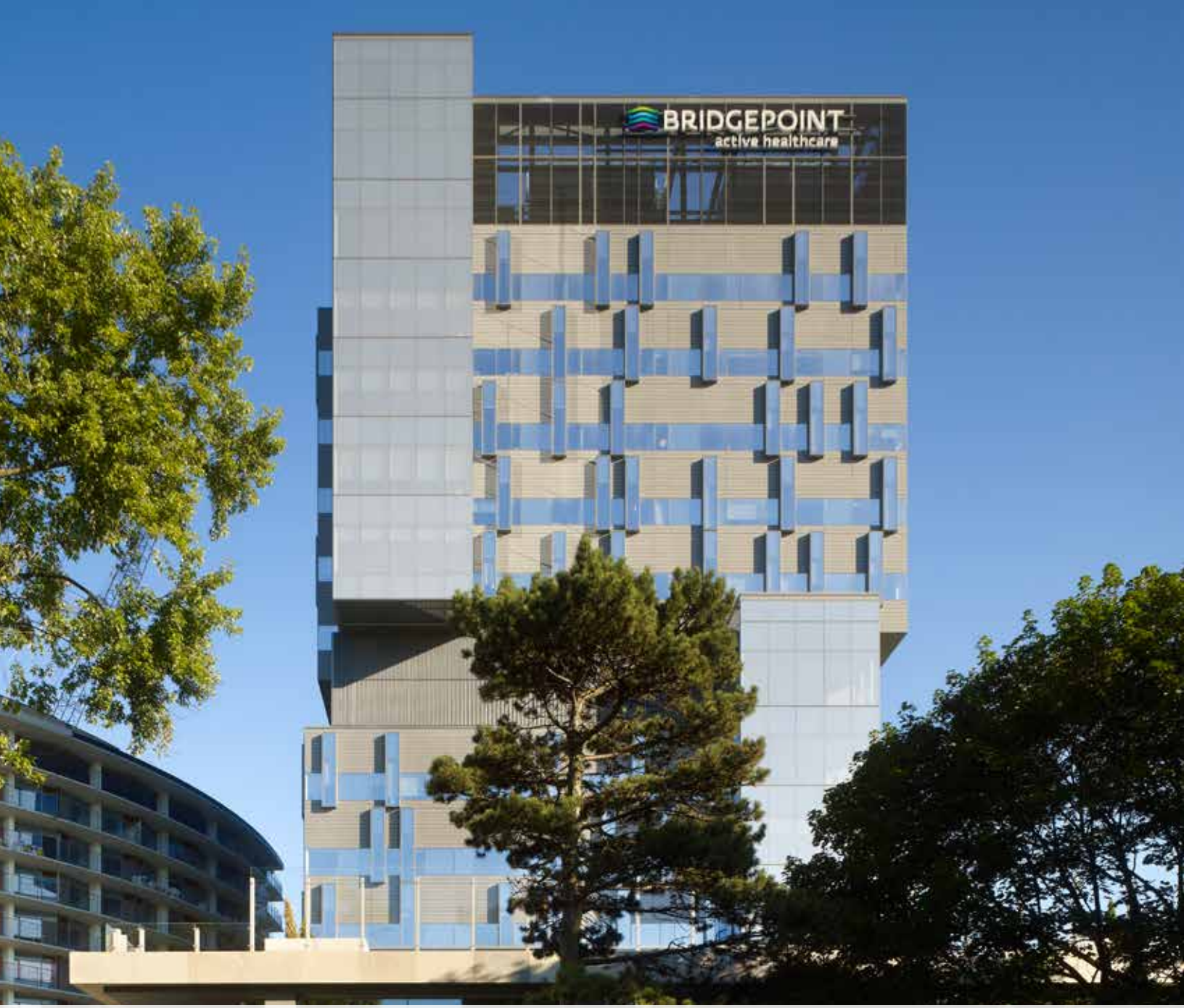

Design and Evaluation: The Path to Better Outcomes.

A Preliminary Report on the Bridgepoint Active Healthcare Pre- and Post Occupancy Evaluation.

Celeste Alvaro, PhD
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BRIDGEPOINT active healthcare

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Team Acknowledgements

Lead Researcher:

Dr. Celeste Alvaro, Research Scientist at the Bridgepoint Collaboratory for Research and Innovation.

Dr. Alvaro holds a Ph.D. in experimental social psychology from Simon Fraser University (2004). Upon completing her doctoral studies, she pursued a three-year post-doctoral fellowship at the Atlantic Health Promotion Research Centre, Dalhousie University where she coordinated a multi-centre grant examining settings, communities, and the built environment. She then held a two-year limited term position as Assistant Professor (Research) in the Faculty of Health Professions at Dalhousie University. She was based at the Atlantic Health Promotion Research Centre (AHPRC), with a secondment to Public Health Services, Capital District Health Authority to lead research development and research capacity building activities. In January 2011, Celeste was recruited as a Research Scientist to lead a program of research on architecture and health at the Bridgepoint Collaboratory for Research and Innovation, Bridgepoint Active Healthcare. Celeste holds an appointment as Adjunct Professor in the Department of Architectural Science at Ryerson University as of September 2011.

In building her team for this project Dr. Alvaro's objective was to create a distinguished group consisting of academic researchers, high level decision makers, principal architects in the field of health care facility design, and health care directors.

The team members have been actively involved in all phases of the research from early conceptualization to research design and measure development, and in the creation of the knowledge translation plan. This plan recognizes the importance of promoting and sharing the research findings, recommendations and best practices for the benefit of both private and public sectors, and ultimately for improving patient care.

The Health Capital Investment Branch of the Ontario Ministry of Health and Long-Term Care approved $318,872 in ancillary project funding to support the post occupancy evaluation of the new Bridgepoint Hospital. The funds were requested in the Bridgepoint Health Redevelopment Final Estimate Cost (FEC), supported by a business case. These funds were successfully leveraged as partnered funding to secure an additional $504,018 for this program of research via a CIHR Partnerships for Health System Improvement grant.

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Research Trainees and Collaborators:

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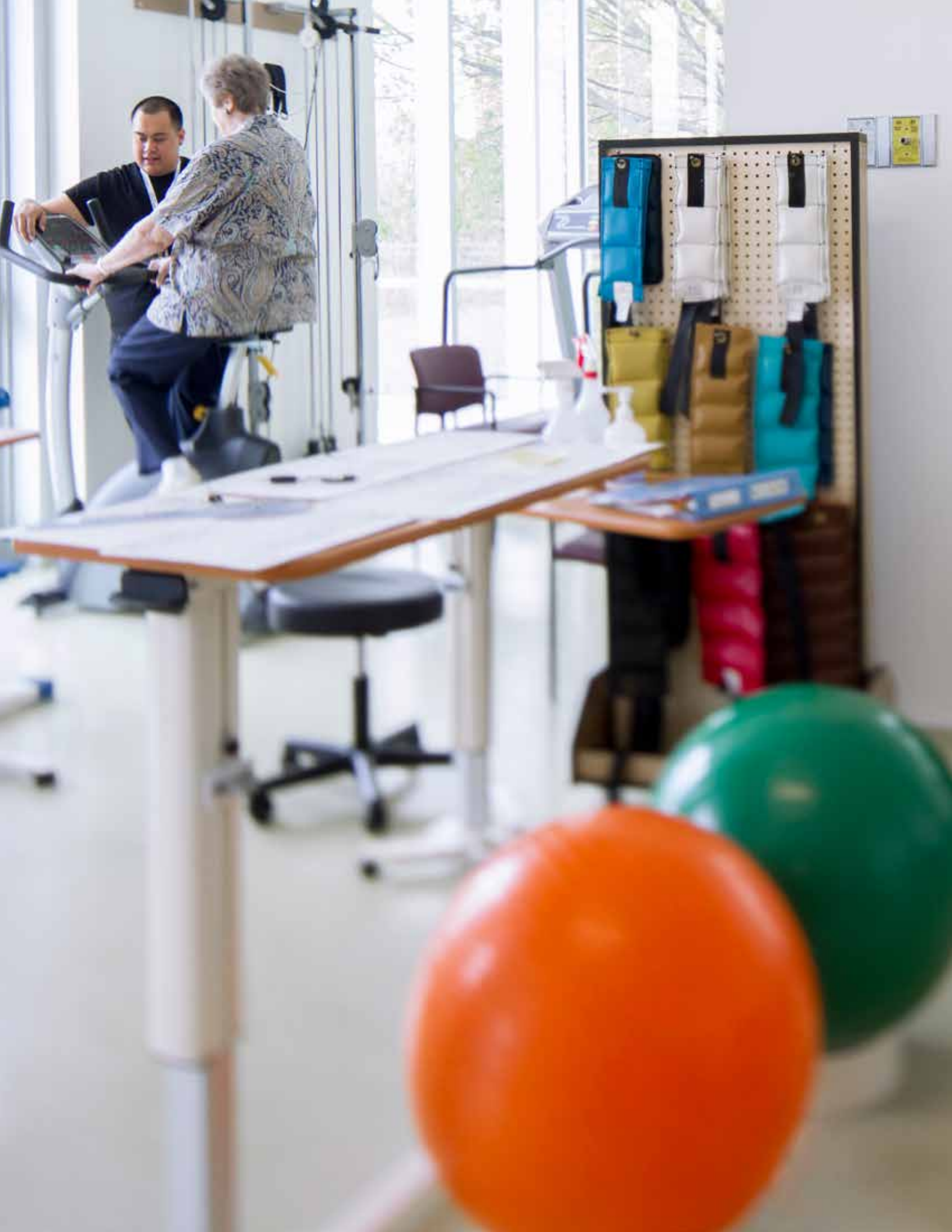

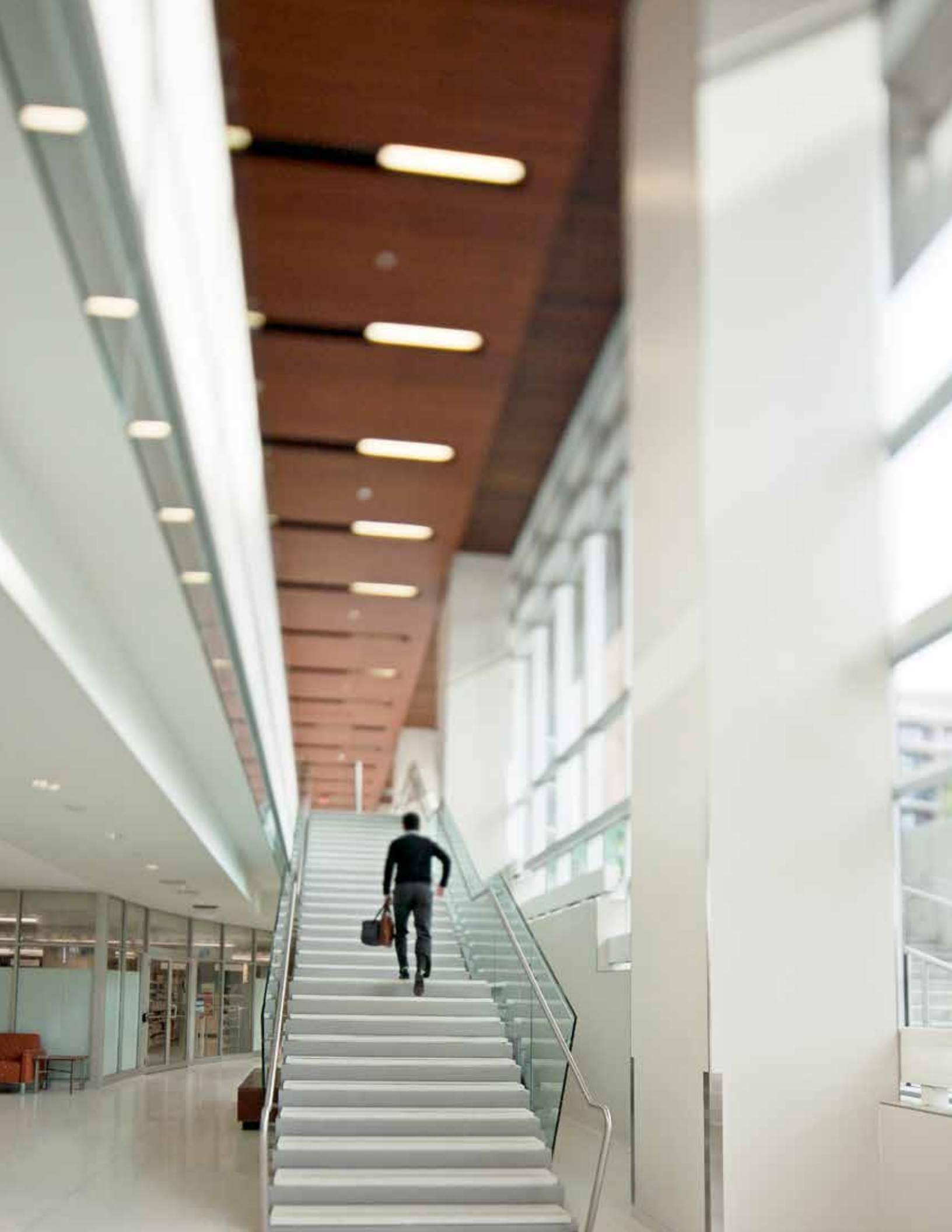

Executive Summary

Introduction and Rationale

Managing and treating patients with complex chronic disease is arguably the most pressing healthcare challenge of our generation. Extraordinary advances in acute care have led to the creation of a patient population that is living longer and living with multiple health conditions. The advances of modern medicine, coupled with the population demographics of the baby boom era, clearly illustrate that the complex rehabilitation and continuing care patient population will continually grow.

A significant concern in responding to this challenge is the inadequate infrastructure to support chronic disease management across Ontario. The present day hospital infrastructure is based on the acute care model. However, building more acute care facilities cannot be the answer to managing and treating patients with multiple complex health conditions. Better design, both in hospital infrastructure and in patient programming, is the optimum way to ensure the proper delivery of care for patients with chronic disease. We need to invest wisely and ensure that what we build will work. The dilemma is that very little empirical evidence exists on how building design can foster better health outcomes for a population that typically represents extensive clinical challenges, high costs, and care burdens for the system and Canadian families.

The Opportunity: A New Bridgepoint Hospital

The focus of the study is the new Bridgepoint Hospital that opened in April 2013. The central design intentions of Bridgepoint Hospital were to enhance a patient's connection to the community, nature and urban environment and to include features that will increase social interaction and inspire physical activity. The design intentions were to be accomplished with the introduction of a series of innovative features that included: meaningful views of the city skyline, Riverdale Park and surrounding community, communal dining spaces, multiple outdoor destinations, and the abundance of natural daylight.

The central idea was that the collection of design features would eliminate the psychological obstacles to healing, boost spirits and morale and motivate patients to re-engage in life. The research concentrated on assessing whether or not these design elements achieved their intended outcomes and objectives.

Bridgepoint Hospital is the newest purpose built facility to cater to patients with multiple health conditions and those in need of rehabilitation. The new hospital replaced a deteriorating facility that was built in 1963. At the time it was designed and built to cater to a different patient population than it was treating when the facility closed in April 2013. Although it has now been demolished, the distinct half round hospital plays an important role in the research project. The opportunity of collecting and comparing data from the two Bridgepoint Hospital facilities allowed for a unique research design that provides greater ability to attribute outcomes to design.

Feature staircase to main floor, Tom Arban



Tom Arban

The Methodological Approach

The data collected for this post occupancy evaluation (POE) are sourced from three facilities, a pretest sample of patients and staff at the old half round Bridgepoint Hospital to be analyzed in comparison to posttest samples of patients and staff from the new Bridgepoint Hospital. A third location, West Park Healthcare Centre, acts as a control site: the pre and post data collected from this location will be analyzed against the data collected from the two Bridgepoint Hospital facilities.

The typical Bridgepoint patient is in their mid sixties and they are living with approximately five complex health conditions, such as diabetes, cancer, arthritis and are in need of neurological or musculoskeletal rehabilitation. Although the specific illnesses vary, commonalities typically exist in the physical symptoms such as, pain, weakness, daily living restrictions in terms of mobility and activity, depression and mental health symptoms.

An important element of this study was to find the most compatible hospital and patient population to act as a control site. Based on a variety of factors West Park Healthcare Centre was selected. It is a public hospital in Toronto that offers specialized rehabilitation, complex continuing and long term care services. In an effort to improve compatibility with Bridgepoint, only a targeted group of West Park patients were included in the data collection phase. This group was the most similar to the patient population at Bridgepoint and facilitated a more realistic comparison.

Quantitative and qualitative methods were used to collect the data. Patient and staff surveys measured impressions of the hospital design with questions that gauged: how connected they feel with the community, city or neighbourhood; if they considered the facility as a place of wellness; did they feel isolated or are there ample opportunities to socialize with others; what areas in the hospital do they visit and how often, impressions of these areas; and what they do in these spaces. These findings are shared in this preliminary report. The surveys also measured patient satisfaction, workplace satisfaction, depressive symptoms, general well-being, optimism. Along with patient and staff characteristics, those findings will be provided in the final report that is scheduled to be released at the end of this year.

The qualitative methods were used to better understand the context of usage. Using naturalistic observation researchers covertly monitored patterns of behaviour and recorded how staff and patients used the different hospital spaces and how they interacted with each other. More overt techniques included go-along interviews, where a researcher follows a test subject and interviews them while they are going about their daily routine.

Bridgepoint POE Outcomes: Noteworthy Highlights of the User Experience

Staff impressions of the new Bridgepoint Hospital proved to be consistent with the overall design intentions as a place of wellness. Staff felt safe, comfortable, cheerful



and connected to the natural surroundings, neighbourhood and city. There were two areas where staff impressions were not consistent with the overall design intentions. Staff responded less favourably to questions concerning wayfinding and opportunities to visit with others.

Patient impressions of the new Bridgepoint Hospital were more favourable than those at the former Bridgepoint Hospital. It was expected that they would feel more connected to the neighbourhood, however given that the pathways and other design features are not in place, it is anticipated that these impressions would change once the entire redevelopment has been completed. As expected, there were no differences at West Park Healthcare Centre pre and post.

Patients' sense of belonging to the city, neighbourhood, and nature is elevated at the new Bridgepoint relative to the former facility. Whereas patients expressed greater connection to nature at West Park relative to the former facility, no differences were found between the new Bridgepoint and West Park. A sense of belonging to the city and neighbourhood were higher for patients at the new Bridgepoint facility relative to West Park.

Recommendations

The POE of Bridgepoint Hospital is one of the largest ever conducted for a healthcare facility in Canada. The findings not only provide us with an invaluable roadmap on understanding what design elements have the greatest impact on health outcomes, but it also establishes a process on how to execute future POEs on any healthcare or public facility. The following are a series of recommendations that address the importance of POEs and how they should be conducted.

I. A systematic approach to POE

Post occupancy evaluations need to be mandatory and standardized for all hospital infrastructure projects

Billions of dollars have already been earmarked for future hospital redevelopment projects, and as with any sizable financial commitment, investors are always trying to identify the potential return on their investment. It is vital that we move beyond the simplistic evaluation of whether a project was built on time and on budget. These are two very important factors to a redevelopment project but it does not tell the entire story. It is time to embrace a more innovative approach to evaluating these capital investment projects. It is important to understand what design features work best for the different user profiles and to draw on past experiences and identify what design features - both intended and unintended - were successful, and what design features required further support and animation before their objectives were achieved. These findings can only be discovered through post occupancy evaluations. The same framework, methods and metrics should be used to harvest the data and the same format should be used to present the data.



Tom Arban

Post occupancy evaluation information and outcomes need to be stored in a database

A consistent approach would facilitate the proper integration of information in a database containing information collected from previous POEs.

Over a period of time this valuable resource would be able to generate statistical comparisons across projects and increase our knowledge of what designs work and who experiences the greatest benefit - patients, staff or the community. It would offer the added advantage of being able to cross reference the type of facility - acute care hospital, emergency room, mental health facility, rehabilitation centre or a complex continuing care centre.

Many stakeholders would benefit from the creation of a database sustained by the incorporation of POE data – researchers, academics, students, designers, clinicians, patient advisory groups, and most importantly it would provide ongoing research evidence and assist with the decision making process on capital investment projects at the Ministry of Health and Long-Term Care.

The selection of independent third party evaluators

In order to guarantee the integrity of the data, the evaluators must have research expertise in methods and measurement, superior data analysis skills, research ethics that are beyond reproach and a sizeable human resources network that is capable of conducting the field research.

Furthermore, the most essential factor is that the evaluators are unbiased and lack a vested interest in the outcome. An established partnership with the hospital under study and the architects responsible for facility design is essential to the POE. However, a fundamental concept in evaluation research is to ensure that it is conducted by an independent third party that is not beholden to the hospital or architectural firm.

Post occupancy evaluators are to be included from the onset of the redevelopment project

Although it is a post occupancy evaluation, pre-move and post-move assessments are required to better establish a cause and effect relationship between architectural design and health outcomes. Moreover, it is essential that the evaluators are present and active from the inception.

The methods and tools that have been developed can be used in these early planning and design stages of redevelopment. This process will capture patient, staff and stakeholder experiences, an insight that will better shape and identify the optimal design outcomes. Simply by participating as a control site, the West Park Healthcare Centre's redevelopment project will gain invaluable data that will help shape their final redevelopment plans.

This stage of the design process will only increase in significance, as the new requirements in Requests for Proposals (RFPs) from Infrastructure Ontario mandate user experience in addition to POE as required research. Therefore, involvement of researchers in the early phases of design is as important as their involvement in the POE.

Allow for easier access to patients

Every research project requires test subjects. One of the most challenging issues with the implementation of the POE was the recruitment of patients. There would be many advantages to improving the process in how researchers can access and invite patients to participate in the study. A set of administrative changes would have a profound impact on the overall implementation of the POE. Time and money would be saved resulting in a greater number of patients participating in the study.

The suggested administrative changes could be incorporated into the admitting process where patients could opt into the research study and provide their consent. The research group would then be provided with the patient profile and determine their eligibility to participate. If all of the criteria are met and the patient is deemed eligible, hospital staff working in cooperation with patient care managers and therapists would book a time for them to conduct the survey. At the predetermined time the researcher and, if needed, a volunteer translator would arrive and complete the survey.

Standardize the financial sustainability of POEs

In addition to standardizing the evaluation methods, archiving of the research findings in a database and developing a consistent protocol for the recruitment of research participants, it is paramount that the financial sustainability of POEs be ensured. A funding formula can be incorporated into the request for proposals (RFP) process with the various stakeholders involved in the design, build and maintenance of the facility being responsible for contributing their equitable share into a POE fund.

Financing for this project was tied to the hospital's redevelopment budget and as a consequence the POE was conducted under a very condensed timeline, beginning shortly after the opening of the hospital. Traditionally, POEs are conducted at least a year after a facility has been occupied or deemed fully operational.

This tight timeline impacted the timing of the pre and post interviews at the control site – West Park Healthcare Centre – where the second data collection period occurred within six months of initial data collection. Ideally, the pre and post interviews would have been completed a year apart.

II. Design feature recommendations based on the user experience in the Bridgepoint POE

It was envisioned that the collection of design features would eliminate the psychological obstacles to healing, boost spirits and morale, and motivate patients to re-engage in life. The following are three design recommendations that are based on the findings of our POE.

Patients need a view of their own

The findings illustrate that patients thoroughly enjoy the meaningful views in the hospital. It is of significant importance when we consider the access to natural sunlight and meaningful views in a patient's room. It is recommended that future hospitals be designed following the Bridgepoint model, where each patient whether in a private or semi-private room and regardless of whether or not the privacy drapes are drawn be positioned to ensure a direct siteline to the outdoors.



Tom Arban

Quality outdoor spaces, not quantity

Outdoor spaces are very popular but the results are showing that the quality of the space is more important than the quantity of spaces that are available to patients and staff.

In addition to meaningful views and access to nature, outdoor destinations require a certain level of animation to attract users. The spaces require furniture to encourage patients, staff, and visitors to gather, and some element of hospital or social programing. Moving forward, it is recommended that quality outdoor spaces be included in hospital designs and that they are supported with proper levels of animation and positioned in locations that have agreeable environmental conditions.

Social spaces need to be strategically located by hubs of activity

The social areas that have demonstrated high volumes of usage are the cafeteria and the seating areas located by the entrance to the hospital. The cafeteria is a location that serves a variety of uses over and above food consumption, and the diversity of the user groups is remarkable. In this space, senior hospital leadership, front line staff, visitors and patients all interact in the same location. The seating areas also exhibit the same diversity of user groups and offer a vantage point to observe activity and engage with others.

For future projects, there needs to be greater consideration on where these social spaces are positioned in the hospital. To foster sustained usage by a variety of users these spaces should be closer to hubs of activity.

The Forthcoming Final Report

The final report will have a fulsome comparative analysis of patient and staff impressions as they relate to overall building design and the functionality of spaces – social versus quiet, outdoor versus indoor, destinations versus transitory spaces.

The most important element of the final report will be the dissemination of patient and staff well-being related outcomes. Patient findings will focus on whether they perceive improvement in their illness, are satisfied, feel optimistic or depressed, have a sense of being self-sufficient or feel the need to rely on others. For staff, findings related to workplace satisfaction, burnout, optimism and their ability to interact with others will be discussed.

Rooftop terrace south view, Tom Arban

Conclusion

In the past, the impression was that hospital redevelopment projects were monitored according to whether they were built on time and on budget. Very little effort was invested in evaluating the final product and determining if what we built worked and produced the intended results. **This study represents a new era in healthcare.**

This exercise has created a framework which enables us to standardize the approach to evaluating the design features of healthcare facilities. This rich resource POE tool kit consisting of templates, computer software, methodological protocols, and experienced evaluators can be used to evaluate healthcare facility design in any environment be it acute care, rehabilitation, or chronic care hospitals. With this application we have the potential to consistently gauge the effectiveness and improve upon the investments in new hospital infrastructure in Ontario. **By knowing more, we can do more. By building better, we can achieve better.**