.

The actual room-by-room space program can be viewed at www.spacemed.com/mpu.

Conclusion

Creation of the new MPU would not have been possible without the vision and strong leadership of the executive team and their facility planning consultant. Previous attempts by the organization to get input from individual department staff resulted in recommendations to simply maintain the status quo. Once the unit is operational for a year, hospital leadership will determine if there are other outpatient services that could potentially be incorporated into the MPU. For example, outpatient cardiac cath patients are currently transferred from the first floor to a third floor nursing unit for their recovery and outpatient chemotherapy patients receive treatment in the adjacent physician office building.

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