Findings - Nurse/Staff Working Conditions

Introduction

The shortage of highly skilled nurses is a national (even international) problem that is expected to worsen in the years ahead. Solutions for recruiting and retaining qualified nurses must be found in order to avert a potential catastrophe. Increasing nurse vacancy rates are causing some hospitals to close beds or units and even delay or cancel some surgeries. One important method for retaining nurses may be to provide them with improved working conditions. While that involves a large number of organizational factors, providing a physical environment that is highly functional and aesthetically pleasing may enhance job satisfaction and improve both recruitment and retention of nursing staff. However, there is still a serious lack of information regarding how best to design healthcare facilities to improve the quality of working conditions for nurses and other members of the medical staff. As hospital design becomes more patient-centered, it is important to ensure that design strategies, such as decentralized nursing stations, do not worsen working conditions for medical staff. It is not yet clear how to design hospitals so that they are more spatially efficient yet provide improved environments for staff, patients and their families. During the HER Summit in Atlanta, three break-out groups tackled the issues of identifying research needs, understanding the information pipelines among stakeholders, and developing action items to advance the field of evidence-based design to enhance nurse/staff working conditions. The findings have been synthesized in the following sections.

Research Needs

In order to provide nurses and staff with physical environments that make their facilities better places to work, it is important that we better understand the relationships between the environment and outcomes such as satisfaction, fatigue, turn-over, ability to provide high quality patient care, errors and other performance measures. The break-out groups identified many research needs that have been grouped into several categories, including: Specific Design Issues, Technology, Movement, Hospital Culture, Ambient Environment, Perceptions, Infection Control, Flexibility, Regulations & Policies, and Research Methods and Tools.

Specific Design Issues

- Space
  - How do we provide a facility that meets patient expectations while considering staffing costs and shortages? Square foot/staff?
  - How do we integrate human resources with facility design?
  - How will staff roles/responsibilities evolve over time (5, 10, 15 years) and how will the facility respond?
  - What elements of design most significantly effect nurse retention?
How big is an oversized room and what benefits does it provide if it includes 3 zones – caregiver zone, family and patient zone?

How do smaller spaces improve how people work together?

How does the distance between where the nurse is stationed and where the nurse serves affect nurses? References the Yale Traffic Index\(^1\) – design influencing walking, distance covered, etc. Single rooms might be worse from this aspect.

Is traveling a good thing or a bad thing? How can an optimal team culture that helps to create better working environments be created/influenced through the built environment?

How do acuity-adaptable rooms compare to other types of rooms re: patient/family outcomes and staff outcomes?

How does decentralized nursing affect the learning and special needs of nurses?

- Material
  - How do flooring surfaces affect nursing injuries and stress rates?

- Ergonomic
  - What height of nursing desks is most appropriate? What are the optimal desk/chair configurations?

**Technology**

- How should we purchase and use technology? Technology cost may be more than the building cost. Are we making the right choices?

- How can monitoring systems improve the work environment?

- How can lessons learned from Transforming Care at the Bedside (TCAB)\(^2\) – improve working conditions (e.g., eliminates hunting and gathering)?

- What effect does the use of lifts and other technologies have on reducing nurse injury rate?

**Movement**

- Do we have effective ways to model organizational behavior using computer simulations rather than in real life (much less expensive)? We’ve had good success in construction sites. How do you define key performance indicators/which process is better than another? The softer it is – the more the human interacts with the system – the harder it is to model reliably. Perhaps we could try using our models to see how they compare to the real world examples that we already have, and see how well they model. We can compare to known outcomes to test the validity of these models. One example: c.f. Euclidean diagrams with nurse movements. If you make the change, do nurses actually gain the time back? Or, is there something that we’re missing out on? Previous simulations had rational rules about which


\(^2\) TCAB - [http://www.northshorelij.com/body.cfm?id=3831&oTopID=3831&PLinkID=2977](http://www.northshorelij.com/body.cfm?id=3831&oTopID=3831&PLinkID=2977)
route to take. Now we have adaptive systems - if you can make a few good models, you can realistically model the situation.

- How many computers on wheels (COWs) versus wireless systems might we need? This is an example of a study involving both technology and movement.

**Hospital Culture**

- Operational / governance model transformational that is bottoms up along with top down culture. Directly affect working condition, turnover, etc
- What are the relationships between organizational culture, ethnic culture and design and how do these work together to impact patient outcomes?
- Is the acuity adaptable room effective? Is it better than appropriately sized patient/family rooms with decentralized work stations? Do acuity adaptable rooms provide more “steep” care? How does this work in conjunction with the necessary changes in nurse culture?
- How is decentralized nursing impacting the learning and social organization of nurses?
- How does a lack of spatial ownership amongst doctors affect their performance and social organization?
- What type of design facilitates multi-disciplinary teamwork?
- Workplace culture of the nursing – what is it? How does culture influence patient care; how do we improve the culture in design?
- How do we use design to increase the aspects of culture that we know improve safety?
- What are the elements of design that most significantly affect retention?

**Ambient Environment (lighting & noise)**

- What lightings types and configurations result in improved health outcomes?
- Can we distinguish the different types of activities that occur and the light that is needed? What kinds of eye tasks are used in different activities? The light require for looking for medicine is different from that needed for interacting with patients or navigating a corridor.
- How does a real window compare with a false window (using LCD) with respect to patient outcomes? Are there alternatives to natural light, such as channeling natural light with fiber optics, that produce desired effects?

**Perceptions**

- We have identified what brings “joy in work”. How can design enhance and facilitate “joy in work”?
- Industry is concerned with negative stressors. How do we identify major negative stressors?
- One important thing about the home environment is the items that give it context (Institutional Environments, Mayor Spivick). How might having these kinds of items in the hospital affect the nurse/staff working environment?
Infection Control

- Nosocomial infections: Is there more work to be done? Most nosocomial infections are from touch. Primarily cultural issues—people will not wash their hands frequently enough. Handwashing lapses cause nosocomial infections; design and culture can improve this, education is flighty with results. If their real issue is “I don’t have time” how do we solve that?
- How could you really examine the paths of nosocomial infections? How would you make a version of the cash purple dye that would allow you to see the transmitters of the diseases?
- Do we have other alternatives to hand washing to reduce nosocomial infections? How do we design and test mechanical devices – both cleaning and testing for hand washing?

Flexibility

- We have been examining what makes people do well in some given conditions? What’s optimal? We can never satisfy all requirements/needs. It is important to try and determine tolerance margins. Where are these boundaries? What conditions are unacceptable? How can you accommodate multiple activities without harming anyone? (including multiple people and multiple tasks).
- Given lots of multitasking in hospitals—do we know what factors encourage/hurt multitasking?
- Do we want to have people multitask? We have lost our basic nursing practice. We are too task-driven (too specialized already).
- How does an aging workforce affect working conditions? A person has different tolerances when older. We have a good deal of data about this, but need to disseminate these studies more widely.

Regulations & Policies, Drivers for Decision-Makers

- How do you get CEO’s to listen?
  - What information/research is needed to enhance decision making by the C-Suite? Without that information there will not be change.
  - Return on investment (ROI)
  - Tell a story
  - Listen and respond to their stories
  - Dollars per square feet
  - Timing, missing out on money, market share etc. construction time
  - More fable hospitals of different types. Multiple case scenarios
- What are the financial incentives for redesign? How should future payment models be designed to reward good design?
- How can we align design research with what we know about magnet environments? Is design considered in Magnet Hospital Designation?
- What is the percentage improvement over a magnet hospital with improved design? Magnet certification costs about $200K. Questions being asked—do you need this? Cost due to measurements required.
• Is the hospital designed with evidence-based approaches viable in the long term, how do regulations and rules impact the implementation of evidence-based design?

• Regulatory bodies include:
  o JCAHO
  o CDA
  o NCQA
  o CMS

Research Methods and Tools

• How can we best translate research into a usable format?
• How can we better use simulations to predict outcomes?

Pipeline Issues

Healthcare practitioners and designers do not typically interact with researchers on a regular basis. As a result, research may be perceived as having little relevance for practical application or the information that is learned is not always communicated in a way that is meaningful to potential end users. If we are to improve the working conditions of medical staff through improved physical design, we must better understand what types of environments make working in hospitals more rewarding. We must translate research findings into actionable steps that can be taken to enhance design. Additionally, medical staff, hospital decision-makers and designers must also learn how to collect data and feed it back to researchers. There is currently no formal infrastructure in place to support this kind of two-way communication. There is not even agreement yet as to how that infrastructure might be best established. During the break-out sessions, participants identified many issues associate with the pipeline of information among key stakeholders in evidence-based design. These issues have been grouped into the following categories: Research Methods and Tools, Knowledge Management, Improving Education & Awareness, Establishing a Field, and Sources of Funding.

Research Methods and Tools

• We must develop common research metrics and processes.
• Do we know what teamwork is in a healthcare setting? Safety Climate Teamwork, Dr. Bryan Sexton. Should be widely disseminated.
• Look at collaborative research from industry, i.e., several companies do research, GE, IBM, Steelcase, etc.
• How do CEO’s inform directions in research and how are CEO’s affected by researchers?

Knowledge Management

• Need to develop information Repositories (database)
  o Information Resource

3 SURVEYS AND TOOLS: http://www.uth.tmc.edu/schools/med/imed/patient_safety/survey&tools.htm
• Knowledge Transfer
  o Facilitates communication and exchange of information
  o There is a hunger for the right information. How do we get it out there?
  o How do we translate these things to healthcare settings? What is unique about healthcare?
  o Need to focus some attention on the impact of design variables on caregivers during the night and evening shifts.
  o When we take knowledge from industry, etc, how do we make sure that we make the correct translations/transformations for healthcare? Think from the ground up about how we would design—what we would like to have?
• Knowledge dissemination
  o Need champions, people you know nationally. The number one way that people adopt something new is through a credible champion (either personally or nationally), see figure 1.
  o We should develop learning tools for architects and design professionals; also, a credentialing program for architects and other design professionals is being developed.

Figure 1. Credible champion approach

![Credible champion approach diagram](image)

Improving Education & Awareness
• Target Audience
  o Research not just basic scientific method, but also quality improvement approach. To the pipeline, if we look at the elements of the pipeline, we should start with educators - the curriculum.
  o What is the most effective way to bring new design ideas to clinicians?
  o Find out what people read what meetings and conferences they attend and go there.
• Media
  o Publishing opportunities - do we contact existing journals? The *New England Journal of Medicine* should publish healthcare research, etc.
• Business case
We have enough information that is ready for primetime. Refine the business case by testing certain cost saving assumptions, under different performance models.

- How can we integrate that with CNE?
- Get the information into physicians’ hands, e.g. RWJF policy papers.
- *Pay for Performance*[^4], – all of these issues are big at conferences. If we can add in environment and behavior into these.
- What do CEO’s read? What Conferences do they attend? Need to go where the CEO’s meet rather than create a special forum - they will not go to it.

**Mentoring/ Training**

- Develop and explore an interdisciplinary curriculum - nursing, medicine, designers, etc.
- The feasibility of *virtual linkages* – Clemson University and Texas A & M. Action oriented approach is important.
- Certificate program.

**Establishing a Field**

- What do healthcare professionals and students need to know about healthcare design and vice-versa?
- There is no organized infrastructure. It is a fractured relationship.
- Do we need a new community or bolster existing communities? EDRA, CHD etc.
  - Create a name for your community
  - Have planned yearly meetings
  - Create a newsletter
  - Create a journal
- Conduct a study regarding whether to start a new group or latch on to an existing group (e.g., CHD, ANFA, ASHE, AIA, AHA, AMA)
  - Interviews and surveys could be used to identify the need for a new organization, what form should it take, what should be its organizational structure, leadership, etc.?
- Develop a press release
  - A one page policy kind of paper
  - A column in a large journal in every couple of months
  - Special issues, supplements, etc. Get short bursts of things
- Researchers – need to foster interdisciplinary research that is highly usable and applied. Find hospitals that are receptive.
- What do design students need to know about healthcare?

**Sources of funding**

- Need incentives for professors
  - Promotion from assistant to associate professor based on grants

[http://www.iha.org/payfprfd.htm](http://www.iha.org/payfprfd.htm)
• Potential funders include:
  o RWJF
  o AHRQ
  o DANA Foundation
  o Industry (GE, Siemens, Herman Miller, Steelcase, Cerner, HP, 3M)
  o Payors/insurance companies
  o Construction firms
  o Architecture firms
  o NIH
  o NSF
  o DoD
  o Banner
  o Kaiser
  o VA
  o Mayo
  o Sunshine
  o Ascension
  o HCA
  o IHC
  o Triad
  o Vanguard
  o Tenet

**Action Items**

The break-out groups developed a series of action items to pursue and these have been divided into three categories, including: General; Professional Development and Education; and, Research, as listed below.

**General**

- Urgent Change is important
  - We must better understand the feasibility of simulations to evaluate the relationships between physical and social characteristics (culture) on patient outcomes, working conditions and cost.
  - Evaluate the relationships between magnet characteristics and design features (e.g. connecting excellence awards to include measures of evidence based design).
- What are the working conditions that predict burnout and turnover of nursing staff in relation to the physical environment?
- Do not spend time researching things that we do not really need to research – e.g. specific sizes of rooms (identify ranges instead).

**Professional Development & Education**

- Create Hospital Rating System
  - What are criteria?
  - New questions, not old
  - POE – Qualitative/Quantitative
• Identify Universities with potential multi-disciplinary opportunities with programs in Architecture, Medicine, Business, and Healthcare Management.
• Certification for the clients
• Connecting to industry for prime-time, for example, UCSD Connect - Entrepreneur Resource\[^5\]
• Look at the Baldridge Award\[^6\], however, Baldridge is not about patient outcomes but about process improvement. No correlation with their clinical outcomes and the Baldridge award.
• Get the ready business case out to the board room

**Research**

• Need a common research and design process
• Identify common metrics for discussion and research
• Priority research topics (summarized from Group 3- Edward Ronatoski’s group) include:

1. **The physical environment as a direct or indirect variable on** -
   • Staff stress – privacy, noise, lighting, crowding, injuries and infection.
   • Staff behaviors – hunting and gathering, administrative tasks, mentoring time, charting & coding (accuracy, competency), staff injury, compliance (guiding, policy), collaboration with peers, other providers, administrative and management.
   • Variation of patient volume.
   • Training, downtime, respite and relax areas.
   • Shared governance, setting practices, quality resources, establishing protocols and process improvement.
   • Standardized repetitive processes that can be benefit from new technology and reduce redundancies.

2. **Role of environment and staff on delivery of “remote/outstation healthcare and self care”**
   • Knowledge gateway
   • Cross functional information sharing (global and local)
   • Physical environment at remote site – hotel, resort, spa, home, ambulatory
   • Medication delivery system
   • Supply and restock
   • Procedure scheduling and simulation
   • Globalization of healthcare
   • Customer experience and services analogies from industry – tourism, entertainment and veterinary industry
   • Tele-doctor as robots

\[^5\] CONNECT: [http://www.connect.org/](http://www.connect.org/)
• Design your healthcare experience – my healthcare visit and protocols
• Patient food delivery
• Patient education at home
• Transfer the knowledge and tools

Summary

One of the greatest needs identified by the Nurse/Staff Working Conditions break-out groups is the need to translate to the designers and hospital administrators the information currently available about how physical design affects staff outcomes. Of course, there remains much work to be done in order to better understand how to design optimal work environments for staff while providing healthy and pleasing environments for patients and their families. There is still a lack of information about how the environment affects staff behaviors, stress, fatigue and other important outcomes. A current emphasis on decentralized nursing stations, variable acuity patient rooms, single-bed patient rooms, and many other physical design variables will affect hospital culture and the expectations of the nursing staff. Will these effects be positive or negative? How can technology be best used to improve the working environment for medical staff? These types of questions remain unanswered, yet there is a growing interest in understanding how the physical work environment may be used to attract and retain good nurses and other medical professionals. Continued efforts by the participants of the HER Summit to further refine research priorities and take actions to ensure that evidence-based design strategies are implemented in their facilities will advance the field and hopefully ensure that hospitals built and remodeled in the 21st century provide pleasing work environments for medical staff for many years to come.

Figure 2. Staff working conditions model

![Staff working conditions model diagram]