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Mission of the Academy Journal

As the official journal of the AIA Academy of Architecture for Health (AAH), this publication explores subjects of interest to AAH members and others involved in the fields of health care architecture, planning, design, and construction. The goal is to promote awareness, educational exchange, and advancement of the overall project delivery process, building products, and medical progress that affect all involved in those fields.

About AAH

AAH is one of 21 knowledge communities of The American Institute of Architects (AIA). AAH is unique in the depth of its collaboration with professionals from all sectors of the health care community, including physicians, nurses, hospital administrators, facility planners, engineers, managers, health care educators, industry and government representatives, product manufacturers, health care contractors, specialty subcontractors, allied design professionals, and health care consultants.

AAH currently consists of approximately 7,000 members. Its mission is to provide knowledge which supports the design of healthy environments by creating education and networking opportunities for members of – and those touched by – the health care architectural profession.

Please visit our website at aia.org/aah for more about our activities. Please direct any inquiries to aah@aia.org.

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Contents

3

Letter from the editor

4

Co-Diagnosis: An Interdisciplinary Design Study of
Inpatient Units for Mental and Physical Health

16

Medicine in Minutes: A New Paradigm in Healthcare New
York Hotel and Motel Trades Council's (NYHTC) Brooklyn
Health Center

30

Co-Designing with Children: Innovating Patient
Engagement and Participation in Pediatric Healthcare
Design Research with Immersive Technology and
Affective Interactions

Medicine in Minutes: A New Paradigm in Healthcare New York Hotel and Motel Trades Council's (NYHTC) Brooklyn Health Center



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Medicine in Minutes

New York Hotel Trades Council (NYHTC) endeavored to relocate and expand its Brooklyn Health Center location and selected a new parcel of land in the BAM cultural district. This new center would utilize a health and wellness model that was designed to keep patients out of hospitals and would be set up for patient care by disease type with a multispecialty model comprised of a diverse clinical care team versus separate primary care and specialty practices.

NYHTC's goal of "Medicine in minutes" rather than hours was a key element. Through careful planning, design, and the use of key technological elements, FCA was able to deliver a center to realize the vision of providing an efficient member-centered experience.

"We had two major goals for this building," said Dr. Robert Greenspan, former chief executive officer of the Fund and executive director of the Health Center, in a statement. "First, we wanted to create a strong image for [the Health Center] in Brooklyn that supports our brand and welcomes our members. Second, we insisted on a vigorously member-centered environment with top-of-the-line care that exceeds the efficiency, comfort, and quality of commercial health care institutions. Above all, we want our members to enjoy an unmatched health care experience."

To realize these goals, the design team—along with the clinical leadership from NYHTC—developed different focus groups to interview patients and staff using a P3 process and SWOT analysis where the group could identify where improvements and opportunities existed and changes to the operation and design should be made. As a result of the focus groups, many issues came to light:

- Patients were being scheduled too far out and waited too long to see specialists;
- Once they arrived at the centers, the door-to-physician time was very long;
- Patients were asked to travel around within the center and between the centers for treatment and imaging;
- Patients also did not feel as though their medical issues were truly being shared among their clinicians in a multidisciplinary way.

An Innovative Approach to Health

The design team including the clinicians, specialists, phlebotomists, and support team came together to review these issues. Together, they identified and created a new paradigm for delivering care that utilized operational, technological, and design concepts to eliminate redundant steps. Dr. Greenspan led the operational concept wherein, rather than using the traditional Ambulatory Care model of individual physician

practices, the center would be organized around disease type and provide preventative care spaces that would encourage its members to not only get healthy but learn to stay healthy. Why around disease type? Their visionary leadership knew that if you could treat patients for the major disease that they came to the health center with, for example a diabetic patient, you could also layer in all of the specialists and services that a diabetic patient would typically need to see all in one pod. This was a more efficient model, as it turned out, because diabetic patients, had in the past, needed to make multiple appointments per week with different specialists. At the Brooklyn Health center, they could come in for 1 visit

and see all those specialists in one place. The patients didn't even have to move throughout the building as the specialists all came to the patient.

Rather than making several appointments each week with key specialists, patients are seen by multiple clinicians in a single visit. The Health Center design utilized interdisciplinary workplaces and technology to better reduce redundant steps and wait times. Additionally, the building is designed to engage with the local Brooklyn community and invite them to attend health sessions and activities.

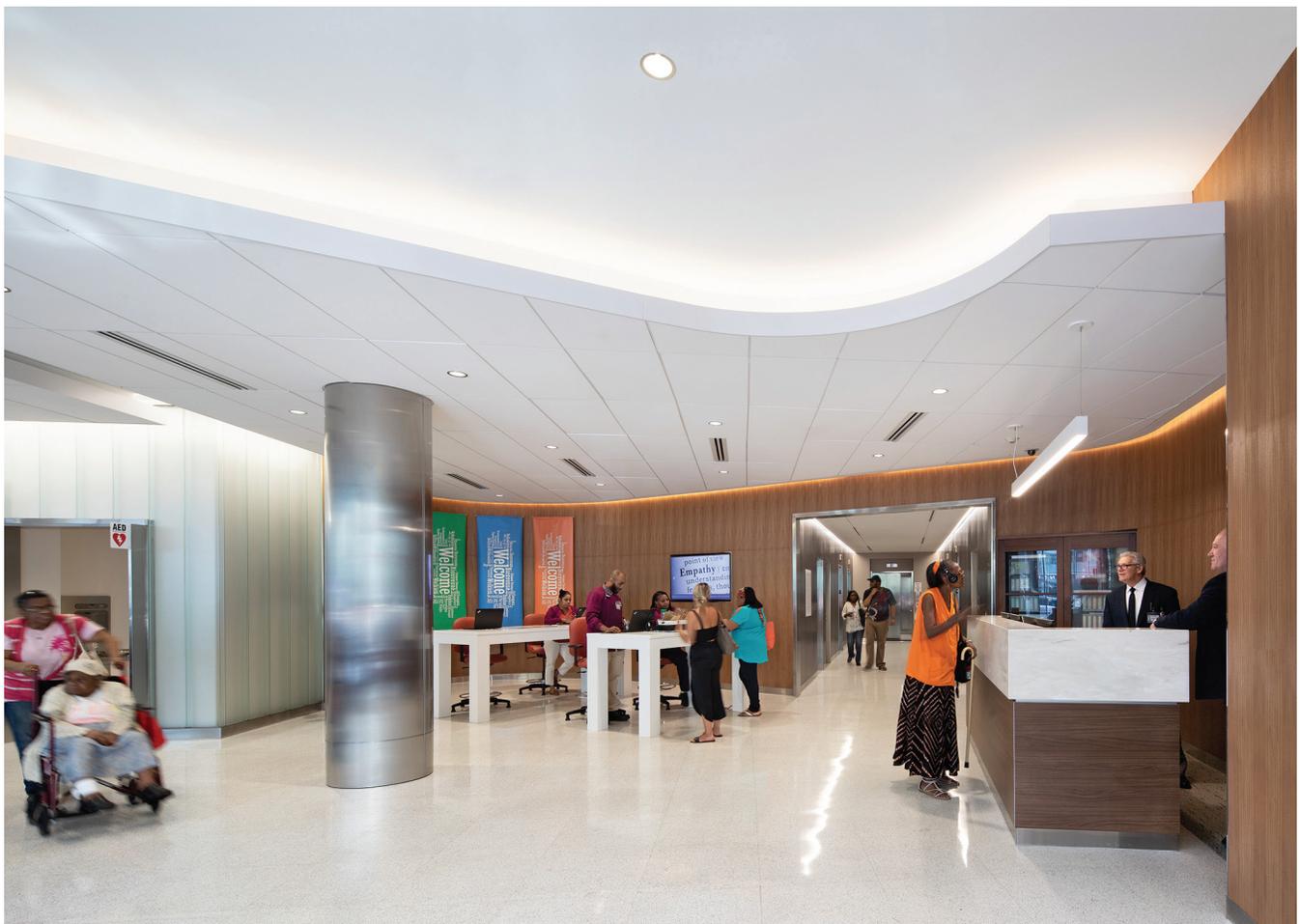


Image 1. Concierge lobby.

One of the most revolutionary aspects of the design was the concept of self-rooming. Patients enter the building lobby and are greeted by concierge team members that translate instructions into 43 languages that are spoken at this center. Once checked in, they are given a small clipboard with an RFID badge attached to it; the concierge then prints the directions for them to self-room, including the floor and room that the patients will go to in the language of their choice.

As patients arrive in their Exam room, a welcome message is instantly displayed on the monitor within the room, identifying the patient's name and letting them know they are in the right room and that the clinical team will arrive shortly. The Health Center doesn't have physicians' offices or even waiting rooms; all appointments are handled electronically through online scheduling and registration programs that link patient records and medical history with the appropriate treatment programs.

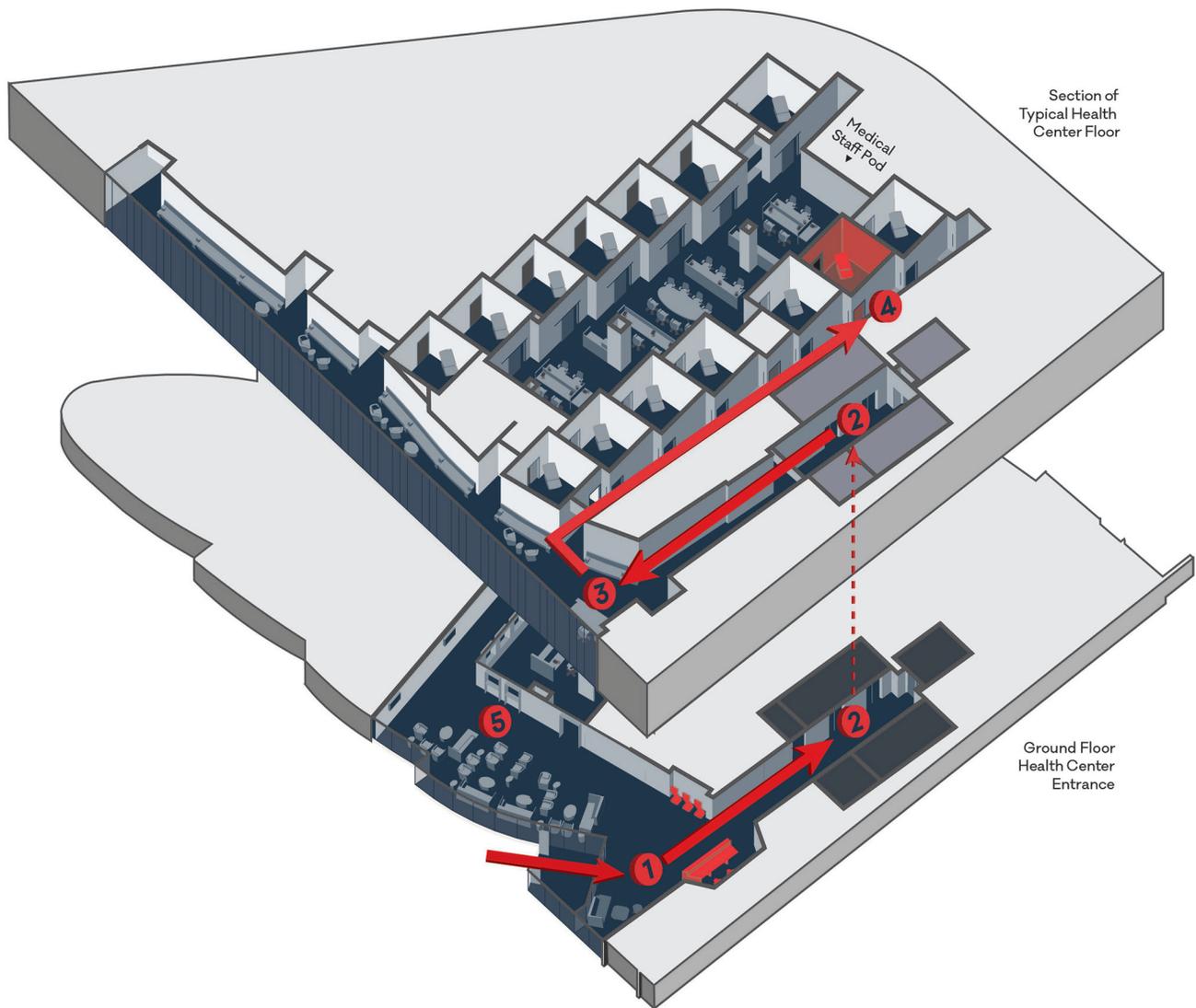


Image 2. Self-rooming path from lobby to exam room.



Image 3. Exam room with clinical touchdown visible.

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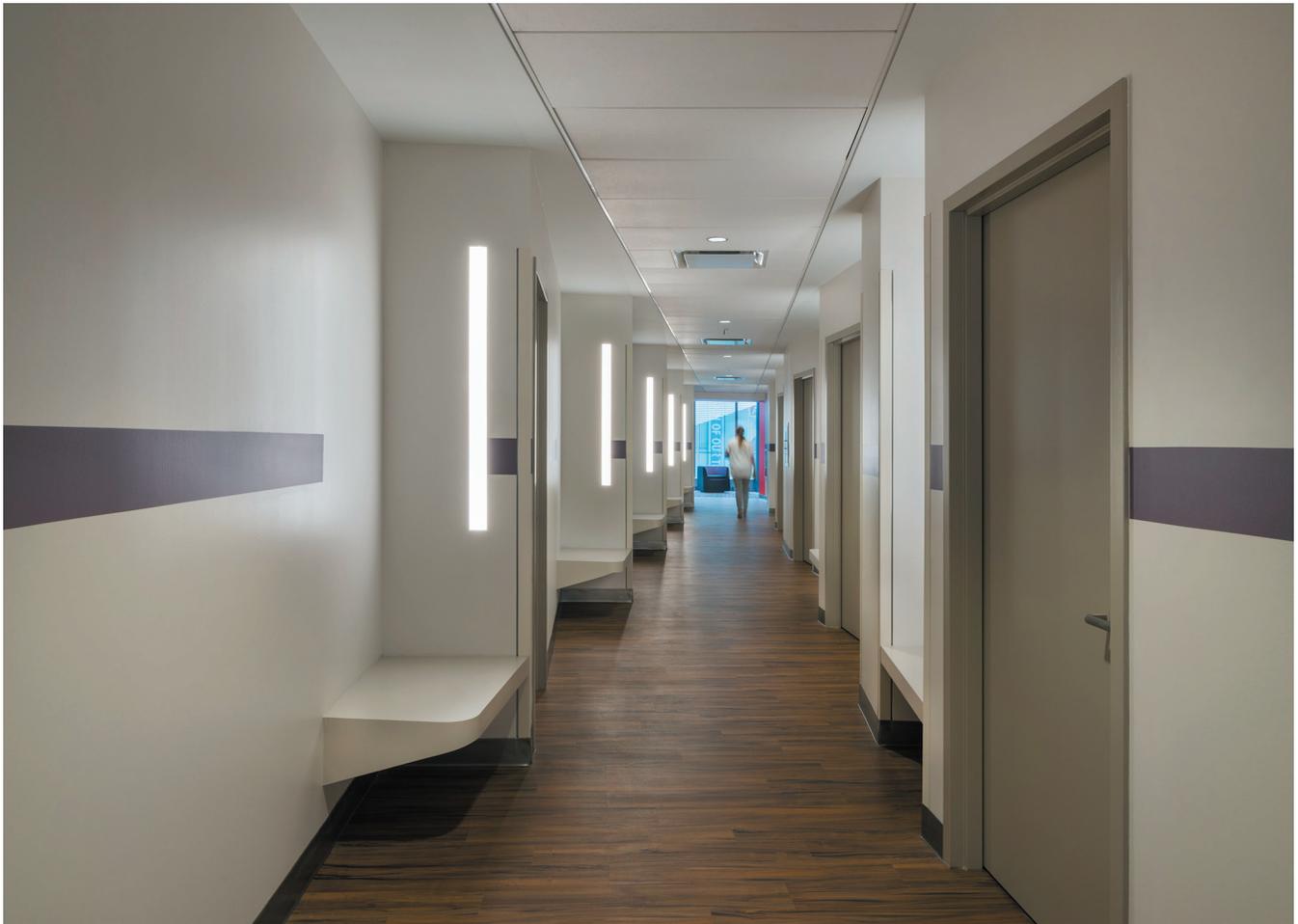


Image 4. Seating outside exams.

Patients simply walk into the building and right into their treatment spaces. And while waiting areas weren't necessary for patients, we provided them so that family members could have a comfortable, eye-pleasing place to wait and relax, with outstanding views of the surrounding neighborhood.



Image 5. Off-stage (staff) access route.

We also included seating just outside of the Exam rooms to accommodate family members who may need to step out for a moment during the exam process so that they don't have to travel out to the Family waiting areas.

While this is not a new concept, the group investigated several models for accessing the spaces and ultimately landed on an on-stage/off-stage approach for Public and Staff flow. It was felt that this model provided the clinicians and supplies to flow quite seamlessly to their spaces in a cleaner way that would not be seen by the public accessing the Exam suites.

After arriving at their floor, patients then travel up through public-only access routes, as the center is organized using an on-stage/off-stage concept so that their members can access the treatment spaces from one side and the staff from the other. Union members and materials/supplies travel on separate paths throughout the building both vertically and horizontally.

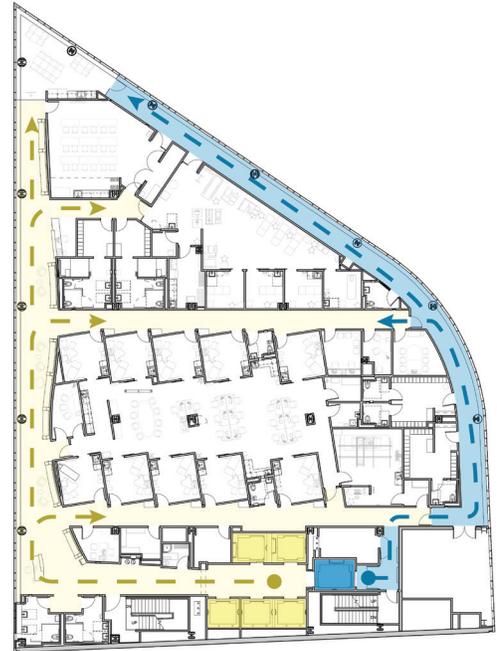


Image 6. Second floor with public and staff flow.



Image 7. Floor plans and circulation plan.

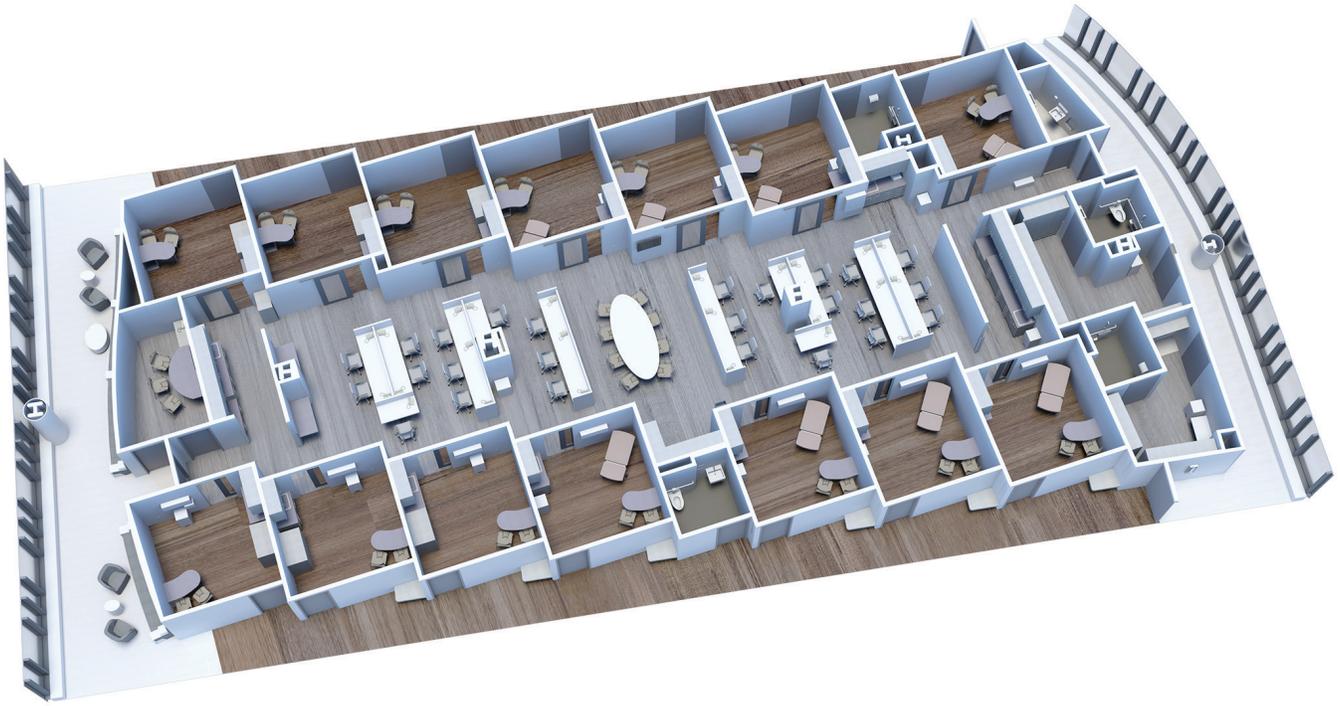


Image 8. Treatment pod diagram.

Accessing the left-hand side of the plan, members circulate up the spine and flow into the exam corridors from the left. Each of the Exam rooms within the pods is angled, which not only allows for easier wayfinding but also creates a small area where family members can wait outside the room. Staff and materials flow from the right side of the plan up a staff-only spine to the top of the plan where each floor has a staff respite space.

The treatment pods are grouped by disease type: Musculoskeletal, Diabetes & Endocrine, Cardiovascular, Peds, Family, Womens, Ophthalmology, Dental, and Procedural. There are also preventative care spaces, such as a teaching & training Kitchen, a multi-purpose/fitness space, an imaging suite, and a blood draw center.

The centralized nature of the staff workspaces fosters a collaborative environment where physicians can speak with each other about complex cases. This multidisciplinary collaboration allows for multiple team members to review patient cases and be prepared ahead for direction on care. The patient Exam rooms are directly connected to the Care Team workspace via double-sided Exam rooms allowing quick access to centralized areas.

The Health Center's clinical core/exam room model pod was built in a live mock-up at the Queens Health Center

location to test this model's efficiency; the model proved to be wildly efficient. This mock-up of a pod of 3 Exam rooms, a Consult room and a Care team workspace was a wonderful test case. Physicians, Specialists, Behavioral Health team members along with Phlebotomists and Clerical team members came to realize how inefficient they had been by sitting apart from one another in their current offices and workspaces that isolated each other. They stated how they appreciated being together in the Care team space as it eased many simple things that they found were causing additional time to be added to a patient's visit. No longer were they running to find the Clinician to get clarity on a prescription order. They also utilized the team conference table to break down the following day's patients, reviewing them together as a group. The mock-up revealed a few things that didn't work, and they were incorporated into the final Health Center. The exam rooms did not initially have printers in the rooms, and they were ultimately added to the Exam rooms to retrieve printouts. The desk shape was modified in the mock-up to ensure that the desk could have 2 chairs for pull-up access to review x-rays or other pertinent materials with patients. Another issue that was brought out in the mockups was patients arriving at an Exam room but not quite being sure they arrived at the right one. RF technology was utilized using a patient tracker to have the patient's name come up on



Image 9. Clinical touchdown showing exam room.

the large monitor in the patient room. This was perceived as a much better assurance that patients had indeed arrived at the proper Exam room. We utilized this for self-rooming as much as was possible since the Queens Health Center, where the mock-up was constructed, was a fully functioning Health center that continued to operate. “Welcome Mr. Jones – we will be right with you” was a much easier way for patients to be greeted and assured they found their way to the correct location. This was done in the language that they registered in as 43 languages are spoken in the health center.

Upon occupation of the Brooklyn Health Center, the performance metric was quantitatively calculated and 85% of members were treated in less than an hour. The data also showed that the physicians were able to see an additional 1,200 patients per year. This is a huge improvement that allowed the center to see many more patients than they had anticipated.

While the clinical care teams vary, they are usually comprised of a family practitioner, behavioral health specialists, clinical specialists, medical assistants, nurse practitioners, a clerical team, floating phlebotomists, and care managers.

During the design process, the clinical team wondered about such a large open space in which many people would be working. The design team mitigated this by utilizing high-performance sound absorption ceiling tiles in the Care Team work area as well as Pink Noise for sound reduction. The space has a very calming atmosphere due to these elements.

While it was vital to the Fund to ensure that its members would receive care at the same level in a similar environment as the guests in the world-class Hotels they worked in every day, it was equally vital to them that the staff of the Brooklyn Health Center be treated with equal

importance. To that end, we placed the Staff Lounges within the building, not in dark basements but in areas of prominence, strategically placed at the apex of the building on each floor, allowing the staff to enjoy natural light from all sides of the space as well as tremendous views of the cultural district. Materials here were also chosen to emphasize a hospitality feel. These lounge spaces also allow for patient tracking and efficiency on the monitors visible in these rooms.

Leveraging Technology

The Brooklyn Health Center was designed to incorporate the best in state-of-the-art technology. Even before patients come for visits, the scheduling team leverages

EMR to book multiple visits. Upon arrival, technology is engaged in language translation software, RFID badges and tracking software are used to aid in patient self-rooming and navigation. Fingerprint touch technology allows Clinicians to log out from Exam rooms and log back in instantly into charts within the Care Team areas. In the live mock-up, the technology showed where all the glitches were in the timing of the appointments and shined a light on patient waiting times for things like time to doctor, blood draw, and overall wait times. These could not have been accounted previously, without the aid of the patient tracking systems.

All these technological interventions aid the Center to operate in a more effective way streamlining care.



Image 10. Lounge space with patient tracking on monitor.

The Health Center's Beating Heart

The Fund wanted to ensure that the Brooklyn Health Center wouldn't become lost inside the high-rise building, and they wanted it to be as distinctive and vibrant as the community around it. They wanted their 4-floor Health Center to be as distinctive as their 11-story building itself.

While reflecting on this design challenge, the project's Senior Designer had a breakthrough— she crumpled a red piece of paper into a glass and realized a design vision for the center. The Health Center would be a distinct element within a glass building. The red walls of the Health Center stand out at different times of the

day identifying the Health Center as it is encased in the glass envelope of the building. It is highly visible from the exterior so that at any vantage point around the site, you would always see the Health Center, the beating heart of the building.

By centering the beating heart of the Health Center within the glass object of the building, we allowed for the large windows to provide enormous amounts of natural light, along with a connection to the surrounding community, and breathtaking views of the surrounding cultural district.

Inside, the building's circulation corridors run alongside its perimeter and around the clinical spaces, inverting what is traditionally the planned layout of healthcare



Image 11. The Health Center at night.

interiors. To reinforce the pathways for patients, each floor is assigned a color that is repeated throughout, via the furniture, wall colors, and artwork.

The layout, along with the intuitive wayfinding, provokes movement, while the curtain wall highlights the circulation throughout the building.

Realizing potential

Another tie to the community happened by maximizing the site. Initially, the client was looking to develop a five-story building to house their Health Center on a proposed site in Downtown Brooklyn. When the FCA design team reviewed the site, we saw the potential for so much more. If we could develop a public space, we could maximize the building envelope, which would allow for the inclusion of leasable space that would, over time, help pay for the project entirely. Our team showed the client that they could increase the projects size, if they developed a Privately Owned Public Space (POPS), which are outdoor/indoor spaces/parks built for public use and maintained by the owner of the building. POPS are created in exchange for greater square footage and allow for greater interaction and activate the streetscape within a dense urban fabric. In this situation, the inclusion of a 2,000 SF park on the building's east side, increased the allowable square footage of the site while opening it up to the neighborhood residents.

The increased square footage granted to us by the POPS allowed us to build additional floors. These additional floors required a building setback on the 6th floor. This gave us the opportunity to build a terrace. The terrace adds comfort with its easy access to the outside, which promotes

wellness. All the outdoor spaces were constructed to promote wellness and were designed to complement the building's shape and design, as well as highlight the entrances. While the park creates a visual relief and connects the Brooklyn Health Center with the surrounding BAM cultural district, the terrace provides extended views of downtown Brooklyn and lower Manhattan while also acting as a buffer in an urban environment.

A New Paradigm for Care

The new Brooklyn Health Center truly embodies new and innovative ambulatory care design. From the operational model, to technology, to the design approach, each element that has been added supports the goals that the health center was attempting to achieve. The new model will influence their new center in Queens and their other existing centers will now be designed with these elements in mind so that future generations of patients can receive care in a thoughtful and state-of-the-art environment.



Image 12. The park is an added benefit that the residents will enjoy.

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