"HACKATHONS"

GENERATE OUT-OF-THE-BOX SOLUTIONS FOR PATIENT CARE

Ayesha Khalid, MD, MBA, walked across the auditorium and raised her microphone. "Are you guys awake?" she demanded.

"Woooo!" came the collective answer to Dr. Khalid, Clinical Director of the Center for Biomedical Innovation and Technology (CBIT) at Yale.

It's not the usual way that meetings on patient care concerns begin at the Yale New Haven Health System (YNHHS). But there is nothing usual about what happened. This was a Healthcare Hackathon, one of a series sponsored by CBIT. Hackathon is a term coined for marathon coding sessions where great tech minds gather to solve problems. The intensity and collaboration are the same here as at a tech hackathon, but the goal is improved patient care through creative thinking that the competitive but informal atmosphere is designed to foster. The attendees were charged with finding ways to overcome "The Weekend Effect."

Nationally, patients admitted on the weekend have worse outcomes and stay in the hospital longer. At night and on the weekends, hospitals have fewer staff and generally offer less access to diagnostic and specialty services. Because fewer patients are discharged on the weekend, beds can be in short supply.

At this Hackathon, participants worked in teams to develop an innovative strategy to fight the Weekend Effect. Many contributors work for YNHH in clinical or non-clinical roles. Teams also included students from Yale College and the Schools of Medicine, Management, and Public Health. The hackers convened on a Friday evening to hear a speaker and begin networking. Participants were provided with a range of tools: markers, giant Post-it notes, duct tape. "You are supposed to cheat!" Dr. Khalid said, as she encouraged them to use the Internet while they brainstormed. Mentors, heathcare, and business experts in the YNHHS floated from team to team to ask challenging questions or provide information.

Within a span of 24 hours, participants formed teams, developed a plan – probably changed that plan multiple times in response to comments from expert "mentors" staffing the event – and summarized their idea in a five-minute pitch for a panel of judges. Winning teams took home cash prizes and, more importantly, will have the opportunity to continue developing their idea and see it implemented.

Typically more than 300 people from around the world apply to be part of CBIT's primary annual hackathon, according to Margaret Cartiera, PhD, Investment and Innovation Director at CBIT. Everyone who participates is on equal footing, whether they are an undergrad or a leading physician.

"We hope they leave their suits and their white coats at the door," said Peter Schulam, MD, PhD, Chair of Urology and Co-founder of CBIT, along with Mark Salzman, PhD, Chair of Biomedical Engineering. CBIT was founded to catalyze biomedical technology development and commercialization at Yale.

Healthcare hackathons provide clinicians valuable input from people outside the healthcare system. "We all have blinders on," he explained. "We do the same thing every day."

Harishwar Patlolla arrived at the Hackathon with his eyes on the sky. He works at YNHHS as a data intern while he is finishing his master's degree in industrial engineering. The aviation industry has an extremely low failure rate, he noted, and plans far in advance, right down to a passenger's seat assignment. Why couldn't hospitals use data, he asked, to predict demand just as airlines do? "In the hospital, everything is reactive rather than proactive," he explained.

The airline industry inspired the creation of Team Take Off at the hackathon, who proposed an airport lounge-style area for patients who have been discharged but are not going home for non-medical reasons – most commonly, because they are waiting for a ride. Moving discharged patients to a lounge would improve their experience while freeing up beds. Several teams focused on technology-based solutions, including telemedicine to prevent unnecessary trips to the emergency room and a phone-based system that would let patients know how long the wait for a test or procedure would be.

"Technology offers the possibility to truly reimagine healthcare," said Patrick Kenney, MD. "If 19th century Americans had access to 21st century technology, healthcare for the sick would likely have evolved differently, perhaps without the need for large hospitals in the first place." Dr. Kenney is Clinical Vice Chair of Urology and a member of the leadership team for Clinical Redesign, a YNHHS project to improve and standardize patient care. The group is the ultimate consumer for the ideas produced by this Hackathon.

"I used to work in finance," he explained. "I've always been interested in systems." The ideas that the teams pitch must benefit patient care. They must also make financial sense within a healthcare system where cost pressures are significant. "Successful projects here will be based on reality," Dr. Kenney said.

Many routines have changed little since those early hospitals, agreed Sumeet Pawar, MD, a clinical fellow in cardiovascular medicine. "We take pride in bringing the latest cutting-edge technology to clinical practice," he noted, while the logistics of healthcare lag. How do clinicians deal with that? "It's mainly frustration," said Dr. Pawar. Of the Hackathon, "Win or lose, it's been inspiring to spend a day with bright people exploring better ways to organize care," he said.

In the end, Dr. Pawar's team, T^3, was victorious. The name represents transparency, timeliness, and throughput, all of which they propose to improve by giving patients access to an electronic timeline that will help them understand what to expect while in the hospital and will also improve communication with and between their clinicians. The eight members beamed as they accepted a giant cardboard check for $1000.

Even within teams that do not finish in the money, there are plenty of group selfies and plans to continue collaborating. "I felt empowered," said Lori Ryder, perioperative director of ambulatory services at Yale New Haven Hospital. "I felt like my voice could be heard." Y

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