HMPI | HEALTH MANAGEMENT, POLICY & INNOVATION
BAHM BUSINESS SCHOOL ALLIANCE FOR HEALTH MANAGEMENT

Pinar Karaca-Mandic: Researcher, Entrepreneur & CEO

Abstract

This is the first in a series of interviews conducted by Kirsten Gallagher, managing editor of HMPI, with leading health management faculty. The inaugural interview features Pinar Karaca-Mandic, Distinguished McKnight University Professor and the C. Arthur Williams Jr. Professor in Healthcare Risk Management in the Department of Finance, Carlson School of Management, University of Minnesota. She is the Founding Director of the Business Advancement Center for Health (BACH), and a Research Associate at the National Bureau of Economic Research.

Dr. Karaca-Mandic is also the CEO and a co-founder of XanthosHealth, a University of Minnesota start-up developing a digital social care referral platform for individuals affected by cancer. This interview focuses on how her research led to the formation of the XanthosHealth and how she leverages her role as an academic researcher and entrepreneur.

Your goal as a health economist is to help improve “value” and “equity” in healthcare. Why is this area of focus important to you?

I am intrigued by the concept of “value” in healthcare, because there is no single, gold standard

definition of “value”, highlighting the complexity of evaluating outcomes from multiple perspectives and stakeholders – patients, providers, payers, society overall and more. My research views value as *“innovations for which healthcare consumers have high preferences, receive improved health outcomes, and experience higher function and quality of life.”*

While identifying innovative methods to enhance value in healthcare is important, these innovations will not reach their full potential unless their benefits are distributed equitably. This leads to the question: How can we improve value in an equitable way? I approach this question in several ways: First, by improving health gains through new medical technologies and treatments that effectively and equitably add to quality of life and survival. Second, by ensuring that evidence guides treatments, including evidence that identifies and allows us to curtail ineffective or harmful treatments. Third, by making sure medical innovations are accessible and affordable so that improvement does not drive inequities. Fourth, by addressing factors outside of the healthcare system such as financial frictions and social determinants of health. These four areas interact dynamically, particularly in terms of the impact of regulation and market forces.

The intersection of “value” and “equity” in my research aligns with my commitment to help create a healthcare system that is both innovative, efficient, and at the same time inclusive – which needs to entail leveraging resources optimally and leading to improvement of health outcomes for all, reducing existing health disparities.

What do you believe are some of the greatest untapped opportunities in realizing a more equitable, value-based healthcare system?

As we all know, healthcare is a complex ecosystem with numerous multi-sector stakeholders whose interdependencies often lead to conflicting market incentives. Many underlying problems, as well as their solutions, lie at these intersections. For instance, innovative payment models, such as value-based payment models, have the potential to create shared value among payers, providers, and patients.

One of the greatest untapped opportunities lies in understanding how patients value various medical and digital health technologies and integrating this understanding into payment models. By closely examining the intersections within the healthcare sector, we can uncover numerous opportunities for innovation that align incentives to improve patient care.

Data plays a crucial role in this endeavor. It is essential to inclusively collect real-time information from healthcare consumers to understand their experiences and the value they derive from treatments and technologies. While there are new and exciting ways to collect data, a significant untapped area is making this data actionable. For example, if we identify patient needs through the data we collect, how can we use this information effectively?

Can we align payers and providers to create customized care plans? Can payment for certain services be adjusted to incentivize medical services and treatments that patients find most valuable? Additionally, there is potential in leveraging artificial intelligence and machine learning to analyze patient data and predict outcomes, which can further refine value-based care models.

Moreover, fostering collaboration across sectors, including technology, pharmaceuticals, and insurance, can lead to the development of holistic solutions that address the root causes of inequities in healthcare. By focusing on these intersections and leveraging data-driven insights, we can create a more equitable, value-based healthcare system that truly meets the needs of all stakeholders.

Why did you establish XanthosHealth with your University of Minnesota colleague, David Haynes?

The untapped opportunity I mentioned earlier—leveraging real-time data from individuals about their health and healthcare experiences to develop customizable treatment plans—has been a growing passion of mine over the past six years. In 2018, I co-founded and co-led a multidisciplinary team to develop the “PRISM” (Patient Reporting Insight System from Minnesota) mobile app. This app was designed to enhance the collection of standardized patient-reported outcomes, integrate them into electronic health records (EHRs), and amplify the patient’s voice in the healthcare process.

PRISM has garnered several awards, including first prize nationally in the Step-Up App Challenge sponsored by AHRQ. Our team successfully piloted the app in nine MedStar Health clinics in Washington, DC, during 2019 and 2020, and we made PRISM available as open-source technology.

During the pandemic, I continued to explore how such technology could expand the types of

patient-reported outcomes we collect and make such data actionable. For example, financial stress and other barriers such as transportation, language barriers, housing, or food insecurity significantly impact health, drive healthcare costs, and contribute to inequities. In certain cases, such as for cancer patients, these needs are highly elevated. The impact of financial toxicity of cancer is well established. By collecting social risk data from individuals and leveraging it to support these social needs, we have an opportunity to improve value and equity in cancer care and survivorship.

Around the same time, my XanthosHealth co-founder, Dr. David Haynes, a health geographer and cancer disparities researcher at the University of Minnesota, was developing technology to visualize social risk factors in communities and connect high-cost, complex patients to relevant community resources. We were following each other's work closely. One day, we came across a contract solicitation from the National Institutes of Health (NIH), National Cancer Institute (NCI), to design software addressing social determinants of health in oncology.

We recognized this as a tremendous opportunity to combine our expertise. Our goal was to develop seamless, user-friendly methods to collect social needs information from individuals affected by cancer and make that data actionable in two key ways: First, by matching and connecting individuals to real-time services provided by cancer-focused community-based organizations for which they are eligible. Second, by integrating social needs and services information into Electronic Health Records (EHRs) with the patient's consent. This integration would provide the clinical team (e.g., oncologists, social workers, navigators) with transparency into the patient's social care journey and equip them with tools to refer patients to necessary services.

We decided to submit a proposal for the contract solicitation and discovered it was through the Small Business Innovation Research (SBIR) mechanism. We then founded XanthosHealth, applied for the contract, and were awarded it.

Then, earlier this fall, XanthosHealth, in partnership with the University of Minnesota, was awarded a two-year, Phase 2 Small Business Technology Transfer (STTR) NIH/NCI grant that, in addition to enhancing the features of the digital social care referral platform we have built, funds a randomized clinical trial with patients undergoing cancer treatment. This will give our team an opportunity to continue building and expanding our partnerships with the community-based

organizations dedicated to supporting individuals affected by cancer.

Could you describe both the challenges and rewards in setting up and scaling a business?

Doing something for the first time is always challenging. Reflecting on my academic career, I remember the difficulties of my first research project, publishing my first manuscript, submitting my first grant proposal, and teaching for the first time. The same holds true for entrepreneurship and scaling a business. The learning curve is steep, and one must wear many hats and learn various areas from scratch.

Beyond developing the core product or project, understanding market needs, and building a team, you must also manage operational tasks such as corporate organization, contracts, insurance, payroll, finances, cap table, HR, taxes, accounting, fundraising, legal matters, and more. It can be a relatively lonely journey at times, requiring laser focus on your venture with a small founding team. The key is to surround yourself with people who are driven by the product you are building and who champion your progress and impact. This kind of relationship building can make you feel part of a larger community.

Regardless of how difficult the journey is, your “why” always centers your thinking and makes it easier. In our case, our “why” is the potential our platform offers to support cancer patients and their loved ones, connecting them to a network of community organizations and services, improving their health outcomes, quality of life, and survivorship. Many of us have experienced cancer among our close circles, and it can be extremely challenging, even for the well-off. Sorting through directories, flyers, and other resources, calling programs, verifying eligibility, and applying to each individual program can be overwhelming. I like to think that if we are making it a bit easier to navigate facing cancer, that is a reward worth the work we put in.

How does XanthosHealth inform your role as an academic researcher, and vice versa?

Through our work at XanthosHealth, I discovered the joy of going beyond preparing publications for peer-reviewed journals and creating a product for real-life use. We have been designing and developing our platform using a participatory approach from the earliest stages. This involves closely engaging with key stakeholders, listening to patients, caregivers, clinical workers, and

social workers in focus groups, synthesizing key informant interviews with healthcare providers, and convening community-based organizations to receive their feedback as we iterate on our technology.

All this has deepened my appreciation for defining problems and unmet needs collectively with stakeholders and designing solutions to meet those needs collaboratively. As an academic researcher, this experience has enriched my understanding of the practical applications of research and the importance of stakeholder engagement in the development process.

In many ways, my academic research training enhances my role at XanthosHealth. Both my cofounder, Dr. Haynes, and I are driven by a shared passion for research aimed at improving health outcomes and reducing disparities in cancer care. Collectively, we have decades of research experience and a strong foundational knowledge of the literature in health economics, health insurance, healthcare delivery, health informatics, cancer outcomes, disparities, and the adoption of medical innovations.

Our training equips us to design robust research studies, work with large datasets, analyze and interpret data, and derive key insights. This methodological and evidence-based approach is crucial in measuring the impact of our work at XanthosHealth. By applying rigorous research principles, we ensure that our platform is both effective and grounded in solid evidence.

How has your role as CEO informed your approach to teaching?

Through my role as a start-up founding CEO, I have gained a much better understanding of the commercialization pathway for a product and the key elements of building a business plan. I have developed insights on how to build partnerships, identify potential customers, listen to user segments and other stakeholders, and prepare for the metrics that angel investors or VCs look for.

Our participation in local accelerator BetaMN and the national public-private partnership CancerX accelerator has provided me with opportunities to network with and hear perspectives from many other founders and entrepreneurial teams. This has given me a wealth of real-world examples that I now incorporate into my lectures, helping to break down theoretical concepts into more practical understandings for my students.

Additionally, my passion for healthcare innovation shines through in my lectures. I often find myself enthusiastically encouraging my students to push themselves to innovate in healthcare and improve health outcomes in the U.S. In my undergraduate business of healthcare class, I have recently revised the research paper component to focus more on proposing a venture in a healthcare area of their choice. This involves building a business plan that discusses market size, partners, stakeholders, customer acquisition, scaling, and financial sustainability. In the next iteration, I may add a two-minute pitch component where students discuss the problem, the solution, and why now.

What would you advise academic colleagues who are considering launching a business of their own?

Our academic careers are certainly challenging in many ways. We face the pressures of the tenure and promotion process, manage an active pipeline of research papers, submit and manage grant proposals to fund our research, stay on top of teaching, and take on administrative and professional or university service roles, among other responsibilities.

Launching a business involves embracing a new learning curve, navigating a new environment, forming new partnerships, and building teams. It comes with many ups and downs and uncertainties. It requires stepping out of our academic comfort zone, pivoting, and overcoming hurdles at a much faster pace than the academic journey.

It is important to find co-founders who can complement your skill set early on. This is somewhat different from academic teams, where we often collaborate with colleagues in our department who have similar interests and skills. In early start-ups, you almost want the least amount of skill overlap with your co-founders so that collectively you can cover a broader set of tasks and responsibilities. That said, sharing a common vision is critical.

I would advise that the journey is well worth taking and more manageable if it strongly links with your academic and research passion, and if the two can complement and reinforce each other.

Contact Pinar Karaca-Mandic: pkmandic@umn.edu

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