Session 4: Part 2
The Future of Healthcare

Oklahoma Association of Healthcare Engineers
2019 Fall Regional Event
October 11, 2019
The Future of Healthcare

1. MACRO TRENDS
   - Virtual Telemedicine
   - Solving the Problem of Overworked Clinicians
   - Continued Drive for Value

2. CONSTRUCTION TRENDS
   - Lack of Skilled Trade Labor
   - Integrated Design and Construction

3. EVIDENCE-BASED RESEARCH TRENDS
   - Case Study 1: Clemson Operating Room Simulation Study
   - Case Study 2: Critical Access Hospital Study by HFG + KU Health and Wellness Program in the School of Architecture

4. WHAT IS THE FUTURE OF HEALTH CARE DESIGN
   - On-Stage / Off-Stage Design
   - Patient Centered Care and Other Topics
Macro Trends
Virtual Telemedicine

Virtual Care Center at Mercy
Virtual Telemedicine

Kaiser-Permanente: 50% of patient encounters are virtual
Solving the Problem of Overworked Clinicians

➢ Electronic Medical Records not always working well
➢ Shortage of 100,000 physicians
➢ Loss of autonomy related to the explosion of data
Solving the Problem of Overworked Clinicians
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➢ Electronic Medical Records not always working well
➢ Shortage of 100,000 physicians
➢ Potential Solutions:
  ▪ More mid-level providers
  ▪ More virtualization
  ▪ Fewer in-person encounters
  ▪ Spaces designed to give respite and relieve stress and drive for efficiency and collaboration
Continued Drive for Value

➢ The “Drive for Value” as opposed to “Fee for Service” is here to stay
➢ Healthcare is asking the question, “How do we keep people well?”
➢ Social Determinants and Health
  ▪ Homelessness leads to more frequent, more expensive healthcare
  ▪ Lower socioeconomic status leads to poorer quality food
Continued Drive for Value

➢ Community Partnerships
➢ Healthcare providers thinking about how to “bend the curve” on homelessness, poverty and food insecurity as a way to reduce healthcare cost.
➢ Continued push for Wellness
  ▪ We spend just under 20% on healthcare – how are we spending the other 80%?
Construction Trends
Lack of Skilled Trade Labor

➢ Trends:
  ▪ More integrated approaches to design and construction
  ▪ Drive towards pre-fabrication
  ▪ Quality and control conditions

➢ Pressures:
  ➢ Pressure to speed product to market
  ➢ Healthcare construction is more complex than ever
Lack of Skilled Trade Labor

This is the desire of the market:
Lack of Skilled Trade Labor

➢ We are still building like it is 1981.
➢ The time is ripe for transformation.
  ➢ Pre-fabrication
  ➢ Lean Design and Construction Practices
  ➢ Time to make being a “tradesman” a sought-after vocation
Evidence-Based Research Trends
Case Study 1: Clemson Operating Room Simulation Study
Case Study 1: Clemson Operating Room Simulation Study

➢ Observation
Case Study 1: Clemson Operating Room Simulation Study

- Observation

OBSERVATIONS

FLOW DISRUPTIONS
- Usability
- Layout
- Environmental hazard
- Equipment failure
- Interruptions

DOOR OPENINGS
- Door to Sterile Core open
- Door 1 Corridor open
- Door 2 Corridor open
Case Study 1: Clemson Operating Room Simulation Study

➢ Testing Sizing and Layout
Case Study 1: Clemson Operating Room Simulation Study

➢ Work-Flow Analysis
Case Study 1: Clemson Operating Room Simulation Study

➢ Surgical Case Flow Disruptions
Case Study 1: Clemson Operating Room Simulation Study

➢ Infection Control Analysis

BACTERIAL LOAD SAMPLING

Design Guidelines:
Minimize surface and airborne contamination

STUDY AIMS
• Understand how the movement of the patient, equipment, materials, staff and OR door openings affects OR microbial loads at various locations.
• Offer evidence-based guidelines for OR workflow design.

KEY FINDINGS
• Analysis of the air sampling data did not demonstrate differences by location in the bacterial load.
• Higher traffic areas in the OR have a higher microbial load than the lower traffic areas.
• The number of door openings did not have a significant impact.
• All hierarchical regression models of the settle plate CFU identified the sampling timeframe as significant.


VANDERBILT UNIVERSITY
39TH ANNUAL HEALTHCARE DESIGN & CONSTRUCTION SYMPOSIUM
Case Study 1: Clemson Operating Room Simulation Study

➢ Task Switching Analysis

(Task Switching Analysis Diagram with text: Design Guidelines: Optimize movement and flow. Study Aims: Understand how anesthesia providers switch between tasks during maintenance phase. Simulate task-switching to proactively analyze different layouts. Key Findings: Task switches occurred every 3.20 seconds. Patient tasks were primarily performed (30%). EMR tasks consume the second largest proportion of the total surgery time (26.6%). Layouts C and D improved the focus of tasks around the patient, with the majority of lines and line crossings positioned at the head of the patient bed.)
Case Study 1: Clemson Operating Room Simulation Study

➢ The Optimal Sizing and Layout of an OR
Case Study 2: Critical Access Hospital Study by HFG + KU School of Architecture Health and Wellness Program

Current Research looking at areas of recently designed CAH hospitals to study outcomes and for elements of commonality and what has worked and what continues to need to be improved.
Other Resources

➢ Many sources of good research into elements of healthcare environments
➢ Healthdesign.org
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➢ Advisory Board at Advisory.com
On-Stage / Off-Stage Design

➢ Creates ability for staff to work out of the flow
On-Stage / Off-Stage Design
Patient Centered Care – Biophilia and other “touchy-feely” topics architects are known to promote


➢ “So if Physicians across the country are reporting record levels of burnout, we might ask if hospitals are the problem?”
➢ “If you’ve been to a hospital that was built or renovated in the last decade, you know the aesthetic. Muted pastels, potted plants, and plenty of places for patients and their families to occupy themselves. “
➢ “Many people, when they walk in the ground floor, they say they don’t feel like they’re in a hospital,” bragged one planner. “It’s a grand space, the lobbies, the circular openings through the lower levels, nothing says ‘hospital’ there.”
➢ “Bromley notes that ‘architects built few conference rooms and lounges, leaving little room for physicians and nurses to congregate.’"
Patient Centered Care – Biophilia and other “touchy-feely” topics architects are known to promote


- “Several of the administrators and architects speak glowingly of “the Disneyland concept,” where all the messy parts are hidden “to generate a seamless fantasy world.”

- “Let’s be clear. Healthcare that does not look like healthcare is not healthcare — it is a sort of theatre created to distract an audience of anxious patients. It doesn’t serve their interests. It’s a funhouse mirror vision of patient-centred care, where it’s more important to pretend you’re not sick than to be properly treated.”
Patient Centered Care – Biophilia and other “touchy-feely” topics architects are known to promote


➢ “Business teamwork studies, including one by ahem, the Disney Institute, recognize that collegiality between colleagues is a necessary ingredient for team success.”

➢ “I remember one of my attendings once saying, as he flipped a series of switches in vain seeking a light to illuminate the patient’s bed from above, that people who design hospitals should be punished by being treated in them.”
Patient Centered Care – Biophilia and other “touchy-feely” topics architects are known to promote


➢ “Want to raise the ire of healthcare architects worldwide? Then publish an opinion piece titled “How architects ruined healthcare” on Toronto’s *The Globe and Mail* newspaper website. Judging from my colleagues’ responses on social media, this piece really hit a nerve…”

➢ “This particular hospital administration chose to hyper-prioritize patient-centeredness through the “Disney Effect” of all clinical spaces being off-stage.

➢ “Citing this one 10-year-old study, Dr. Landy states in his op-ed that “Modern hospitals are specifically designed to eliminate collegiality.”
Patient Centered Care – Biophilia and other “touchy-feely” topics architects are known to promote


➢ “Instead, I see today’s healthcare designers and clients seeking a more balanced, research-based approach, recognizing patient-centered care means bringing caregivers closer to patients and that supporting a team-based approach is the future of healthcare…”

➢ “Apparently, Dr. Landy isn’t familiar with the studies that have shown the healing effect of nature, positive distractions, and family support in reducing patient pain and anxiety, which ultimately could improve patients’ medical conditions.”
Patient Centered Care – Biophilia and other “touchy-feely” topics architects are known to promote


➢ “One intriguing issue I found is his op-ed was the comment that physically hiding the “messy part” of healthcare devalues medical professionals.”

➢ “Understanding staff psychology is an important factor in hospital design, especially as their own health and well-being is threatened. Longer hours, increased documentation requirements, and the stress of ever more medically complex patients are contributing to staff burnout.”

➢ “Despite Dr. Landy’s strident tone, as healthcare designers we need to listen to and unbundle the concerns of all constituents, especially as medicine transforms.”
Patient Centered Care – Biophilia and other “touchy-feely” topics architects are known to promote


➢ “Finally, Dr. Landy asks, ‘Is this place built to make us healthy—or to distract us from thinking about our health?’ I don’t believe the two are mutually exclusive. People, process, and place must all support care delivery, the patient’s recovery and emotional well-being, and family involvement in a balanced approach….“
Contact Information

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