THE NOTION OF SHARING A ROOM WHILE RECEIVING HEALTHCARE HAS IN REALITY DOMINATED PATIENT CARE THROUGHOUT HISTORY; IN FACT, NOT UNTIL RECENTLY DID THE PRIVATE PATIENT ROOM BECOME A COMMON FORM.

HEALTH CARE DESIGN CONFERENCE 2010

CLEMSON/ARCHITECTURE+

HEALTH

FOOTPRINT

A thesis

noun - [thee-sis]

a proposition stated or put forward for consideration, especially one to be discussed and proved or to be maintained against objections

IS THERE A PLACE FOR THE SEMI-PRIVATE PATIENT ROOM IN CONTEMPORARY AMERICAN HOSPITALS? THIS THESIS PURPOSES THAT THE SEMI-PRIVATE ROOM REMAINS A VIABLE OPTION FOR SOME PATIENT POPULATIONS AND CARE SCENARIOS, AND MERITS RECONSIDERATION AND REDESIGN. THIS INQUIRY IS AMONG FEW IN THE LITERATURE DEVOTED TO ADVANCING SEMI-PRIVATE PATIENT ROOM DESIGN AND APPLICATION WITHIN CONTEMPORARY HEALTHCARE. THE SEMI-PRIVATE ROOM MAY YET OFFER INCREASED OPPORTUNITIES TO ADDRESS PRESSING ISSUES OF INCREASING HEALTHCARE COSTS, IMPROVING OPERATIONAL EFFICIENCIES, AND REDUCING THE HOSPITAL'S ENVIRONMENTAL FOOTPRINT, WHILE SIMULTANEOUSLY ATTEMPTING TO ADDRESS BOTH LONG-STANDING AND RECENT INDUSTRY CONCERNS WITH TRADITIONAL SEMI-PRIVATE PATIENT ROOMS. FURTHER, IT WILL SERVE AS AN OPPORTUNITY TO BETTER UNDERSTAND THE BENEFITS AND LIMITATIONS FOR BOTH THE PRIVATE AND SEMI-PRIVATE PATIENT ROOM MODELS AS THERE REMAINS LIMITED EMPIRICAL EVIDENCE IN SUPPORT OF ALL PRIVATE ROOMS IN ALL CIRCUMSTANCES.

LINDSAY GAVOS TODD

A SEMI-PRIVATE REVIVAL

IS THERE A PLACE FOR THE SEMI-PRIVATE PATIENT ROOM IN AMERICAN HOSPITALS?

A MASTER OF ARCHITECTURE THESIS

BY LINDSAY GAVOS TODD

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LINDSAY GAVOS TODD

Thesis Committee:
David Allison (Primary Advisor), Dina Battisto, Stephen Verderber, Janet Craig, Sandra Garrett
**DESIGN GUIDELINES: SEMI-PRIVATE ROOM DESIGN**

**01 ROOM SIZE**
The average private patient room, including toilet room, occupies approximately 330 net square feet of space on a typical adult inpatient unit. Therefore, accommodate two patients in one room occupying less than 330 net square feet of space per patient, while improving upon 180 net square feet of space per patient in the traditional semi-private patient room model.

**02 VIEWS AND NATURAL LIGHT**
Each patient should have direct access to views outdoors and to natural light. The reduction in patient pain and stress often results in decreased lengths of stay for patients who receive views onto nature during their stay at the hospital. Therefore, position patient beds so that each patient is afforded the opportunity to view the outdoors without another patient bed or toilet room to look beyond.

**03 PERSONAL SPACE**
A degree of personal space is required at some level for every individual in almost every circumstance, and a patient receiving care in the hospital is no exception. Therefore, distinguish each patient’s space within the same room by using material changes or partition walls (for example) and providing unique control over environmental factors, such as lighting.

**04 PRIVATE CONVERSATIONS**
Code requires that the sharing or disclosing of a patient’s personal information, including information regarding their medical condition, be reserved for a private conversation between a doctor and patient. Therefore, provide the patient room with acoustical protection between beds, either through the architecture of the room or by incorporating technology.

**AN EXTENSIVE LITERATURE REVIEW WAS CONDUCTED IN THE BEGINNING OF THIS PROCESS TO VERIFY THE ASSERTIONS AND ASSUMPTIONS MADE AT THE OUTSET OF THIS THESIS AND TO GROUND THE STUDY IN RESEARCH AND EMPIRICAL EVIDENCE.**
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**FAMILY NICHES** The patient’s family has evolved in their role within the American healthcare setting from merely being visitors or spectators in the delivery of care to active participants in caring for the patient. Therefore, dedicate a space within the room for each patient’s family, adjacent to the respective patient, for activities such as eating, sleeping and visiting.

**SANITATION SEPARATION** It is not practical to assume that after a patient uses the toilet room once that the staff would then thoroughly clean and sanitize the toilet room before the neighboring patient uses the toilet room, therefore the risk of cross contamination between patients sharing the same toilet and hand washing sink is very high in this space. Therefore, provide each patient with their own toilet room so as to prevent cross contamination between two ill patients.

**SINK PLACEMENT** Hand washing has been cited on multiple occasions as being the most effective way to reduce the spread of nosocomial infection. Therefore, include at least one hand washing sink per patient room and place the sink strategically and conveniently in the primary path of travel of staff and visitors. A sink placed directly between the beds will serve as a reminder to staff to wash their hands before caring for the next patient.

**CORRIDOR VISIBILITY** Staff should be able to view both patients from the corridor outside the patient room for reasons of operational efficiency and patient safety. Therefore, provide direct lines of sight from the corridor to the head of each patient in their bed either through the doorway or through a borrowed light.
DESIGN GUIDELINES: SEMI-PRIVATE ROOM DESIGN

09 ARTIFICIAL LIGHTING Unique lighting settings should be provided for to accommodate the various tasks that might take place in a patient room including: lighting for the patient to read by, lighting for staff to examine the patient with, night lighting, etc. Therefore, consider each task and outfit the room with appropriate levels of light and lighting fixtures to adequately accommodate each individual task.

10 FURNISHINGS AND FINISHES Each patient sharing a room has a right to his or her own personal space and sense of individual place within the room. Therefore, finish the space around each patient bed with colors and/or materials unique from those used for the neighboring patient, in essence, creating a room within a room. Additionally, offer each patient’s visiting family/friends their own furnishings to use adjacent to the patient’s bed.

11 ENTRY AND ARRIVAL Often times when entering a semi-private patient room it can be uncomfortable to pass by one patient entirely to get to another. Therefore, give each patient bed a unique entry of its own. If it is impossible to do so either because of corridor wall restrictions or because of the space layout, arrange the patient beds in the room in such a way that upon entering the room one is not forced to pass by the neighboring patient.

12 FLEXIBILITY / ADAPTABILITY Patients sharing a room should have various degrees of privacy offered to them by the architecture of the room so that the room is able to change based on the acuity and the needs of the individual patient. Therefore, provide movable partitions and/or furniture that will offer the patient/room flexibility to adapt to the changing patient and their needs.
A thoughtful analysis of each was conducted during and upon returning from this tour.

**Privacy Variance**
Within any shared space, individuals will require and desire multiple levels of privacy depending on the activity they are partaking in. A quiet conversation meant for two people requires a greater degree of privacy than standing shoulder to shoulder between others at a rock concert. Therefore, provide opportunities for the patients and their families to experience varying degrees of privacy for all activities that might take place in the patient room.

**Care Efficiency**
Operational efficiency on the nursing unit and within the patient room is vital for staff working on the unit and providing care to patients. Therefore, incorporate design strategies into the shared patient room that will reduce travel distances, optimize visibility and accessibility to the patients, provide decentralized, distributed nurse work and charting areas, and ultimately, maximize the amount of time staff has to physically care for each patient at their bedside.

**Ventilation Separation**
Infection control remains one of the primary issues in the argument for the all-private patient room hospital. Addressing this issue in the redesign of a semi-private room prototype will be critical to its success in contemporary healthcare architecture. Therefore, accommodate each patient with their own ventilation system, creating an air barrier between the two patients, avoiding potential exchange of infection.

**Socialization and Support**
The private patient room eliminates the opportunity that certain patient populations might have to benefit from empathizing with one another in their illness and supporting each other in their recovery. Therefore, arrange patient beds so that patients sharing a room might have the chance to socialize with each other and offer encouragement and support in being able to directly relate with their neighboring patient.
A separate, direct view to the outdoors and to nature is provided for each patient.

**DESIGN GUIDELINE:**

02 03

The patient wardrobe provides storage for each, individual patient. The location of the patient wardrobe aids in defining each niche for both patients’ families and visitors.

**DESIGN GUIDELINE:**

03 05

Placement of patient beds encourages social interaction and support between patients.

**DESIGN GUIDELINE:**

03 16

Sliding digital panels provide each patient with individual access to television, internet, etc. In addition, panels also serve to separate each patient’s space offering flexibility within the room.

**DESIGN GUIDELINE:**

03 04 05 12 13

Separate toilet and sink for each patient contributes to decreasing the risk of infection.

**DESIGN GUIDELINE:**

06
A separate, direct view to the outdoors and to nature is provided for each patient.
The patient wardrobe provides storage for each, individual patient. The location of the patient wardrobe aids in defining each niche for both patients’ families and visitors.

DESIGN GUIDELINE: 03 05 12 13

Bench beds encourage families to stay with their loved one over night. Bed storage within the bench provides for an efficient solution to maximize space in the family zone.

DESIGN GUIDELINE: 05 10 12

Sliding digital panels offer visitors and families privacy options. The situation may arise that one patient and their visitors might be enjoying conversation together while the neighboring patient and their visitor are trying to sleep. The panels provide a solution for this activity variance between patients and their visitors.

DESIGN GUIDELINE: 03 05 12 13

Bench beds offer families and visitors ample seating adjacent to each patient. When bed is in use it sits at the same height as the window seat and allows for a larger sleeping surface.

DESIGN GUIDELINE: 05 10

Entry location allows visitors to approach their loved one without forcibly passing through the neighboring patient’s space.

DESIGN GUIDELINE: 11
SEVERAL SCENARIOS WERE RECOGNIZED AND DEEMED MOST QUALIFIED AS BEING APPROPRIATE CONDITIONS FOR SHARING A PATIENT ROOM, SUCH AS PEDIATRIC PATIENTS, REHABILITATION PATIENTS AND TRANSPLANT PATIENTS.

DESIGN GUIDELINE:

05 10 12

Sliding digital panels offer staff and patients a degree of audio privacy needed for quiet, intimate conversations and visual privacy for examinations from the neighboring patient.

DESIGN GUIDELINE:

08 12 14

Secondary staffing corridor provides greater efficiency for nurses when caring for patients and making rounds. This corridor offers nursing units an innovative approach to organizing patients and creating ‘patient pods.’

DESIGN GUIDELINE:

07 14

Wet and dry nurse work stations, conveniently positioned between patient beds, serve in part as a reminder to nurses to wash their hands in between caring for patients.

DESIGN GUIDELINE:

13 14

Location of the patient bathroom along the headwall provides staff assisting patients to the toilet direct access from the patient bed with a short travel distance. The direction of the curve offers a greater degree of privacy from the neighboring patient.
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DESIGN GUIDELINE: Location of the patient bathroom along the headwall provides staff assisting patients to the toilet direct access from the patient bed with a short travel distance. The direction of the curve offers a greater degree of privacy from the neighboring patient.
**DESIGN SOLUTION**

The semi-private patient room redesign process began by evaluating the relationship of the patient beds to one another. Finding the optimal arrangement to be a mirrored condition, patient beds were placed directly opposite from each other locating patients on their own headwall. Mirroring the patient beds satisfied more design guidelines than any other arrangement as it put patients in an equal position relative to the rest of the room: both patients receive equal and direct access to views and natural light, neither patient is closer to the bathroom than the other, staff has equal visibility from the corridor to both patient beds, etc. Placing the patient beds on separate headwalls also provided an improved degree of privacy and personal space to each patient and their family. Acknowledging the fact that each patient and their family will at some point desire a greater level of privacy, flexible, sliding partitions were designed into the room that not only distinguish each patient’s individual space within the room, but also serve as a “digital foot wall” giving both patients access to the television, internet, and additional hospital/patient information. The semi-private room redesign, incorporating many of the design elements favored in both private and semi-private room models, has the potential to contribute to the economic and environmental sustainability of contemporary healthcare design.

"PATIENT POD" CONCEPT
The semi-private patient room redesign process began by evaluating the relationship of the patient beds to one another. Finding the optimal arrangement to be a mirrored condition, patient beds were placed directly opposite from each other locating patients on their own headwall. Mirroring the patient beds satisfied more design guidelines than any other arrangement as it put patients in an equal position relative to the rest of the room: both patients receive equal and direct access to views and natural light, neither patient is closer to the bathroom than the other, staff has equal visibility from the corridor to both patient beds, etc. Placing the patient beds on separate headwalls also provided an improved degree of privacy and personal space to each patient and their family. Acknowledging the fact that each patient and their family will at some point desire a greater level of privacy, flexible, sliding partitions were designed into the room that not only distinguish each patient’s individual space within the room, but also serve as a “digital foot wall” giving both patients access to the television, internet, and additional hospital/patient information. The semi-private room redesign, incorporating many of the design elements favored in both private and semi-private room models, has the potential to contribute to the economic and environmental sustainability of contemporary healthcare design.
# Medical University of South Carolina: Ashley River Tower

**Site Selection Process** Prior to selecting a physical site for the location of the semi-private room design to be evaluated within, it was important first to identify a patient care scenario which might be more suited than another for the application of a shared patient room model. Transplant patients emerged as a unique possibility for the application, given the longer lengths of stay experienced by patients awaiting a new organ and the often ongoing rehabilitation that might be involved after surgery. Situated in the heart of Charleston, the Medical University of South Carolina (MUSC) is the only hospital facility in the state of South Carolina with a transplant center. To ground this study in an existing nursing unit, the new Ashley River Patient Tower at MUSC was selected to evaluate the success of the redesigned semi-private patient room within the actual context in which it may lie. MUSC is the only hospital in South Carolina that services whole organ and bone marrow transplant patients, therefore the renal transplant inpatient unit, located on the fourth floor of the tower, has been chosen as the patient care scenario and site context for which the redesigned room will be particularly proposed for. The intention of the redesigned room is that it would satisfy, to the fullest extent possible, the design guidelines originally established to inform a better, more applicable shared patient room model for the contemporary American healthscape.

### MUSC Renal Transplant Unit Program Summary

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
<th>Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Care</td>
<td>39%</td>
<td>6,545 SF</td>
</tr>
<tr>
<td>Support Space</td>
<td>19%</td>
<td>3,365 SF</td>
</tr>
<tr>
<td>Administration</td>
<td>08%</td>
<td>1,304 SF</td>
</tr>
<tr>
<td>Public Space</td>
<td>04%</td>
<td>754 SF</td>
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<tr>
<td>Circulation</td>
<td>24%</td>
<td>4,054 SF</td>
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<tr>
<td>Building Services</td>
<td>06%</td>
<td>1,066 SF</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17,048</strong></td>
<td>17,048 D.G.S.F.</td>
</tr>
</tbody>
</table>

### MUSC Renal Transplant Unit Redesign Summary

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
<th>Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Care</td>
<td>34%</td>
<td>5,415 SF</td>
</tr>
<tr>
<td>Support Space</td>
<td>22%</td>
<td>3,365 SF</td>
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<td>Administration</td>
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</tr>
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<td>05%</td>
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<td>Circulation</td>
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</tr>
<tr>
<td>Building Services</td>
<td>07%</td>
<td>1,066 SF</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15,712</strong></td>
<td>15,712 D.G.S.F.</td>
</tr>
</tbody>
</table>

### Original MUSC Unit Travel Distances

<table>
<thead>
<tr>
<th>Distance</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>110 SF</td>
<td>Central Nurse Work to Farthest Patient Room (Along Straight of Unit)</td>
</tr>
<tr>
<td>107 SF</td>
<td>Central Nurse Work to Farthest Patient Room (Along Curve of Unit)</td>
</tr>
<tr>
<td>105 SF</td>
<td>Primary Support Spaces to Farthest Patient Room (Along Straight of Unit)</td>
</tr>
<tr>
<td>111 SF</td>
<td>Primary Support Spaces to Farthest Patient Room (Along Curve of Unit)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17,048</strong></td>
</tr>
</tbody>
</table>

### Redesign MUSC Unit Travel Distances

<table>
<thead>
<tr>
<th>Distance</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 SF</td>
<td>Central Nurse Work to Farthest Patient Room (Along Straight of Unit)</td>
</tr>
<tr>
<td>81 SF</td>
<td>Central Nurse Work to Farthest Patient Room (Along Curve of Unit)</td>
</tr>
<tr>
<td>101 SF</td>
<td>Primary Support Spaces to Farthest Patient Room (Along Straight of Unit)</td>
</tr>
<tr>
<td>111 SF</td>
<td>Primary Support Spaces to Farthest Patient Room (Along Curve of Unit)</td>
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Assuming a construction cost of $350 to $400 per square foot and a space saving of 1,336 square feet across the United States.
Addressing one of the primary goals of the semi-private patient room redesign, the notion of patient pods was conceived in order to provide a more efficient way for nurses to deliver care to their assigned patients. The idea is that one nurse would be responsible for one pod of patients. And, per each hospital, and even more specifically, per each nursing unit, the layout of the pod is flexible and can adapt to the changing needs of both the unit and the hospital. The pod is comprised of a combination of private and semi-private patient rooms, dependent on the nature and needs of the patient care unit in which it is situated. The ratio of private to semi-private as well as the arrangement of the room models can be mixed and matched multiple ways. Each room located within the pod is connected by a subtle staff passageway that allows nurses to move freely between the rooms without moving in and out of rooms and corridors. Instead, sliding doors, similar in concept as to what one might see moving between the cars of a train, provide a seamless path of travel for nurses to traverse through, providing more efficient care to the patients they are responsible for. This idea of connection also lends itself to greater visibility of the patients by the staff as they are able to care for patients in one room, while maintaining auditory, and at times, visual supervision of other patients in other rooms.
A reconsideration of the history of patient care reveals the semi-private patient room as a relevant, effective, and efficient model for care delivery today as it was then.

In conclusion, this study is, however, among few devoted to advancing semi-private patient room design and application within the healthcare system today to address pressing issues of healthcare costs, sustainability and operational efficiencies while simultaneously developing responses to environmental factors. Further, this study serves as an opportunity to better understand the benefits and limitations of both the private and semi-private patient room models as current empirical evidence remains limited. At the beginning of this study, it was anticipated, as well, that this research and thesis would aid in reconciling the perceptions people may have of the semi-private patient room, be they experiential or functional, grounded in evidence or mere perceptions founded in opinion, with the design possibilities that still have yet to emerge from this neglected patient room model.

Within the framework of the global issues at hand in the twenty-first century, a period newly cognizant of the urgency of adopting a more economically and environmentally sustainable approach to the future, healthcare architects have a responsibility today to consider their role within the industry to ensure the sustainability of the contemporary hospital. As patient rooms form the basic element of any hospital, this re-evaluation of the evidence supporting the all-private patient room care unit, and in turn the re-conception of the role and design of the semi-private patient room within the hospital of the twenty-first century signifies a potential step toward a new, sustainable model for patient care.
IN CONCLUSION

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