



RESEARCH IN A SNAP

OVERVIEW

We're keeping you updated on citations added to The Center's Knowledge Repository.

The Knowledge Repository is a collaborative effort between The Center for Health Design and our partners

Academy of
Architecture for Health
an AIA Knowledge Community



Design for Aging
an AIA Knowledge Community



Additional key point summaries provided by



RESEARCH DESIGN
CONNECTIONS

Knowledge Repository News

Of the new entries to the Knowledge Repository, several papers are related to the development of design and evaluation methods. Three newer papers on this topic discuss the expanding application of building information modeling (BIM) in design and research processes. A literature review by Jabalamel and colleagues (2019) explores issues related to renovation projects, and how the use of BIM can help teams to store a wide range of information and reduce waste of hospital resources. Thomson and colleagues (2019) explore potential use of BIM to support facilities management – including user experience – in large healthcare projects. See all the latest additions in the Design and Evaluation section.

(Papers published ahead of print “in press” will be updated as volume and page information becomes available.)

March - April 2019

Experience

Perceived Quality of Care (Noise, Communication, Waiting, etc.)

1. Anåker, A., Von Koch, L., Sjöstrand, C., Heylighen, A., & Elf, M. (2018). The physical environment and patients' activities and care: A comparative case study at three newly built stroke units. *Journal of Advanced Nursing*, 74(8), 1919–1931. <https://doi.org/10.1111/jan.13690>
2. Bliefnick, J. M., Ryherd, E. E., & Jackson, R. (2019). Evaluating hospital soundscapes to improve patient experience. *The Journal of the Acoustical Society of America*, 145(2), 1117–1128. <https://doi.org/10.1121/1.5090493>
3. Huynh, T.-G., Owens, R. L., & Davidson, J. E. (2019). Impact of built design on nighttime family presence in the Intensive Care Unit. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719836287>
4. Huffenberger, A. M., Stamm, R., & Martin, N. D. (2019). Tele-ICU Patient Experience: Focus on Family-Centered Care. In M. A. Koenig (Ed.), *Telemedicine in the ICU* (pp. 177–195). https://doi.org/10.1007/978-3-030-11569-2_10
5. Idris, M. M., & Sibley, M. (2019). What are users' perceptions of the hospital courtyard garden and how satisfied are they with it? *Asian Journal of Environment-Behaviour Studies*, 4(13), 60–76. <https://doi.org/10.21834/aje-bs.v4i13.348>



6. Montes-González, D., Barrigón-Morillas, J. M., Gómez Escobar, V., Vílchez-Gómez, R., Rey-Gozaló, G., Atanasio-Moraga, P., & Méndez-Sierra, J. A. (2019). Environmental noise around hospital areas: A case study. *Environments*, 4(4), 41. <https://doi.org/10.3390/environments6040041>
7. Morhayim, L. (2019). Visitors' use of corridors in internal medicine wards: Modalities of territoriality, proxemics, and privacy while waiting. *Facilities*, 37(5/6), 313–329. <https://doi.org/10.1108/F-01-2018-0024>
8. Walker, L., & Karl, C. A. (2019). The hospital (not so) quiet zone: Creating an environment for patient satisfaction through noise reduction strategies. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719839229>
9. Zijlstra, E., Hagedoorn, M., Krijnen, W. P., van der Schans, C. P., & Mobach, M. P. (2019). The effect of a non-talking rule on the sound level and perception of patients in an outpatient infusion center. *PLOS ONE*, 14(2), 1–15. <https://doi.org/10.1371/journal.pone.0212804>

Staff Focused (Communication, Efficiency, Satisfaction, etc.)

10. Aalto, L., Sirola, P., Kalliomäki-Levanto, T., Lahtinen, M., Ruohomäki, V., Salonen, H., & Reijula, K. (2019). User-centric work environments in modular healthcare facilities. *Engineering, Construction and Architectural Management*, in press. <https://doi.org/10.1108/ECAM-04-2018-0169>
11. Gharaveis, A., Hamilton, D. K., Shepley, M., Pati, D., & Rodiek, S. (2019). Design suggestions for greater teamwork, communication and security in hospital emergency departments. *Indoor and Built Environment*, in press. <https://doi.org/10.1177/1420326X19836209>
12. Gharaveis, A., Shepley, M. M., Hamilton, K., Pati, D., & Rodiek, S. (2019). The influence of visibility on staff face-to-face communication and efficiency in emergency departments. *Facilities*, 37(5/6), 352–363. <https://doi.org/10.1108/F-07-2018-0077>
13. Karp, Z., Kamnetz, S., Wietfeldt, N., Sinsky, C., Molfenter, T., & Pandhi, N. (2019). Influence of environmental design on team interactions across three family medicine clinics: Perceptions of communication, efficiency, and privacy. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719834729>
14. Terzi, B., Azizoğlu, F., Polat, Ş., Kaya, N., & İşsever, H. (2019). The effects of noise levels on nurses in intensive care units. *Nursing in Critical Care*, in press. <https://doi.org/10.1111/nicc.12414>

Supportive Design (Social Support, Distractions, Nature, etc.)

15. Lim, B., Rogers, Y., & Sebire, N. (2019). Designing to Distract: Can Interactive Technologies Reduce Visitor Anxiety in a Children's Hospital Setting? *ACM Transactions on Computer-Human Interaction (TOCHI)*, 26(2), 9:1–9:19. <https://doi.org/10.1145/3301427>
16. Sjölander, A., Jakobsson Ung, E., Theorell, T., Nilsson, Å., & Ung, K.-A. (2019). Hospital design with nature films reduces stress-related variables in patients undergoing colonoscopy. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719837754>



Safety

Infection Prevention/Control

17. Chen, P.-Y., Kung, L.-C., Tsai, W., Chien, D.-K., & Chang, W.-H. (2019). The potential risk of sick building syndrome of the emergency department areas in a medical center in Taiwan. *Health Technology*, *3*(3), 1–10.
18. Ghani, U., Assad, S., Sulehria, T., & Arif, I. (2016). Hospital curtains: An undermined source of nosocomial infections. *Indian Journal of Critical Care Medicine : Peer-Reviewed, Official Publication of Indian Society of Critical Care Medicine*, *20*(7), 432–433. <https://doi.org/10.4103/0972-5229.186263>
19. Jacob, S., Yadav, S. S., & Sikarwar, B. S. (2019). Design and Simulation of Isolation Room for a Hospital. In P. Saha, P. M. V. Subbarao, & B. S. Sikarwar (Eds.), *Advances in Fluid and Thermal Engineering* (pp. 75–93). Springer Singapore.
20. Jo, S., Hong, J., Lee, S.-E., Ki, M., Choi, B. Y., & Sung, M. (2019). Airflow analysis of Pyeongtaek St Mary's Hospital during hospitalization of the first Middle East respiratory syndrome patient in Korea. *Royal Society Open Science*, *6*(3), 1–14. <https://doi.org/10.1098/rsos.181164>
21. Mody, L., Washer, L. L., Kaye, K. S., Gibson, K., Saint, S., Reyes, K., ... Zervos, M. (2019). Multidrug-resistant Organisms in Hospitals: What Is on Patient Hands and in Their Rooms? *Clinical Infectious Diseases*, in press. <https://doi.org/10.1093/cid/ciz092>
22. Moreno, G. S.-B., Sanz-Calcedo, J. G., & Romero, A. C. M. (2019). Influence of air velocity on indoor environment quality in unidirectional flow operating theatres: A study based on Computational Fluid Dynamics. In M. C. Balan, F. Bode, C. Croitoru, A. Dogeanu, A. Georgescu, C. Georgescu, ... M. Sandu (Eds.), *E3S Web of Conferences* (Vol. 85, pp. 1–5). <https://doi.org/10.1051/e3sconf/20198502003>
23. Shek, K., Patidar, R., Kohja, Z., Liu, S., Gawaziuk, J. P., Gawthrop, M., ... Logsetty, S. (2018). Rate of contamination of hospital privacy curtains in a burns/plastic ward: A longitudinal study. *American Journal of Infection Control*, *46*(9), 1019–1021. <https://doi.org/10.1016/j.ajic.2018.03.004>
24. Stawicki, S. P., Brisendine, C., Levicoff, L., Ford, F., Snyder, B., Eid, S., & Worrirow, K. C. (2019). Comprehensive and live air purification as a key environmental, clinical, and patient safety factor: A prospective evaluation. *Vignettes in Patient Safety*, *4*, 1–18. <https://doi.org/10.5772/intechopen.84530>
25. Squire, M. M., Igusa, T., Siddiqui, S., Sessel, G. K., & Squire, E. N. (2019). Cost-effectiveness of multifaceted built environment interventions for reducing transmission of pathogenic bacteria in healthcare facilities. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719833360>
26. Woodard, D. R., Buttner, M., Cruz, P., & Roeder, J. (2018). Microbial contamination of privacy curtains in the emergency department of a metropolitan hospital. *Journal of Hospital Infection*, *100*(3), e153–e154. <https://doi.org/10.1016/j.jhin.2018.06.018>



27. Zerbib, S., Vallet, L., Muggeo, A., de Champs, C., Lefebvre, A., Jolly, D., & Kanagaratnam, L. (2019). Copper for the Prevention of Outbreaks of Health Care–Associated Infections in a Long-term Care Facility for Older Adults. *Journal of the American Medical Directors Association*, in press. <https://doi.org/10.1016/j.jamda.2019.02.003>

Medication Safety

28. Aarts, M. P. J., Craenmehr, G., Rosemann, A. L. P., van Loenen, E. J., & Kort, H. S. M. (2019). Light for patient safety: Impact of light on reading errors of medication labels. *International Journal of Industrial Ergonomics*, *71*, 145–154. <https://doi.org/10.1016/j.ergon.2019.03.004>

Patient Handling/Mobility

29. Pickup, L., Nugent, B., & Bowie, P. (2019). A preliminary ergonomic analysis of the MRI work system environment: Implications and recommendations for safety and design. *Radiography*, in press. <https://doi.org/10.1016/j.radi.2019.04.001>

Care across the Lifespan

Elders/Aging

30. Ergin, E., & Yücel, Ş. Ç. (2019). The Effect of Music on the Comfort and Anxiety of Older Adults Living in a Nursing Home in Turkey. *Journal of Religion and Health*, in press. <https://doi.org/10.1007/s10943-019-00811-z>

Cognitive Impairment & Dementia

31. Blandfort, S., Gregersen, M., Rahbek, K., Juul, S., & Damsgaard, E. M. (2019). Single-bed rooms in a geriatric ward prevent delirium in older patients. *Aging Clinical and Experimental Research*, in press. <https://doi.org/10.1007/s40520-019-01173-y>
32. Fetherstonhaugh, D., Haesler, E., & Bauer, M. (2019). Promoting mealtime function in people with dementia: A systematic review of studies undertaken in residential aged care. *International Journal of Nursing Studies*. <https://doi.org/10.1016/j.ijnurstu.2019.04.005>
33. Landi, D., & Smith, G. (2019). The implications of a new paradigm of care on the built environment. The Humanitas© Deventer model: Innovative practice. *Dementia*, in press. <https://doi.org/10.1177/1471301219845480>

Building Systems and Technology

34. Gao, X., & Pishdad-Bozorgi, P. (2019). BIM-enabled facilities operation and maintenance: A review. *Advanced Engineering Informatics*, *39*, 227–247. <https://doi.org/10.1016/j.aei.2019.01.005>
35. García-Sanz-Calcedo, J., Gómez-Chaparro, M., & Sanchez-Barroso, G. (2019). Electrical and thermal energy in private hospitals: Consumption indicators focused on healthcare activity. *Sustainable Cities and Society*, *47*, in press. <https://doi.org/10.1016/j.scs.2019.101482>



36. Olmedo, I., Berlanga, F. A., Villafruela, J. M., & Ruiz de Adana, M. (2019). Experimental variation of the personal exposure in a hospital room influenced by wall heat gains. *Building and Environment*, 154, 252–262. <https://doi.org/10.1016/j.buildenv.2019.03.008>
37. Matarneh, S. T., Danso-Amoako, M., Al-Bizri, S., Gaterell, M., & Matarneh, R. (2019). Building information modeling for facilities management: A literature review and future research directions. *Journal of Building Engineering*, in press. <https://doi.org/10.1016/j.jobbe.2019.100755>
38. Sánchez-Barroso, G., & Sanz-Calcedo, J. G. (2019). Evaluation of HVAC Design Parameters in High-Performance Hospital Operating Theatres. *Sustainability*, 11(5), 1–16. <https://doi.org/10.3390/su11051493>

Design & Evaluation (e.g., Process, Methods, Simulation Modeling)

39. Brambilla, A., & Capolongo, S. (2019). Healthy and sustainable hospital evaluation—A review of POE tools for hospital assessment in an evidence-based design framework. *Buildings*, 9(4), 76. <https://doi.org/10.3390/buildings9040076>
40. Carthey, J. (2019). Interdisciplinary user groups and the design of healthcare facilities. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719843877>
41. Durham, J., & Kenyon, A. (2019). Decentralized nurse stations: A methodology for using research to guide design decisions. *HERD: Health Environments Research & Design Journal*. <https://doi.org/10.1177/1937586719842356>
42. Fatayer, F. A., Hassanain, M. A., Abdallah, A., & Al-Hammad, A.-M. (2019). Investigation of facilities management practices for providing feedback during the design development and review stages. *International Journal of Building Pathology and Adaptation*, in press. <https://doi.org/10.1108/IJBPA-05-2018-0040>
43. Greenhalgh, T., Hinton, L., Finlay, T., Macfarlane, A., Fahy, N., Clyde, B., & Chant, A. (2019). Frameworks for supporting patient and public involvement in research: Systematic review and co-design pilot. *Health Expectations*, in press. <https://doi.org/10.1111/hex.12888>
44. Grzywinski, M., Carlisle, S., Coleman, J., Cook, C., Hayden, G., Pugliese, R., ... Ku, B. (2019). Development of a novel emergency department mapping tool. *HERD: Health Environments Research & Design Journal*. <https://doi.org/10.1177/1937586719842349>
45. Jabalamel, M. A., Saghatforoush, E., & Nikooravan, H. A. (2019). Evaluating the need to recognize and measure the reduction of duplications in the hospital spaces reform projects using building information modeling. *Advance Researches in Civil Engineering*, 1(1), 15–24.
46. Lim, L., Kim, M., & Zimring, C. M. (2019). Measuring interpersonal visual relationships in healthcare facilities: The agent visibility model and SAVisualPower tool. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719842357>



47. Lipson-Smith, R., Churilov, L., Newton, C., Zeeman, H., & Bernhardt, J. (2019). A framework for designing inpatient stroke rehabilitation facilities: A new approach using interdisciplinary value-focused thinking. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719831450>
48. Sherman, J. P., Hedli, L. C., Kristensen-Cabrera, A. I., Lipman, S. S., Schwandt, D., Lee, H. C., ... Care, S. L. L. for N. and M. (2019). Understanding the heterogeneity of labor and delivery units: Using design thinking methodology to assess environmental factors that contribute to safety in childbirth. *American Journal of Perinatology*, in press. <https://doi.org/10.1055/s-0039-1685494>
49. Thomson, G., Lindahl, G., Shemery, A., Roupé, M., Hampson, K., & Johansson, M. (2019). BIM related innovation in healthcare precinct design and facilities management. In *Emerald Reach Proceedings Series: Vol. 2. 10th Nordic Conference on Construction Economics and Organization* (Vol. 2, pp. 455–462). <https://doi.org/10.1108/S2516-285320190000002036>
50. Torres-Landa, S., Neylan, C., Quinlan, K., Klock, C., Jefferson, C., Williams, N. N., ... Dumon, K. R. (2019). Interprofessional Simulations to Inform Perioperative Facility Planning and Design. *Journal of Surgical Education*, *76*(1), 223–233. <https://doi.org/10.1016/j.jsurg.2018.06.016>

Other

51. Dixit, M. K., Singh, S., Lavy, S., Yan, W., Pariafsai, F., & Ostadalimakhmalbaf, M. (2019). Floor Finish Selection in the Design of Healthcare Facilities: A Survey of Facility Managers. *Facilities*, in press. <https://doi.org/10.1108/F-04-2018-0047>