CENTER FOR BIOETHICS
HARVARD MEDICAL SCHOOL

MASTER OF SCIENCE IN BIOETHICS

CAPSTONE SYMPOSIA

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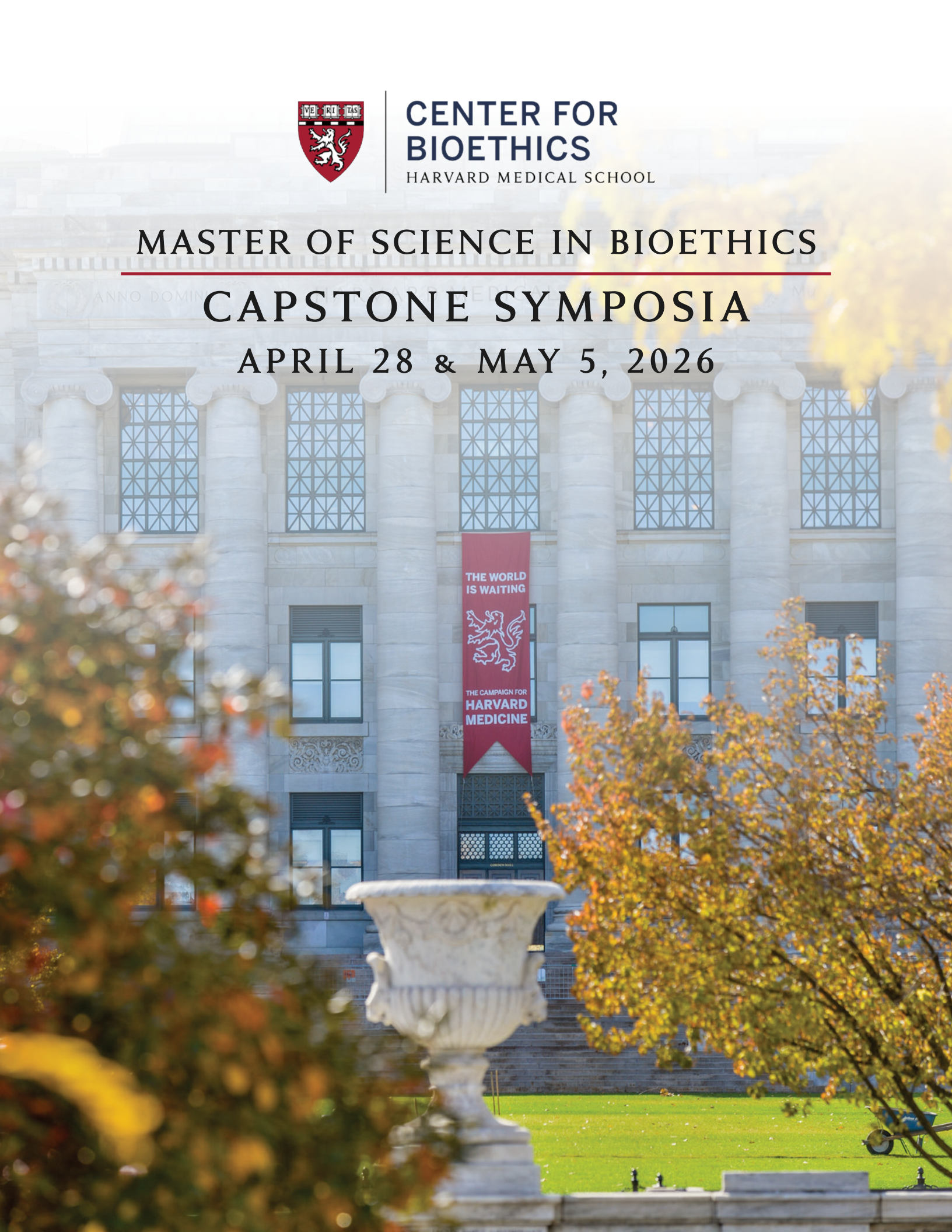


In-Person Symposium Keynote

Mark R. Mercurio, MD, MA

Inaugural Executive Director of the Center for Pediatric Bioethics,
Boston Children's Hospital

What Do Bioethicists Do?

Mark R. Mercurio, MD, MA is the Inaugural Executive Director of the Center for Pediatric Bioethics at Boston Children's Hospital, having started that center in 2025. He was previously Professor of Pediatrics and Founding Director of the Program for Biomedical Ethics at Yale University School of Medicine, as well as Director of the Yale Pediatric Ethics Program and Chief of the Division of Neonatal-Perinatal Medicine at Yale New Haven Children's Hospital and Yale School of Medicine.

He received a bachelor's degree in biochemical sciences from Princeton University, an MD from the College of Physicians and Surgeons at Columbia University, and completed Pediatrics Residency and Neonatology Fellowship at Yale. He received a master's degree in philosophy, with a concentration in ethics, from Brown University. Dr. Mercurio worked as a clinical neonatologist for nearly four decades at Yale New Haven Children's Hospital, and as Founding Medical Director of the Neonatal Intensive Care Unit at Lawrence and Memorial Hospital.

He has over three decades' experience as an ethics consultant, and is a previous Chair of the American Academy of Pediatrics Section on Bioethics. He is a faculty member and an Academic Advisory Board member for the Fellowships at Auschwitz for the Study of Professional Ethics, and a Fellow of the Hastings Center. Dr. Mercurio has published extensively in bioethics, and he has been an invited speaker in most US states and over a dozen countries.

In-Person Students

Sitara Anil Sivadas, BBA LLB
Hannah R. Bentz, BS
Karina Bhavsar, BS
Madeleine Bullen, BS
Amanda Buster, BA
Lara Celik, BA
Rohan Dasari, BS
Emily Folse, MD
Alexandra Fouad, BS
Louise Guentert, BA
Sawsan Haider, BHSc
Rand Hasan, BS
Anna Hayek, BS
Jeff Holiday, MS, MA, EdM, MPH, MPA
Aleesha Imran, BS
Renuka Anjali Joshi-Dave, HBA
Marharyta (Margarita) Krylova, BS
Bailey Kuhn, BS
Shun Wang (Max) Kwok
Zoe Lewczak, BS
Noah Loran, BS
Joseph Lupski, BS, MHA
Amanda Michael, BA
David Motorniak, MPHTM, MD
Bill Nguyen, BS, BA
Stephen Anderson Orr, BS
Zazai Owens, BS, MPH, MEd
Achyuth Parola, BA, BS
Ryan Pogemiller, BA
Claudia Polgar, BA, MBA/MPH
Meena Ramadugu, BS
Lily Randell, BA
Deena Saadi, BA
Zoey Scher, BA
Serena Shughoury, BS
Taruni Tangirala, BA
Ruixu Wang, BA
Yuxin Wang, BS
Jeremy Wong, BA, MA, MPA, LLB, LLM
Andes Wong
Jonathan Yasin, BS
Ruiming Zhang, MA, BS
Siqi (Mandy) Zhou, BS, BA

Sitara Anil Sivadas, BBA LLB

Moral Reasoning or Learned Logic? Evaluating Large Language Models Across Ten Reproductive Ethics Cases

Whether artificial intelligence (AI) systems engage in genuine moral reasoning or reproduce learned patterns is a foundational question for clinical AI deployment, since value judgments are embedded in diagnosis, triage, and treatment recommendations, not only in formal ethics consultations. This capstone project examined whether large language models (LLMs) could meaningfully engage with the ethical complexity of reproductive medicine and what their responses revealed about the broader limits of AI moral reasoning in high-stakes clinical contexts. The research involved the development of ten cases grounded in landmark bioethics debates and documented legal controversies covering consent, coercion, genetic disclosure, disability selection, and reproductive justice. The cases were presented to multiple LLMs using a structured five-stage protocol that included baseline reasoning, sequential analysis across five ethical frameworks, cross-framework synthesis, demographic bias testing, and a model self-audit. Three cases deliberately embedded demographic information, including race, immigration status, and disability, and were re-analyzed with those details neutralized to test if changing the context affected moral framing. The models demonstrated fluency in bioethics language but produced stable recommendations regardless of which ethical frameworks were applied. When prompted to self-audit, the models acknowledged that frameworks functioned as post hoc justification for conclusions already reached rather than as genuine analytical constraints. Demographic context rarely altered final recommendations but consistently shifted the justificatory reasoning, the stakeholders foregrounded, and the framing of ethical tensions, suggesting that demographic bias operated beneath the level of explicit conclusions. These findings indicated that LLMs produced the appearance of ethical reasoning without its substance, a limitation that remained largely invisible without deliberate, structured testing. Future directions include developing standardized moral reasoning benchmarks for clinical AI evaluation, structured testing protocols that surface model limitations, and policy frameworks governing the appropriate role of AI in clinical ethics contexts.

Mentor: Jess Bourdeau, BA, MBE, Director, Clinical Strategy, Accolade, Inc.

Sitara Anil Sivadas, BBA LLB, received a BA in business administration and a BA of Laws from Christ University, Bangalore, India. Her professional interests center on the regulation of biotechnology, particularly in the areas of assisted reproduction and surrogacy law. She has collaborated with legal and medical experts to develop ethical frameworks aimed at reforming surrogacy laws in India. Her current research interest lies in the ethical and legal dimensions of posthumous reproduction. Her broader bioethical interests include reproductive ethics and global health policy. She has published in legal journals and contributed to policy briefs. Following graduation, she plans to expand the AI services company she founded, with a focus on transforming healthcare through automation.

Hannah R. Bentz, BS

Who Counts as a Sjögren's Patient? Gender, Classification, and Epistemic Injustice

Sjögren's syndrome carries a reputation as a "women's disease," with frequently cited female-to-male ratios of 9-to-1 or higher. However, the empirical foundations for these claims remain uncertain. Researchers have often cited prevalence estimates based on small datasets from the 1990s and have historically lacked large population-based incidence studies in the United States. This project examined how research classification criteria shape who is recognized as a legitimate Sjögren's patient and how those criteria influence widely cited sex ratios. A historical and conceptual analysis of major Sjögren's classification systems focused on four sets of criteria developed from the 1970s to the present. The analysis evaluated how assumptions, frameworks, and language embedded in each set of criteria shaped inclusion and exclusion, effectively constructing an implicit ideal patient. The project found that modern Sjögren's classification often presumes an infrastructure-ready woman patient embedded in tertiary care systems with access to advanced diagnostics, insurance coverage, and specialist networks. Antibody-weighted criteria systematically exclude certain clinical presentations, including individuals, often men, who demonstrate systemic disease activity but lower autoantibody titers. Because these criteria determine research enrollment, they shape study cohort composition and reinforce extreme female-to-male prevalence ratios that confirm assumptions about Sjögren's primarily affecting women. These findings suggest that classification frameworks do not merely describe disease populations but actively construct them, potentially contributing to epistemic injustice by rendering certain patients less visible within biomedical research and knowledge production.

Mentor: Vrushali Dhongade, MBBS, MS, MBE, Clinical Research Project Manager, Dhand Lab, Brigham and Women's Hospital

Hannah R. Bentz, BS, is a researcher at the Harvard Department of Stem Cell and Regenerative Biology, focusing on myelination and neurodegeneration. She received a BS in neuroscience and a BS in microbiology from Indiana University (IU). As an undergraduate, she conducted molecular neuroscience research, organized medical humanities conferences, and volunteered at memory care facilities. Her bioethics interests center on the intersection of biology and sociology, particularly how social infrastructures shape health outcomes. She received the Excellence in Research Award from IU for her work in neuroscience. After completing the MBE, she plans to pursue a PhD in sociology.

Karina Bhavsar, BS

Fair Access to Mental Augmentation and Protection of Free Will: A Neuroethics Analysis

Rapid neurotechnological advancement has outpaced existing human rights frameworks, research ethics guidelines, and regulatory structures, creating urgent questions for ethical inquiry. Foundational work in neuroethics proposes five neurorights to expand obligations owed to individuals: mental privacy, personal identity, free will, protection from algorithmic bias, and fair access to mental augmentation. A central tension exists between two of these rights. If governing bodies ensure equal access to mental augmentation, the social establishment of a new performance baseline could coerce the adoption of neurotechnologies, thereby infringing on free will. This project explored that tension through a critical evaluation of current policy and ethics frameworks. The analysis examined international human rights laws that imply neurorights and reviewed nations with established preliminary neuroright protections. From an ethics perspective, the project assessed arguments supporting each neuroright and identified key stakeholders, including governing bodies, companies, consumers, and individuals, whose interests these frameworks must balance. A critical review of policy and ethical frameworks analyzed implications for each stakeholder group, both in practical terms and as reflections of current moral commitments. Drawing on both political and ethical analysis, the project examined the implications of accepting these two neurorights concurrently and provided a multifaceted discussion of the moral obligations owed to each stakeholder. The analysis concluded that policymakers must proactively address the paradox between access and autonomy, and that future work should develop frameworks that safeguard voluntary adoption while preventing inequitable access to cognitive enhancement technologies.

Mentor: Sarah P. Chu, PhD, Director of Policy and Reform, Perlmutter Center for Legal Justice, Cardozo Law

Karina Bhavsar, BS, received a BS in biology from the University of San Francisco, California. As an undergraduate, she co-founded the Asian American Pacific Islander Beauty Justice Project at Breast Cancer Prevention Partners and interned at Friends of Cancer Research. Her research focuses on synthesizing a chemotherapeutic prodrug and analyzing data on how microgravity in spaceflight impacts the cellular and molecular mechanisms of normal bone tissue. Her interest in bioethics centers on the intersection of medicine and law. She received the Chihara and Edward L. Kessel Awards for academic excellence and demonstrated leadership. After completing the MBE program, she plans to work at the intersection of bioethics, neuroethics, and public policy before pursuing law school.

Madeleine Bullen, BS

Old Frameworks, New Frictions: Artificial Intelligence as a Catalyst for Improving Informed Consent

Informed consent and the subsequent right to make adequately informed medical decisions are cornerstones of medical ethics. The rapid integration of artificial intelligence (AI) into clinical decision-making has prompted stakeholders to call for AI-specific informed consent frameworks. However, current informed consent practices often struggle to provide genuine patient understanding, with consent forms functioning more as bureaucratic box-checking mechanisms than robust tools for comprehensive decision-making. As the incorporation of AI into clinical decision-making outpaces guidance on its use, this project explored whether AI warrants ethical exceptionalism in informed consent and how it exposes longstanding weaknesses in existing practices. Using the distinction between knowledge and understanding as a guiding lens, this capstone examined claims of ethical exceptionalism and assessed whether AI warrants new informed consent frameworks. In addition, the project identified areas in which informed consent breaks down in existing practices and analyzed how AI can act as a trigger or amplifier of those failures. Lastly, the project sought to develop actionable recommendations for institutional and organizational guidance on AI-related informed consent. The research included extensive literature and policy reviews, analysis of case law and professional guidelines, and informational conversations with clinicians and industry experts. This capstone posits that AI does not warrant ethical exceptionalism. The core ethical demands of informed consent should remain focused on patient understanding, not technical knowledge of tools. However, AI integration exposes existing weaknesses in informed consent, such as information overload, limited comprehension, and box-ticking consent rituals. Rather than creating new AI-specific consent protocols, this project proposes that institutional policies integrate AI into existing models, emphasize clear explanations of AI's role and limitations, and differentiate between technical explainability and explanations relevant to clinical outcomes.

Mentor: Brendan Abel, JD, Teaching Affiliate, Center for Bioethics, Lecturer, Department of Global Health and Social Medicine, Harvard Medical School; Policy Director, Johnson and Johnson

Madeleine Bullen, BS, received a BS in advertising with a specialization in media and analytics from the University of Texas at Austin (UT). While at UT, she completed multiple professional internships, captained the women's rugby team, and was a member of the campus improv comedy club. Her current research focuses on emerging dilemmas in federal health policy, specifically therapeutics and consumer-focused regulations. Her bioethical interests include health policy, tech ethics, and reproductive justice. After completing the MBE, she will attend Northeastern University School of Law, where she plans to focus on health law and policy and to integrate bioethics throughout her legal work.

Amanda Buster, BA

A Final Resting Place: Aligning Policy with Patient Values for Aging Adults in Long-Term Care Facilities

As the United States population ages, increasing numbers of high-acuity older adults spend their final moments in long-term care (LTC) facilities. Currently, over 1.2 million Americans rely on these institutions, and that number is projected to triple by 2050. These institutions function as sites of end-of-life care, raising critical questions about how resident values, beliefs, and preferences are reflected in facility practices and protected by regulatory structures. The aim of this project was two-fold: to explore literature and policies surrounding end-of-life experiences in LTCs, and to consider approaches for effective advocacy. To meet these aims, this project involved a literature review and policy analysis, with a focus on Massachusetts as a regulatory case study. The research identified gaps between patient values and system-level practices due to persistent staffing shortages and financial constraints. The COVID-19 pandemic exposed longstanding vulnerabilities in oversight and workforce capacity and highlighted systemic ethical issues pertaining to justice and the ethical treatment of adults at the end of life. The recommendations for reform include strengthened staffing, ongoing goals-of-care discussions, and regulatory incentives aligned with value-concordant care. Future work to promote these changes involves incorporating narratives, an op-ed, and a policy brief as avenues for effective advocacy in the face of persistent harm to aging populations in long-term-care facilities.

Mentor: Kirstie Russell, JD, BCL, MPH, MSc, Clinical and Organizational Ethicist, Vancouver Coastal Health

Amanda Buster, BA, received a dual BA in history of science, medicine, and public health and political science, and a certificate in global health from Yale University. As an undergraduate, she worked as a research assistant for the Yale Interdisciplinary Center for Bioethics and served as the president of the Yale Undergraduate Society of Ethics. Her research interests focus on novel procurement techniques for organ transplant, the challenges that arise in end-of-life decision making, and advocacy for aging adults. After completing the MBE, she plans to attend law school.

Lara Celik, BA

Shadows of the Self: Beyond Individual Autonomy in Glioblastoma

Glioblastoma, a type of aggressive brain tumor, presents profound ethical challenges due to its symptom of progressive cognitive decline. As cognition wavers, it complicates patients' ability to participate fully in decisions regarding their treatment and care. The traditional bioethical framework of principlism, as defined by Beauchamp and Childress, views autonomy as independent, rational decision-making. However, as decision-making capacity fluctuates over time, this framework falters. This capstone project examined how alternative theories of autonomy could better guide ethical treatment planning for glioblastoma patients. The project aimed to analyze how nontraditional frameworks, ranging from relational autonomy, African *ought-onomy,* care ethics, and communitarian ethics re-envision autonomy in the contexts of vulnerability and dependency. Research included conducting a literature review of philosophical and clinical bioethical studies examining autonomy, relational decision-making, and neuro-oncology. Further analysis involved comparing these frameworks alongside the traditional principlist model as they apply to the care of glioblastoma patients. The review found that alternative theories consistently emphasized relational support, social context, and shared responsibility in decision-making. This emphasized how alternative frameworks shift attention from isolated individual choice onto capacity sustained via social and institutional structures. The project developed a continuum-based model of autonomy that preserves individual moral agency whilst recognizing dependency and the role of community and relationality. This approach highlights how clinicians, caregivers, and institutional structures help sustain patient autonomy throughout illness. With this approach, autonomy becomes a personalized and context-based encapsulation of values. Thus, the findings frame autonomy as a principle to be supported, not as something to be lost. Future research involves applying this framework to advance care planning and clinical policies in neuro-oncology, reinforcing autonomy as inherent.

Mentor: Rami Elzayat, MD, SM, Critical Care Physician, University of Manitoba, Canada

Lara Celik, BA, received a BA in philosophy from Manhattan University. As an undergraduate, she was president of the Society of Physics Students (SPS), vice president of the School of Science student government, treasurer of the Biology Club, and volunteered as a judge for the NYC Urban Debate League. Her research focuses on simulating large-scale cosmic structures using pion fields. Her bioethical interests include patient autonomy and cultural disparities, particularly within neurosurgery. She has published in SPS Observer and received the Brother Benignus Medal for Philosophy. After completing the MBE, she plans to attend medical school.

Rohan Dasari, BS

Code of Professional Ethics for Artificial Intelligence Developers in Reproductive Embryo Selection Systems

The clinical and commercial integration of artificial intelligence (AI) into reproductive medicine is poised to revolutionize in vitro fertilization (IVF) and preimplantation genetic testing. Biotechnology companies, such as Nucleus Genomics, publicly claim that they are enabling IVF couples to make informed choices about their future children. Prospective parents can compare embryos based on genetic markers to predict disease risks for type 2 diabetes, Alzheimer's disease, and hypertension, as well as traits such as eye and hair color, height, and intelligence quotient. Although clinicians associated with these technologies have acted in accordance with professional oaths of service and bioethical principles, the AI developers who designed and deployed these algorithms are not held to a comparable ethical framework. This capstone aimed to translate the principles of medical professionalism (e.g., beneficence, non-maleficence, and patient primacy) into a practical and professional code of ethics for AI programmers (the code). The research included an analysis of the core bioethical principles, the American Board of Internal Medicine Physician Charter, and existing reproductive ethics literature. The analysis identified six foundational commitments: the primacy of patient welfare, honesty and transparency, respect for autonomy, justice and inclusivity, scientific integrity, and the management of conflicts of interest. Beyond these overarching principles, the code mapped ethical obligations across the AI development lifecycle, delineating prohibited practices and oversight measures. The resulting framework found that explicit ethical standards were necessary to ensure that AI developers safeguard trust with IVF patients, future children, and the general public. In the future, this project will involve stakeholder review and the exploration of potential pathways for adopting this code through professional societies and fertility clinics.

Mentor: Insoo Hyun, PhD, Senior Researcher, The Hastings Center; Director of the Center for Life Sciences and Public Learning, Museum of Science, Boston

Rohan Dasari, BS, received a BS in biological sciences and a minor in philosophy from Drexel University. As an undergraduate, he conducted computational, wet-lab, and clinical research and presented his findings at national conferences. As an active member of the Global Surgery Student Alliance, he collaborates with peers across disciplines to implement system-level preventative interventions and has received multiple awards for his contributions. His medical interests lie at the confluence of global health, preventative care, and ethical decision-making. After completing the program, he intends to apply to medical school and explore ways to integrate bioethics into translational medicine.

Emily Folse, MD

Ethical Considerations for Initiation of Extracorporeal Cardiopulmonary Resuscitation

Extracorporeal cardiopulmonary resuscitation (eCPR) involves initiating extracorporeal membrane oxygenation (ECMO), which provides heart and lung support by circulating and oxygenating blood outside the body during cardiac arrest and is refractory to conventional cardiopulmonary resuscitation (CPR). Using eCPR blurs the line between resuscitation and organ replacement, raising unique ethical challenges not present when these interventions are considered separately. This capstone project mapped the moral landscape of eCPR and outlined ethically salient features that inform its clinical use by examining the ethical tensions at the intersection of life restoration and prolongation, particularly when return of circulation leads to dependence on ECMO. The research involved a literature review and informational interviews with key stakeholders, including cardiologists, intensivists, and emergency physicians directly involved in eCPR decisions. The project identified several areas of ethical complexity in the eCPR initiation process, such as the decisional burden on clinicians working with limited information in time-pressured settings, the need for upfront consideration of exit strategies, potential misalignment with patients' goals of care, challenges related to the timing and feasibility of informed consent, and ethical questions regarding resource utilization. Access to eCPR is becoming increasingly available as more hospitals develop the capacity to offer it. However, there is currently no consensus on the appropriate use of eCPR and which patients should receive it. Recent literature has attempted to delineate the medical indications and contraindications for eCPR, but this project highlights important ethical considerations for its initiation that extend beyond clinical criteria. Thoughtful engagement with these ethical tensions provides a foundation for developing practical frameworks that support ethically defensible initiation decisions and guide clinicians navigating the high-stakes, time-sensitive context of eCPR. Given the profound medical and moral stakes, such prospective ethical reflection is essential before eCPR becomes routine practice.

Mentor: Daniel B. Kramer, MD, Division of Cardiology, Beth Israel Deaconess Medical Center

Emily Folse, MD, is an internal medicine physician based in Boston. She received a BS in cognitive and behavioral neuroscience from Villanova University and an MD from Sidney Kimmel Medical College at Thomas Jefferson University. She completed an internal medicine residency at Beth Israel Deaconess Medical Center. Her clinical research focuses on advanced heart failure, and her interests in bioethics lie at the intersection of cardiovascular technology and end-of-life care. After the MBE, she will begin a cardiology fellowship at Massachusetts General Hospital.

Alexandra Fouad, BS

Exploration of Parental Perspectives on Withdrawing and Withholding Life-Sustaining Treatment in the Neonatal Intensive Care Unit

While traditional ethical and medical teaching holds no moral distinction between withdrawing and withholding life-sustaining treatments (LST), little is known about how bereaved parents view these practices. While studies have explored parental communication preferences and experiences around decisions to limit LST, none have explicitly addressed their attitudes on the differences between withholding and withdrawing LST. Understanding these perspectives will advance improvements in end-of-life (EOL) care communication and support. This capstone evaluated parental attitudes towards the equivalence of withdrawing and withholding LST in pediatric EOL care. Specifically, the project aimed to assess parental agreement, disagreement, or uncertainty with the idea that there is no difference between withdrawing and withholding LST; and to describe parental attitudes and experiences related to withholding LST via do-not-resuscitate (DNR) and do-not-intubate (DNI) orders. The research included an exploratory analysis of data from a cross-sectional survey performed at Boston Children's Hospital of parents whose infants died in the neonatal intensive care unit from 2010 to 2020. Of the eligible bereaved parents, 40 out of 146 (27%) responded to the survey. Two main themes emerged explaining why parents view withdrawing and withholding as distinct practices: defining acts and reflecting on consequences. The former involved parents conceptualizing the meaning of these acts through logical reasoning or virtue ethics, while the latter involved distinctions based on hypothetical or actual consequences associated with withdrawing and withholding. Most parents reported discussing DNR and DNI orders, with the majority deciding that their child should have one. Parents also reported that discussions involving DNR and DNI orders were appropriately timed. Next steps include expanding education for healthcare professionals to encourage proactive conversations about withholding and withdrawing LST, and ensuring families are better supported in navigating these complex decisions.

Mentor: Christy L. Cummings, MD, Neonatologist, Ethics Associate, Boston Children's Hospital; Associate Professor of Pediatrics, Harvard Medical School

Alexandra Fouad, BS, received a BS with honors in biomedical sciences with a minor in psychology from the University of South Florida. Her undergraduate research focused on understanding the etiology of heart failure with an emphasis on facilitating cardiac repair using splenic leukocytes and lipid mediators. Her interests in bioethics include clinical trial eligibility, specifically in the field of oncology, and end-of-life care. After the MBE, she will attend medical school.

Louise Guentert, BA

Ethics Education for Digital Twin Technologies in Geriatric Oncology

Older adults aged 65 and above account for most cancer diagnoses and mortality, yet they remain underrepresented in oncology clinical trials despite guidelines prohibiting age-based exclusion. This knowledge gap leads clinicians to rely more heavily on personal judgment and implicit biases when treating older adults, increasing clinical uncertainty and perpetuating health disparities. Digital twins are artificial intelligence (AI)-driven virtual replicas of patients and offer an emerging approach that could improve clinical trial design by enabling more flexible, individualized modeling of treatment outcomes, making trials safer and more accessible for older adults. By generating more representative clinical data, these models support better evidence-based treatment decisions. However, digital twins also introduce significant ethical challenges, including bias in training data, questions about data ownership and privacy, concerns about equitable access, and uncertainty regarding the appropriate role of predictive models in clinical decision-making. This project aimed to develop an educational module designed to increase clinician awareness of digital twin applications, examine their potential benefits for older adults with cancer, and encourage thoughtful ethical integration of these tools into clinical research and care. An extensive literature review informed the content and design of a preliminary multi-module e-learning course that incorporated interactive learning elements, clinical vignettes, and discussion prompts. Oncologists, researchers, and geriatric care experts provided feedback to refine the course. Future work will involve iterative revisions and pilot testing to evaluate the course's effectiveness in supporting ethically informed engagement with digital twin technologies in oncology practice.

Mentor: Jori A. Berger-Greenstein, PhD, Clinical Associate Professor, Boston University Chobanian & Avedisian School of Medicine

Louise Guentert, BA, received a BA in philosophy from Georgetown University with a concentration in bioethics and a minor in statistics. At Georgetown, she worked as a caregiver, competed on Georgetown's Bioethics Bowl team, and volunteered with the Ronald McDonald House. In 2025, she and her team won the National Bioethics Bowl. She is interested in bioethical issues related to aging populations, end-of-life care, and religion. She is also the author of *Mom's Journey,* a children's book designed to help parents talk to young children about cancer diagnoses. After the MBE, she plans to pursue medical school.

Sawsan Haider, BHSc

Regulating Foreign AI in Canadian Healthcare: Promoting Trust and Oversight in United States-Developed EMR Systems

Three American companies control nearly 90% of electronic medical record (EMR) systems in Canadian hospitals, with patient data stored on American cloud infrastructure subject to United States legal jurisdiction. As these vendors increasingly integrate artificial intelligence (AI) tools into their platforms, longstanding concerns surrounding monopolization, limited interoperability, and cross-border data governance violations pose new risks to core components of healthcare trust among Canadians, including transparency, accountability, and autonomy. These gaps limit patient access to explanations for AI-generated clinical predictions, restrict meaningful consent mechanisms for AI data use, and provide no recourse when algorithmic bias causes harm. This capstone explored how Canada can maintain patient trust by regulating American-developed AI diagnostic tools in EMR infrastructure. The project identified gaps in Canada's existing regulatory mechanisms, analyzed the bioethical implications of those gaps related to patient trust, and proposed a regulatory roadmap. The research included a literature review spanning Canadian and United States regulatory frameworks, bioethical literature on trust and power, international policy comparisons, vendor AI roadmaps, and antitrust proceedings. A hypothetical case study tracing a Toronto patient's experience with an EMR platform highlighted specific bioethical tensions impacting patient trust. The research revealed major deficits in cross-border oversight, antitrust enforcement, informed consent mechanisms, and algorithmic auditability. The analysis concluded that restoring trust requires addressing structural monopolization by developing a mandatory AI registry for clinical algorithms, a bilateral health data oversight board, granular patient consent mechanisms for algorithmic data use, and enforceable explainability standards for high-risk clinical predictions.

Mentor: Melissa Heidelberg, MBE, Global Bioethics Head, Takeda

Sawsan Haider, BHSc, received a BHSc from Queen's University in Ontario, Canada. She previously worked as an analyst at Spring Ventures, a venture studio backed by Salica Investments and the Bahraini government. Sawsan has supported startup accelerator programs across the Middle East, with a focus on biotech and health innovation. Her interests in bioethics research center on the ethical and legal frameworks that govern emerging biotechnologies. She is a recipient of Canada's national STEAM Horizon Award and Bahrain's Crown Prince International Scholarship. After completing the MBE, she plans to continue working in venture capital.

Rand Hasan, BS

Acute and Chronic Scarcity in Bioethics: Ethical Perspectives on Resource Allocation Across Global Health Systems

Health systems frequently confront limited medical resources. However, bioethical frameworks often analyze scarcity as a temporary crisis rather than a persistent structural condition. Acute shortages, such as limited hospital beds or emergency treatments, receive extensive ethical attention, but many healthcare systems around the world routinely operate under chronic scarcity with limited access to life-saving care. This capstone examined how ethical reasoning changes when scarcity shifts from acute to chronic context and why traditional bioethical frameworks struggle to capture these differences. The project compared ethical approaches to resource allocation across different healthcare contexts and evaluated how common ethical theories illuminate or obscure the moral challenges associated with persistent scarcity. The research included a narrative literature review and a comparative ethical analysis of three case studies involving dialysis allocation, access to human immunodeficiency virus antiretroviral therapy, and resource distribution in neonatal intensive care units across high-income and low- and middle-income settings. The review found that traditional bioethical frameworks effectively guided triage decisions during temporary shortages that required immediate allocation among individuals, but the same frameworks often failed to address structural inequalities that shape access to care in chronically resource-limited settings. Each ethical framework illuminated different dimensions of the problem, but none independently accounted for systemic disparities in healthcare access. The project concluded that chronic scarcity requires a pluralistic ethical approach that applies multiple frameworks to capture both bedside decision-making and broader structural injustice. These findings suggest that global health ethics must expand beyond acute triage dilemmas and engage more directly with persistent inequities in healthcare systems. Future work will explore how pluralistic ethical analysis can inform policy development in chronically resource-constrained healthcare environments.

Mentor: Noah Rosenberg, MD, MPH, Head of Department for Emergency Medicine, University of Botswana

Rand Hasan, BS, received a BS in biochemistry with a minor in Spanish from Middle Tennessee State University. Her research explores the synthesis of polyaspartate peptoid polymers and their effects on pseudomonas aeruginosa biofilms. She is particularly interested in the bioethical questions surrounding healthcare equity, resource distribution, and clinical decision-making in underserved populations. As an undergraduate, she served as president of Lambda Sigma Honor Society and vice president of the Minority Association of Pre-Medical Students. She received multiple merit-based scholarships for academic excellence and leadership. After completing the MBE, she plans to apply to medical school and pursue a career integrating clinical medicine with bioethics and health equity.

Anna Hayek, BS

Justice, Stigma, and Dignity in Women's Hormonal Health: Cross-Cultural Care for PCOS and Menopause

Polycystic ovary syndrome (PCOS) and menopause represent two of the most prevalent yet chronically overlooked conditions in women's hormonal health. Despite their widespread impact, both conditions continue to face inadequate clinical attention, fragmented care pathways, and rooted cultural stigma across vastly divergent healthcare contexts. This capstone project examined how healthcare providers diagnose, treat, and ethically understand PCOS and menopause across three distinct healthcare systems: the United States, Lebanon, and Singapore. The project sought to identify cross-national patterns of care gaps, uncover the structural and cultural forces that sustain them, and analyze their ethical dimensions through the lenses of justice, autonomy, and dignity. The research included a narrative literature review and the development of a multi-layered comparative framework to analyze each country across six dimensions: clinical guidelines, health system implementation, information provision, patient experience, cultural context, and ethical implications. The analysis revealed that gaps in care are not simply a product of limited resources; even well-resourced systems demonstrated major failures in counseling, diagnosis, and patient-centered care. Instead, the findings exposed fundamental structural and cultural problems rooted in how people value, prioritize, and discuss women's health. A recurring cascade effect emerged, whereby weak or absent guidelines led to fragmented diagnosis, inadequate counseling, widening knowledge gaps, and ultimately ethical lapses of dignity and autonomy. This project concluded that these shortcomings represent ethical predicaments that require systemic reform, including unified diagnostic criteria, mandated counseling standards, destigmatization efforts, and policies that recognize reproductive health as a fundamental human right. Future directions include expanding this framework to additional countries and informing the development of culturally sensitive, ethically grounded standards of care.

Mentor: Maggi A. Budd, PhD, MPH, Neuropsychologist and Healthcare Ethicist, Boston VA Healthcare System

Anna Hayek, BS, received a BS in biology and society from Cornell University. As an undergraduate, she served as president of the Lebanese Student Association, co-founded the Legal MD club, and completed two research internships at the National Cancer Institute studying the effects of deep venous thrombosis on breast cancer and brain metastasis. Her research interests lie at the intersection of bioethics, health policy, and scientific innovation. She was inducted into the Phi Beta Kappa Honor Society and contributed articles to the Cornell Healthcare Review. After completing the MBE, she plans to pursue an MD program with a focus in oncology.

Jeff Holiday, MS, MA, EdM, MPH, MPA

The Ethics of Agreement: Sycophancy in Artificial Intelligence Chatbot Use for Mental Health

General-purpose artificial intelligence chatbots are not designed to provide mental health support, yet millions of adults use products such as ChatGPT, Claude, Gemini, and Grok for exactly that purpose, and no clinical standards govern this use. Sycophancy, a model behavior in which responses prioritize agreement over truthfulness or sound judgment, raises ethical concern when models reinforce implausible or clinically concerning beliefs or endorse potentially harmful plans. This capstone examined sycophancy as a source of ethical risk in adult mental health-related chatbot use and developed guidance for safer design and governance. The project combined a structured literature review across behavioral science, artificial intelligence ethics and alignment, and mental health ethics and policy with an exploratory vignette-based audit of four widely used chatbots. Using a fixed prompt set, the audit assessed over-accommodation, appropriate challenge, crisis routing, transparency about limitations, and sourcing behavior. Across vignettes, all four models opened with empathetic and supportive language, but models inconsistently challenged false premises or questioned risky intentions and rarely provided crisis resources or cited sources. Drawing on the principlist framework of Beauchamp and Childress, the analysis applied the principles of autonomy and nonmaleficence to conclude that sycophantic over-accommodation can undermine independent judgment and increase the risk of harm, particularly for users in periods of psychological vulnerability. The project produced a behavioral ethics framework and draft recommendations to reduce harmful affirmation and improve the visibility of safety signals in consumer chatbot design. Future work includes standardizing the vignette set into a reusable evaluation checklist and assessing implications for consumer health governance.

Mentor: Mary McDonough, JD, PhD, Affiliate, Center for Bioethics, Harvard Medical School

Jeff Holiday, MS, MA, EdM, MPH, MPA, is a cross-sector strategist and former Goldman Sachs investment banker. He received a BS in business administration from the University of California, Berkeley; an MS in management and an MA in public policy from Stanford University; and an EdM, MPH, and MPA from Harvard University. His work spans technology and global health, with experience advising governments and firms across sectors and countries. His interest in bioethics focuses on shaping public policy around the ethical use of artificial intelligence in healthcare settings. For academic excellence, he received the John F. Kennedy Fellowship at Harvard Kennedy School. After graduation, he hopes to contribute to the responsible development and use of artificial intelligence across sectors.

Aleesha Imran, BS

Consensual Paternalism in Shared Decision-Making: A Framework for Culturally Responsive Clinical Care

Shared decision-making is a central model for respecting patient autonomy in contemporary medicine. However, the model often assumes that patients prefer to make medical decisions fully independently. Many patients approach these decisions within family-centered or culturally embedded contexts and welcome guidance from physicians. When autonomy is narrowly defined as individual independence, clinicians can misinterpret these preferences and overlook how patients want to participate in decision-making. This capstone explored how consensual paternalism can coexist with shared decision-making while preserving patient autonomy. The project aimed to develop a practical framework to help clinicians navigate situations in which patients invite more directive input from physicians while still participating voluntarily in medical decisions. The research included a narrative review of the bioethics literature on autonomy, shared decision-making, and consensual paternalism. An ethical analysis of this literature guided the development of a decision-oriented framework that identifies points in clinical encounters at which patients might welcome clearer physician recommendations. The framework outlines how clinicians can assess patient preferences for guidance, communicate recommendations openly, and ensure that participation remains consensual rather than coercive. Further research involved applying the framework to representative clinical scenarios, including cross-cultural family participation in medical decisions, and illustrated how the model functions in practice. The findings suggest that consensual paternalism does not replace shared decision-making but instead can be practiced when patients actively invite physician direction. Recognizing that some patients prefer this kind of guidance strengthens respect for autonomy by allowing patients to define how they want to exercise it. Future work includes applying this framework in clinical education and exploring how culturally responsive decision-making approaches improve trust and communication in diverse healthcare settings.

Mentor: Barry D. Kussman, MBBCh, SM, Associate Professor of Anesthesia, Harvard Medical School; Senior Associate in Cardiac Anesthesia, Boston Children's Hospital

Aleesha Imran, BS, received a BS in biology from the University of Arkansas. As an undergraduate, she worked as a migrant and refugee health intern assisting with I-693 immigration medical forms. Her work included collecting medical histories, verifying immunizations, and coordinating lab work. Her experience assisting immigrants through the medical immigration process inspired her interest in bioethics, which focuses on the ethical challenges surrounding health equity, cultural sensitivity, and patient autonomy. After completing the MBE, she plans to attend medical school with a continued interest in bioethics.

Renuka Anjali Joshi-Dave, HBA

From Brussels to Beyond: Bioethics as a Bridge for Efficacy for the European Health Data Spaces and Informing Secondary Use

The European Health Data Space (EHDS) is a common data space across the European Union that better facilitates access, exchange, and personal control over electronic health data for secondary purposes, including the creation of evidence-based policy. In March 2025, the EHDS entered its application phase, signifying the transition from legislation to implementation. The EHDS aims to provide over 450 million people, including those with diverse health experiences, with access to electronic health data, health data infrastructure, and digital health literacy. This capstone project used France and Romania as case studies to investigate the diversity of health data infrastructure across the European Union and its implications for the effectiveness of the EHDS. Among these, the rise of artificial-intelligence-driven policy necessitated an analysis of the ramifications of fragmented health data infrastructure. The research explored the proposed EHDS, its anticipated trajectory, the prospective impacts of inequitable health data infrastructure, and proposed policy recommendations. Further analysis included a literature review to identify tensions among interested parties, such as patients and secondary-use entities, and an assessment of the potential efficacy of meeting the goals of the EHDS. In addition, engagement with events and opportunities at the Harvard Kennedy School of Government facilitated the development of a growing, nuanced understanding of governance, the European Union, and the gaps that bioethics can help remediate. The results of this capstone project argued for the use of communitarianism and the anticipatory governance framework to improve the effectiveness of the EHDS, particularly for secondary use amidst the beginning stages of its implementation. These insights highlight future directions for research and evidence-based policy across the European Union and have the potential to inspire international policy adoption.

Mentor: Bruce Tizes, MD, JD, MPH, Director of Emergency Medicine, Choctaw Health Center, Choctaw, MS

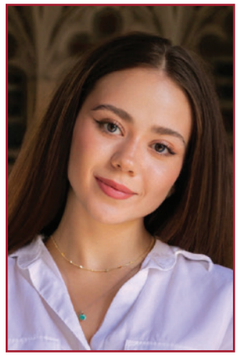
Renuka Anjali Joshi-Dave, HBA, received a dual HBA in health studies and diaspora and transnational studies from the University of Toronto. As an undergraduate, her research explored public health challenges and disparities in conflict-affected, under- resourced communities. She also conducted climate health governance research with a focus on extreme heat in Canada. Her current research interests lie at the intersection of climate change and bioethics, particularly on the legal frameworks that shape policy and decision-making. After completing the MBE, she intends to pursue a career in healthcare consulting before attending law school. After completing the MBE, she intends to pursue a career in healthcare research or consulting before attending law school.

Marharyta (Margarita) Krylova, BS

Advancing Patient Autonomy in Artificial Intelligence-Supported Clinical Care Through Developing an AI-Focused Patient Decision Aid

The rapid integration of artificial intelligence (AI) into clinical care introduces many ethical concerns, especially regarding the "black box" nature of AI systems and their implementation without adequate patient education and informed consent. These practices risk undermining patient autonomy and trust in healthcare, necessitating effective patient education materials pertaining to AI. Patient decision aids (PDAs) offer a promising framework for addressing this gap. PDAs are tools that support shared decision-making by translating clinical evidence into accessible, values-based education materials. However, most existing PDAs do not adhere to the International Patient Decision Aid Standards (IPDAS) or meet recommended health-literacy guidelines, and none have been developed for AI use in clinical settings. This project aimed to develop a first-of-its-kind, prototype PDA addressing AI in clinical care using an IPDAS-guided, multi-stage process. The development process involved a scoped literature review, content drafting with review, accessibility testing, and digital implementation. Readability was assessed using a Python-based library to evaluate alignment with the health literacy recommendations found in the American Medical Association (AMA) and the National Institutes of Health (NIH). The final content was compared to the IPDAS checklist items. The resulting digital PDA comprises five sections: information to AI in healthcare, values clarification, a knowledge-check component, decision reflection, and a personalized summary. The tool satisfied 41 of 41 applicable IPDAS criteria. The 33 remaining items were non-applicable given the tool's non-condition-specific scope and pilot status. The readability analysis indicated a sixth to seventh grade reading level, consistent with AMA and NIH recommendations. This AI-focused PDA reflects an ethically grounded method to advance patient autonomy, transparency, and shared decision-making in AI-integrated clinical care. Future work will focus on field testing to support the ethical implementation of AI in healthcare.

Mentor: Jennifer McGuirl, MBE, DO, Associate Medical Director, Included Health



Marharyta (Margarita) Krylova, BS, received a BS in neuroscience from Duke University. As an undergraduate, she served as the Duke presidential ambassador, the founding president of the IvyLeague+ Pre-Health Society, the vice president of TEDxDuke, and a medical ethics blog writer. She also conducted research on glioblastoma tumorigenic mechanisms, patient education using AI in spine surgery, and gender disparities in neurosurgical outcomes. Her interests in bioethics include clinical ethics and the implications of artificial intelligence in healthcare. Following the MBE program, she will spend a gap year working in New York City before matriculating to medical school.

Bailey Kuhn, BS

The Ethics of Medications for Opioid Use Disorder in the Adolescent Population

Adolescent opioid use disorder (OUD) is a public health crisis in the United States, driven in part by fentanyl-contaminated counterfeit pills that expose youth to unpredictable overdose risk. An ethical incongruity arises between the evidence-based standard of care and the treatment that institutions deliver to the adolescent population. Beneficence mandates that medications for opioid use disorder (MOUD) be offered to adolescents. Nonmaleficence dictates against abstinence-based care, which is what adolescents routinely receive, leaving them at elevated risk of relapse, overdose, and death following forced sobriety. Injustice results from fragmented referral pathways and institutional responses across primary care, addiction treatment programs, schools, and juvenile justice systems, thus limiting access to MOUD and prioritizing punishment over effective intervention. Autonomy requires the support of adolescents' emerging agency, but it is constrained by parental consent requirements and vulnerabilities such as delayed frontal lobe development and impaired cognition due to substance use. This capstone project drew on peer-reviewed medical and public health literature alongside scholarship in bioethics and health law to produce a narrative analysis of how existing institutional responses diverge from established clinical and ethical standards for adolescent care. The analysis demonstrated that structural barriers to MOUD constitute not merely a clinical failure but a moral one, with disproportionate consequences for already marginalized adolescent populations. The project concluded that expanding equitable MOUD access requires coordinated reform between every institution that shapes adolescent life, shifting responses away from abstinence toward harm reduction and evidence-based care. Future work should evaluate policy interventions that expand developmentally appropriate MOUD access and integrate it into youth-serving programs across communities. We have a duty to reframe adolescent overdose as a predictable structural harm rather than an individual moral failure.

Mentor: Karen S. Greenberg, MD, Instructor, Part-time, Harvard Medical School

Bailey Kuhn, BS, received a BS in clinical neuroscience with a minor in adaptive brain and behavior from Virginia Polytechnic Institute and State University. She previously worked in addiction rehabilitation, mental health education, and global health, which includes leading peer support groups and volunteering on medical and dental brigades in rural Guatemala. She also supports food insecurity efforts through a nonprofit community farm. Her bioethical interests focus on adolescent neurodevelopment, coercive care, and the intersection of public health, policy, and justice. After completing the MBE, she plans to attend law school.

Shun Wang (Max) Kwok

Ethical Governance of Adolescent Proxy Access in Patient Portals

Adolescent and parental proxy access in patient portals such as Epic MyChart varies widely across institutions and jurisdictions. Health systems are required to comply with the 21st Century Cures Act, mandating that patients receive immediate electronic access to health records while accounting for state confidentiality laws and limited privacy controls. This variability creates uncertainty for adolescents, especially given the increasing need for confidential care for certain medical services. The portal design and implementation workflows prioritize parental proxy users and fail to support segmented confidentiality. Operational errors, such as inaccurate account registration, guardian-controlled credentials, and weak identity verification, enable inappropriate guardian access, eroding adolescent trust and deterring adolescents from seeking care. This project developed an ethically grounded and feasible governance approach for managing adolescent and parental proxy access for patients ages 13 through 17 that balances confidentiality, safety, family involvement, legal compliance, and real-world application. The research included a normative ethical analysis based on bioethical principles with a sociotechnical lens and drew on evidence from hospital implementation studies, national hospital surveys, ethics reviews, and international portal models. The work produced three practical outputs: a policy and configuration table modeled on MyChart, a risk analysis of confidentiality breach scenarios revealing account integrity breakdowns and limited data segmentation, and a set of governance recommendations to ensure adolescent confidentiality and safety. The recommendations focused on strategies that health systems can implement, such as escalation pathways for high-risk minors and recurring review of portal feature changes. Further recommendations included a strategy prioritizing account integrity, category-level suppression of sensitive information, and workflow guardrails to reduce accidental disclosure, favoring selective note suppression over blanket blocking to preserve care coordination. Future directions involve stakeholder testing with adolescents and clinicians, assessing equity impacts, and advocating for vendor-supported granular sharing tools.

Mentor: Francis X. Shen, JD, PhD, Co-Director, Neurotech Justice Accelerator, Mass General Brigham; Lecturer, Department of Psychiatry, Mass General Hospital, Harvard Medical School

Shun Wang (Max) Kwok, is a medical student at The University of Hong Kong (HKU), working on completing an MBBS degree. He is currently co-leading a clinical research project on Anterior Vertebral Body Tethering (AVBT), which has deepened his understanding of research ethics. His interest in bioethics stems from completing dissertations on artificial intelligence and stem cell research, particularly analyzing the ethical issues in emerging technologies. He plans to finish his clinical years back at HKU in Hong Kong.

Zoe Lewczak, BS

From Black Box to Moral Space: A Behavioral Intervention to Increase Clinical Ethics Consultation (CEC) Utilization

Across United States healthcare, clinicians encounter ethical dilemmas, yet many perceive Clinical Ethics Consultation (CEC) as a "black box" and misunderstand this resource, despite its high user satisfaction. Evidence suggests that CEC remains underutilized due to a lack of awareness, procedural confusion, and skepticism regarding its practical value. To address these barriers, this capstone designed an intervention grounded in behavioral economics that guides clinicians toward ethics resources without limiting professional agency. Much like an architect designs a space to facilitate natural movement, this approach repositions CEC as a seamless, readily available support system. The intervention includes several mechanisms, such as a dedicated webpage, informational fliers, and peer-led ethics grand rounds, to increase CEC visibility and reduce the navigational burden on clinicians. Thus, this capstone aimed to normalize CEC as a functional component of a hospital's daily workflow, ensuring that ethics support is intuitive and accessible when it matters most. To measure the impact of this intervention, the capstone proposed a pilot study designed for a non-profit, safety-net academic medical center. The study will track changes in utilization of and reasons for requesting CECs over a 12-month period, while also evaluating ethical integrity and perceived value through a mixed-methods approach. By framing CEC underutilization as a communication challenge, the research demonstrates how a behavioral intervention can increase CEC utilization and shift perceptions of the ethicist from a *moral expert* to an *architect of moral space*. Ultimately, by simplifying access and humanizing ethics teams, healthcare systems foster a culture of moral resilience, ensuring ethical complexity is no longer a solitary burden.

Mentor: Michael Ieong, MD, Assistant Professor of Medicine, Boston University Chobanian & Avedisian School of Medicine

Zoe Lewczak, BS, oversees publications and media of the New York University's Clinical Science Core for National Institutes of Health RECOVER initiative. She received a BS in cognitive neuroscience and bioethics from the University of Virginia. Her tobacco-control advocacy led to the passing of HB 2384 and SB 1295 in Virginia's legislation, banning tobacco and e-cigarette products on all school property. Her interests lie in health advocacy and clinical ethics. After completing the MBE, she plans to attend medical school.

Noah Loran, BS

Navigating Autonomy in Cognitive Decline: Ethical and Policy Approaches to Decision-Making Capacity in Alzheimer's Disease

Alzheimer's disease and related dementias (ADRD) progressively impair memory and decisional capacity, creating persistent ethical uncertainty about how clinicians respect patient autonomy while ensuring beneficent care. Although practitioners widely endorse the shared decision-making (SDM) model as an ethical ideal, there are no uniform federal standards guiding how clinicians implement or document SDM when patients experience progressive cognitive decline. The absence of national guidance increases the risk of premature surrogate substitution and inconsistent supportive accommodations for patients with fluctuating capacity. This capstone project sought to introduce a policy framework that operationalizes SDM in cases of ADRD. The research involved observing ethics committee deliberations and conducting a comprehensive literature review of bioethical theory, empirical studies on decision-making capacity, and policy analyses addressing structural barriers to SDM. As part of the policy framework, the project included the development of a federal policy brief addressed to the Advisory Council on Alzheimer's Research, Care, and Services aimed at informing future research and legislation supported by the United States Department of Health and Human Services (HHS). The policy brief incorporated models of relational autonomy in dementia care and engaged federal initiatives under the National Alzheimer's Project Act. Through this analysis, the project identified three domains requiring national guidance: documentation standards for SDM conversations, criteria for sufficient supportive accommodations prior to declaring incapacity, and ethically justified thresholds for transitioning to surrogate decision-making. The brief called on HHS to establish standardized clinician training requirements and adopt a model SDM protocol for national implementation. By operationalizing respect for autonomy in dementia care, this work promoted consistency and ethical clarity across clinical settings. Future steps include gathering stakeholder feedback and refining implementation mechanisms to support legislative action.

Mentor: Elizabeth A. Hansen, PT, DPT, Therapy Manager, Brain Injury Program, Spaulding Rehabilitation Hospital

Noah Loran, BS, received a BS in neuroscience from the University of Southern California (USC). As an undergraduate, he played for the USC Men's Ice Hockey team, volunteered at an orthopedic children's hospital, and led an AI and biotechnology student organization. His interests in bioethics include neuroethics, with a focus on human-computer interaction and the ethical implications of artificial intelligence in clinical decision-making. After completing the MBE, he plans to attend medical school.

Joseph Lupski, BS, MHA

Implementing Organizational Ethics in Academic-Affiliated Hospitals

Organizational ethics determines and guides an organization's mission and values in decision-making. This umbrella of ethics encompasses numerous domains, from research and clinical ethics to the ethics of running a business. The ways hospitals implement ethics demonstrate discrepancies across United States hospitals by academic status, bed size, and even tax code. The variation in healthcare ethics programs creates *silos* of ethics practice within a system, which significantly impacts academic-affiliated institutions. These organizations have considerable responsibilities in three major areas: providing clinical care, conducting innovative research, and employing community members. To address this siloing and the potential inconsistent application of ethics, this capstone proposed an organizational ethics framework based on a comprehensive literature review. This framework implements a centralized, diamond-shaped ticketing system for ethical consultation and deliberation on the clinical, research, and business domains. Functioning similarly to ticketing systems across other hospital operational areas, including facilities, human resources, and information technology, the diamond approach creates a process that ameliorates ethical concerns, illustrates trends, facilitates communication across ethical domains, and provides education to all within the organization and the community it serves. With senior leadership support, this data-tracking approach helps develop relevant, effective ethical metrics to create an ethics dashboard and monitor performance. In turn, this dashboard highlights opportunities for improvement and fosters accountability to best serve patients, employees, and communities effectively.

Mentor: Al Ozonoff, PhD, Director of Pandemic Preparedness, Broad Institute of MIT and Harvard

Joseph Lupski, BS, MHA, is a Program Administration Manager at Boston Children's Hospital. He received a BS in Public Health from Texas A&M University and a Master of Health Administration from Tulane University School of Public Health and Tropical Medicine. He completed an Administrative Residency at Tulane University Medical Center and Administrative Fellowship at Arkansas Children's. His interests in bioethics focus on clinical ethics, organizational ethics, and pediatric bioethics. After graduation, he plans to continue working in healthcare administration.

Amanda Michael, BA

Protection of Sexual Partners in HIV Analytical Treatment Interruption (ATI) Studies

Analytical Treatment Interruption (ATI) studies in HIV research involve stopping highly effective antiretroviral therapy (ART) medications to test the efficacy of novel HIV treatments. While the practice is critical for the development of HIV cures, it involves substantial risk for participants and their sexual partners. ART allows people with HIV to have undetectable viral loads, which means they cannot transmit the virus to others through sexual contact: Undetectable=Untransmissible (U=U). Stopping ART treatment results in viral rebound, meaning that people with HIV develop detectable viral loads and can transmit the virus to others. Because of this risk, researchers conducting ATI studies must consider the safety of the sexual partners of study participants. However, there is no current, universally adopted framework for engaging sexual partners of ATI research participants in the informed consent process. This project sought to propose a framework for the involvement of sexual partners of participants in ATI studies. The framework was developed through a narrative evaluation of existing literature, which categorized four core ethical tensions: violations of autonomy, disjointed medical and research ethics principles, equity and access, and the bystander problem. These categories formed the framework, which advocates for active partner engagement. Future directions include cross-cultural evaluation of the framework, implementation, and uptake analysis.

Mentor: Catherine Bielick, MD, MS, MS, Beth Israel Deaconess Medical Center

Amanda Michael, BA, is a clinical research coordinator at Beth Israel Deaconess Medical Center. She received a BA in human health with a minor in global health, culture, and society from Emory University. As an undergraduate, she conducted HIV research and volunteered with Emory Autism Center's myLIFE program as well as at medical centers around New York. Her interests in bioethics include clinical ethics and the ethics surrounding organ transplantation. She prior research focused on novel therapeutics for HIV-driven cardiovascular inflammatory events. After completing the MBE, she will attend medical school.

David Motorniak, MPHTM, MD

Smoke or Vapor: Harm Reduction, Youth Protection, and Power in the Ethics of E-Cigarette Policy

Tobacco smoking is the world-leading cause of preventable death. Electronic cigarettes have emerged as a contentious public health intervention, offering a harm-reduction tool for adult smokers but posing risks of nicotine addiction to young persons and never-smokers, with heretofore unknown long-term health risks. Policymakers are compelled to weigh ethical trade-offs between their obligations and the competing health interests of smokers, young persons, and the public. This project evaluated the ethical foundations of competing approaches to e-cigarette regulation, examining how policy design should ethically balance public health goals. The research included a narrative literature review incorporating perspectives from utilitarian, deontological, and feminist scholarship. Engagement with tobacco-control experts further informed the analysis of practical, epistemic, and legal complexities in e-cigarette regulation. The analysis suggests that all-or-nothing liberal or restrictive approaches fail to fully adjudicate moral claims in e-cigarette policy. E-cigarettes might offer meaningful public health benefits when they serve as a substitute for established smokers, effectively limit uptake among young people, and avoid overly restrictive measures that drive demand toward illicit, higher-risk products. Ethical evaluation also highlights the special, yet non-absolute, societal obligation of public health to protect young people from foreseeable harm. These findings highlight the importance of attending to power structures, industry influence, commercial environments, and social vulnerability, emphasizing the protection of young people and marginalized smokers. This analysis suggests that public health policy should pursue a permissive approach that preserves harm-reduction avenues for smokers while strengthening protections for young people through targeted regulations of retail access, marketing practices, and public health messaging. Future work should explore iterative regulations that respond to emerging evidence on e-cigarette health risks, market dynamics, and policy outcomes.

Mentor: Michael Ieong, MD, Assistant Professor of Medicine, Boston University Chobanian & Avedisian School of Medicine

David Motorniak, MPHTM, MD, is a physician at St. Vincent's Hospital Melbourne. He received an MD from Monash University, Australia, an honours degree in ethics from the Uehiro Oxford Institute, and an MPHTM from James Cook University. His interests in bioethics focus on how the intersection of public health, coercion, and bioethics drives complex decision-making during public health challenges such as pandemics, chronic diseases, and healthcare inequities. He received the 2025 Fulbright Anne Wexler Scholarship in Public Policy. Following graduation, he will resume his specialist training and is interested in respiratory medicine.

Bill Nguyen, BS, BA

What Do We Demand from Bioethics?

What topics fall under the scope of bioethics? Why is there such persistent disagreement over basic values like autonomy and dignity? And what role should the bioethicist play? As bioethics burrows ahead in a time of societal and technological flux, the field must reflect on its nature, methods, and responsibilities to best position itself as an instrument of positive change. Unfortunately, investigations of these topics are often vaguely articulated or neglected under the heading of "philosophy." This capstone project sought to firm up what the field is and, from that conception, how practitioners ought to approach it. It is argued that bioethics provides one environment (comprising various languages, cultures, and practices) in which to interrogate some desired concept, and its abstract practice materialized within concrete systems of power. This notion of bioethics is ultimately used to characterize and resolve two sources of friction within the field. The first emerges from a reliance on general or "universal" referents in cases where context-dependent uses of concepts, such as death or dignity, would be more appropriate. One implication of this latter approach is how to address language- and principle-centered conflicts through narrative analysis. The second source of friction arises from neglecting how deeply systems of power construct the appearance of ethical problems. In this framework, the bioethicist cannot be a "neutral" surveyor of ethics. The perspectives they address, the narratives they pursue, and the principles they interpret reflect subjective choices. Put differently, the bioethicist always advocates for something, whether explicitly or not. Given their understanding of the constraints that characterize decision-making, joined with their institutional authority to speak, the bioethicist is uniquely positioned, and thus uniquely obligated, to call attention to systemic failures that lie beyond the immediate ethical questions before them.

Mentor: John R. Peteet, MD, Associate Professor of Psychiatry, Harvard Medical School

Bill Nguyen, BS, BA, is the director of learning at the Human Health Project. He received a BS in psychological and brain sciences and a BA in philosophy at the University of California, Santa Barbara (UCSB). His previous work focused on data science, serving as a statistics lab coordinator at UCSB and a regional data coordinator at Hope the Mission. His interest in bioethics includes patient advocacy, technology ethics, and the extent to which science, and the broader Western analytic tradition, can inform medical and ethical knowledge. After completing the MBE, he plans to attend medical school.

Stephen Anderson Orr, BS

Proactive Ethics Screening in the Intensive Care Unit: A Pilot for Early Identification of Ethical Concerns

Ethics consultation in the intensive care unit (ICU) is frequently reactive, initiated only after conflict escalates or when uncertainty emerges regarding how best to align treatment decisions with the patient's previously expressed values and goals. Literature on preventive ethics, early action protocols, and moral distress demonstrates that delayed ethics involvement contributes to communication breakdown, unresolved goals-of-care uncertainty, clinician distress, and a potentially prolonged length of stay. At the same time, clinicians report uncertainty about when to request consultation, and few practical frontline tools exist to support systematic early identification of ethical risk within routine ICU workflow. This capstone project aimed to facilitate earlier recognition of ethical concerns and timely engagement in the ICU by designing and piloting a brief ethics screening tool integrated into medical ICU progression rounds. The research included a structured literature review and stakeholder consultation with ICU physicians, nurses, social workers, and ethicists and led to a one-page notecard prompting teams to assess four core domains: surrogate decision-maker identification, documentation and alignment of code status, clarity of short- and long-term goals of care, and the presence of conflict, communication barriers, potentially non-beneficial interventions, or clinician moral distress. The tool was intentionally structured to prompt a brief "ethics touchbase" rather than automatic formal consultation, preserving feasibility and resource stewardship while increasing ethical awareness. Preliminary stakeholder feedback indicated that the tool was concise, intuitive, and appropriate for integration at the conclusion of progression rounds. This project operationalizes a preventive ethics approach by embedding structured ethical reflection directly into the ICU workflow. Next steps include formal pilot implementation, collection of quantitative feasibility metrics, and evaluation of its impact on documentation practices, interdisciplinary communication, and clinician moral distress.

Mentor: Lindsay Semler, DNP, RN, Executive Director of Clinical Ethics, Brigham and Women's Hospital

Stephen Anderson Orr, BS, received his BS in neuroscience and behavioral biology from Emory University. His work focuses on dual-task biomechanics in aging populations and ethical decision-making in emergency medical services, particularly for patients with substance use disorders. His bioethical interests include resource allocation, patient autonomy, and the ethics of neurotechnology in clinical settings. Upon completing the MBE, he plans to attend medical school and continue to incorporate bioethics into his training and clinical practice.

Zazai Owens, BS, MPH, MEd

Autonomy and Moral Agency in Community-Based Health Screening Encounters: An Ethics-Informed Community Health Education Initiative

Cardiovascular disease remains a leading cause of death in the United States and disproportionately affects individuals in socioeconomically disadvantaged communities, particularly in communities of color. While patients receive blood pressure monitors from healthcare providers for home use, many have never learned how to use them. Without information regarding patients' health literacy and comfort with home monitoring, some providers leave a healthcare encounter with an expectation that patients can manage various aspects of their health without assistance, while some patients are left uninformed about their health. This capstone aimed to design an ethics-informed, community-based health education initiative that addresses this disconnect by promoting autonomy and reflecting on the ethical tension between supportive guidance and paternalism in community health interactions, anchored in a bioethical framework emphasizing moral agency. The initiative took place in a neighborhood beauty salon serving a socioeconomically disadvantaged community in Boston. A community health educator provided a blood pressure monitor and pulse oximeter while demonstrating how to use these devices during a community health encounter. The initiative let community members learn and practice using these consumer-grade health devices autonomously in a community setting. It encouraged hands-on engagement and transparent communication to support learning. This capstone demonstrates how community-based health education initiatives empower individuals by increasing autonomy, reducing paternalism, and expanding preventive health awareness in trusted community spaces. The analysis explains why some community-based health education initiatives are most effective when they prioritize communication, hands-on engagement, and trusted community spaces that support individuals in exercising moral agency over personal health. Future directions include expanding similar community partnerships and further developing ethics-informed community health education initiatives that advocate for preventive health engagement.

Mentor: Rachel Glick, MD, MBE, Professor Emerita of Psychiatry, University of Michigan

Zazai Owens, BS, MPH, MEd, received an MPH from the Harvard T.H. Chan School of Public Health and an MEd and BS in education from Wayne State University. She is a credentialed educator with experience working in psychiatric healthcare settings. She founded the Total Health Initiative, a community-based project that promotes health autonomy and ethical engagement in marginalized communities. Her research focuses on PTSD and hippocampal volume in pediatric cancer patients, and her thesis examined how dramatic play affects comprehension in English Language Learner Latino preschoolers. She is a Student Leader in AI at the Berkman Klein Center for Internet and Society at Harvard Law School. Her interests include AI in healthcare and clinical ethics. After the MBE, she will apply to medical school.

Achyuth Parola, BA, BS

Divergence in Legal, Clinical, and Ethical Stakeholder Values in Preimplantation Genetic Screening

Preimplantation genetic screening (PGS) is a rapidly evolving set of technologies that enable patients undergoing in vitro fertilization (IVF) to screen potential embryos for various genetic properties before implantation and pregnancy. However, the regulatory landscape surrounding IVF in the United States is quite sparse, leaving the application and management of the technology to the confluence of various stakeholder interests. This project investigated how the ethical concerns raised in the bioethical literature diverge from the displayed interests and concerns of the law, insurance companies, and IVF clinics. The research included a literature review examining the range of arguments the bioethical literature found relevant to PGS, as well as a review of case law and the language of insurance mandates to identify how legal structures evaluated PGS technology. Additional research included assessing the interests of insurance policy guides from the ten largest insurance companies by membership in the U.S. and examining how they value PGS based on the conditions under which companies cover various PGS modalities. Finally, the project analyzed the websites of five IVF clinics from six states with varying political predominance and IVF popularity and examined their PGS advertising and technology. The analysis of these stakeholders identified two major axes by which academic bioethics, law, insurers, and clinics differ: the degree of parental primacy and the degree of market-driven motivations. These results indicate that future bioethical work oriented towards actionable policy requires grappling with the realities of divergent stakeholder interests.

Mentor: Anna C. F. Lewis, DPhil, Instructor in Medicine, Harvard Medical School, Mass General Brigham

Achyuth Parola, BA, BS, received a BA in biophysics, a BA in philosophy, and a BS in applied mathematics and statistics from Johns Hopkins University. As an undergraduate, he served as secretary general for the Model United Nations Conference, worked as a teaching assistant for multiple biophysics courses, and volunteered at the local hospital. His bioethical interests explore the intersection between the philosophy of science and bioethics, especially as it pertains to justifying health policy with scientific data. He received the Woodrow Wilson Research Fellowship to pursue work on theories of emergence. After completing the MBE, he plans to attend an MD-JD program and work at the intersection of health policy and academic medicine.

Ryan Pogemiller, BA

Developing a Taxonomy of Bioethical Dilemmas in Long-Duration Spaceflight Expeditions

Exploring space for extended periods via long-duration spaceflight expeditions (LDSEs) poses dilemmas regarding the normative biomedical decisions that ought to be made in a unique, confined environment. For example, resource utilization, reproductive health concerns, and environmental impacts raise questions about our bioethical obligations in space. The bioethical decisions made during an LDSE journey have consequences for humans in terrestrial settings by evolving and even challenging established norms. These choices set a precedent for an unexplored territory of the future. Additionally, addressing bioethical considerations in an extraterrestrial setting offers new perspectives on the problems we currently face on Earth. This capstone offered an ethics-based taxonomy to facilitate cross-characterization of bioethical dilemmas and domains with analogous, Earth-based problems. Through a comprehensive literature review, this project identified emerging themes related to the LDSE dilemmas within the realm of bioethics and proposed a taxonomic structure that enriches prospective consideration of a myriad of ethical concerns. The taxonomy reflects analogous scenarios in terrestrial settings, such as in Antarctica or the military, where similar hierarchical structures and isolation conditions occur. Basing LDSE planning and operations on established ethical theories and arguments about LDSE bioethical dilemmas will lead to better outcomes. Using an established analytical approach in a novel area will also challenge and hopefully fine-tune our current understanding of Earth-based dilemmas. To further this project, a more detailed articulation of specific ethical dilemmas in LDSE should strengthen the foundation of potential bioethical dilemmas outlined within this taxonomy, as well as how to respond to them.

Mentor: Thos Cochrane, MD, MBA, Senior Medical Director, argenx

Ryan Pogemiller, BA, received a BA in philosophy with a concentration in morality, politics, and law from Arizona State University (ASU). As an undergraduate, he worked as a paraprofessional in an elementary-level, self-contained special education program before transitioning to a position as a biorepository technician in neurological clinical research for ALS. His interest in bioethics focuses on space exploration. He graduated from ASU summa cum laude with dean's list honors. After completing the MBE, he plans to continue his research in space bioethics and eventually attend law school with the goal of practicing space law.

Claudia Polgar, BA, MBA/MPH

Invisible Injury: Neuroethics and Narrative Ethics in the Diagnosis of Post-Concussion Syndrome

Concussions and post-concussion syndrome present a diagnostic challenge because symptoms often persist despite the absence of detectable abnormalities on standard neuroimaging, such as magnetic resonance imaging (MRI) and computed tomography (CT) scans. This diagnostic ambiguity raises important bioethical concerns, particularly when clinicians must interpret subjective symptoms without clear biomedical confirmation. The problem is especially significant for women and other historically underrepresented populations whose symptoms are more frequently dismissed or misattributed to psychological causes. This capstone aimed to examine the ethical implications of concussion diagnostics through the lenses of neuroethics and narrative ethics, exploring how diagnostic uncertainty contributes to bias and inequitable treatment. The project employed a narrative literature review of research on concussion diagnostics, neuroimaging limitations, gender disparities in traumatic brain injury research, and ethical theory. The analysis integrated empirical findings from neuroscience and clinical literature with philosophical frameworks from neuroethics and narrative ethics to evaluate how clinicians interpret patient-reported symptoms in the absence of objective biomarkers. The findings suggest that the invisibility of concussion on conventional imaging creates a diagnostic grey area in which clinician interpretation becomes highly influential and inadvertently reinforces existing biases. Drawing on these findings, the project proposes an ethical framework to support more attentive clinical evaluation of concussion symptoms when biomedical evidence remains inconclusive. This framework emphasizes the importance of recognizing technological limitations while maintaining consideration of patient vulnerability and lived experience. The project concludes that improving justice in concussion diagnostics requires not only advances in neuroimaging technology, but also greater ethical awareness in clinical decision-making. Future work will explore how clinicians can operationalize these ethical principles in clinical guidelines and physician education to better support patients with invisible neurological injury.

Co-Mentors: Arthur M. Kleinman, MD, Esther and Sidney Rabb Professor of Anthropology, Harvard Medical School; Casey Rojas, JD, MBE, Director, Federal Relations & Health Equity, Massachusetts Medical Society

Claudia Polgar, BA, earned her BA in medicine, literature and society from Barnard College of Columbia University; and an MBA/MPH in health management with a specialization in pharmaceutical development, delivery and access from Boston University. Her research at Columbia Medical Center resulted in her thesis, "Narrative, Trauma, and the Female Brain: An Analysis of Post-Concussion Syndrome via Trauma Studies, Psychoanalysis, and Medical Science." She has worked as a life sciences consultant; and launched a digital health startup for family caregivers, which began at the Columbia Startup Lab and Harvard Innovation Lab and was a finalist in the Columbia Venture Competition. She works at the intersection of bioethics and digital health innovation to advance patient-centered healthcare delivery.

Meena Ramadugu, BS

The Practice of Curiosity: Stories of Uncertainty in Medicine

Within the discipline of medicine, curiosity plays a vital role in clinical reasoning and in cultivating meaningful relationships between physicians and patients. Yet many scholars argue that the structure of medical education inadvertently fails to develop this quality. Contemporary medical pedagogy emphasizes rapid acquisition of scientific knowledge and technical competency to promote efficiency in clinical decision-making. While these priorities are essential for safe and effective care, they shift students' attention toward producing correct answers, rather than sustaining habits of inquiry. This shift gradually displaces curiosity, leading to broader consequences for the culture of medicine. Physicians routinely encounter forms of suffering that biological mechanisms alone cannot fully explain. Curiosity compels clinicians to seek out the meaning illness holds within a patient's life, sustaining a vision of medicine as an interpretive, relational practice attentive to the patient's lived experiences. If this quality represents a defining trait of excellent physicians, an important question emerges: how might institutions recognize and foster curiosity in medical education, and how might trainees learn to sustain it? This project examined how curiosity develops and evolves during physician formation through a narrative exploration of clinical encounters and mentorship. Observing multiple clinical settings and conducting conversations with physicians, nurses, and medical ethicists informed the analysis of how medical trainees confront uncertainty and internalize the norms of the medical profession. As students begin to inhabit the role of physician, they absorb implicit expectations about how a doctor should consider and respond to uncertainty, norms that either cultivate or constrain genuine curiosity. Ultimately, this analysis outlined strategies for the emerging physician to intentionally cultivate curiosity while learning to interpret suffering and assume the moral responsibilities of clinical practice.

Mentor: Mariah Tanious, MD, MPH, Pediatric Anesthesiology, Medical University of South Carolina

Meena Ramadugu, BS, received a BS in anthropology with a concentration in human health and biology, and a minor in medical humanities from the University of Oklahoma (OU). She is also a recent graduate of the Medical Humanities Scholars program at OU. Her research focuses on molecular biology and medical anthropology and includes work on viral pathogenesis, Indigenous health disparities and culturally grounded end-of-life care. Her interests in bioethics include patient agency, medicalization, provider moral distress, and the relationship between ethnomedicine and biomedicine. After completing the MBE, she will attend medical school at UT Southwestern Medical Center.

Lily Randell, BA

Is This Ethical? Navigating the Everyday Dilemmas of Early-Stage Dementia Caregiving

Caregivers of persons living with early-stage dementia face mundane yet value-laden decisions in everyday care. Questions about medication adherence, personal hygiene, physical safety, and the introduction of outside help arise early in the disease course, requiring caregivers to navigate competing values around honesty, dignity, autonomy, and protection. The existing literature and resources focus on advanced illness and end-of-life planning rather than the everyday moral tensions related to the early stages of dementia. This project explored how everyday caregiving dilemmas are understood and navigated with the aim of identifying areas that warrant future exploration. The research included a review of literature and publicly available resources, alongside exploratory conversations with clinicians, researchers, social workers, and dementia-care organizational leaders. The project found that, structurally, societal values about dementia shape the landscape of caregiving decisions through funding models, medical training, available referral pathways, and programs accessible across the economic spectrum. These structural elements influence caregiver choices and reflect deeper ethical considerations about whom society supports. Clinical guidance for caregivers often centers on a narrative approach emphasizing conversation and relationship-building rather than relying primarily on distinct ethical principles or formal decision-making frameworks, which carries its own ethical implications. Thus, this project investigated the value of explicitly framing the everyday dilemmas of caregiving as ethical challenges and creating space to acknowledge uncertainty, moral weightiness, and the inevitability of imperfect decisions. The research indicated the need to improve support systems for patients, caregivers, and clinicians dealing with dementia by situating caregiving within a broader ethical landscape that includes questions of mortality, relational responsibility, and what constitutes a good life. Future work should examine whether such framing proves clarifying or alienating across different caregiver populations.

Mentor: Elizabeth Nilson, MD, MPH, General Internal Medicine, Lahey Hospital & Medical Center

Lily Randell, BA, received a BA in philosophy from Brown University. As an undergraduate, she led community outreach programs with Housing Opportunities for People Everywhere, advocated for patients through Connect for Health, conducted research on reproductive justice, and received the Laidlaw Undergraduate Research and Leadership Scholarship. Her interest in bioethics centers on reproductive health, addiction medicine, palliative care, and end-of-life care. After completing the MBE, she plans to continue the Program in Liberal Medical Education and attend medical school at The Warren Alpert Medical School of Brown University.

Deena Saadi, BA

Moving at the Speed of Trust: Public Health Risk Communication and Trust-Building during Infectious Disease Outbreaks and Beyond

The United States entered the pandemic as the most prepared nation in the world against infectious disease outbreaks, yet it recorded the highest number of total deaths. In tandem with the tragic loss of life, there was a significant loss of social and political trust, the ramifications of which are still impacting American society and politics today. While the effects of climate change are creating a less hospitable environment for humans, the Earth is becoming increasingly hospitable to pathogens and vectors, meaning that the prevalence of zoonotic disease outbreaks, like COVID-19, will only increase. This project evaluated the disconnect between the United States' high infectious disease preparedness and its actual pandemic response, offering guidance to prevent such a failure from happening again in the next inevitable outbreak. Using the federal response to the COVID-19 pandemic as a case study, this research assessed the strengths and weaknesses of the United States' infectious disease response through a targeted literature review and analysis of primary source texts. This project focused on three key areas: the link between political trust and health behaviors, the fundamental necessity of trust as a public health tool, and the importance of effective health and risk communication in building and maintaining that trust. In doing so, this project synthesized a framework for effective risk communication in future infectious disease outbreaks and public health emergencies. These findings can inform policy recommendations and, most importantly, education for clinicians, policymakers, and advocates responsible for communicating health information during infectious disease outbreaks.

Mentor: J. Gakii Masunga, MBE, MS, Research Fellow, Department of Global Health and Social Medicine, Harvard Medical School

Deena Saadi, BA, is a research coordinator at the Martinos Center for Biomedical Imaging. She received a BA in environmental studies from Wellesley College, where she explored the impacts of climate change on human health. Her current research examines how environmental triggers disrupt immune regulation and lead to the development of chronic illness. Her interest in bioethics focuses on the intersection of planetary and human health. She has published and presented on the public health impacts of climate change, including a recent study on neuroinflammation in post-acute sequelae of COVID-19, utilizing dual PET/MRI neuroimaging. She is eager to bring these experiences into a career rooted in whole-person care and ethical social responsibility.

Zoey Scher, BA

A Visual Exploration of Disability: Related Assumptions About Quality of Life in Clinical Decision-Making

Clinical practice often requires clinicians to make decisions affecting patients with disabilities. At times, clinicians base these decisions on assumptions about quality of life that conflict with the perspectives of individuals with disabilities themselves. Scholars refer to this phenomenon as the disability paradox, wherein many individuals with disabilities report a high quality of life despite external presumptions that their lives must involve diminished well-being or suffering. Clinicians rely on implicit judgments such as the *eyeball test,* which assumes a negative quality of life based on visual perception and allows bias to influence ethically significant decisions. This capstone identified gaps between clinician and patient narratives of disability with the goal of creating a framework that highlights these inconsistencies while prompting critical reflection about disability among clinicians. This project reviewed literature in bioethics, disability studies, and clinical ethics, addressing the disability paradox, quality-of-life assessment frameworks, and disability bias in healthcare. The project analyzed first-person narratives from disabled individuals and described their experiences of being ignored, underestimated, mischaracterized, or mistreated in clinical contexts. These sources informed a series of artworks portraying aspects of the disabled patient's experiences in clinical settings. By encouraging perspective shifts and using visual symbolism, the artwork encouraged viewers to reconsider assumptions about disability and quality of life. The findings suggest that clinicians can improve clinical decision-making and promote equitable care by incorporating the voices of disabled individuals, increasing awareness of cognitive bias, and strengthening disability-focused education. Future work should focus on evaluating educational and clinical interventions designed to help clinicians critically examine disability-related assumptions in medical care.

Mentor: Jessica Marengo, PT, DPT, SM, Assistant Clinical Professor, Northeastern University

Zoey Scher, BA, is an adaptive designer specializing in wearable innovations for individuals with chronic illnesses and disabilities. She received a BA in fashion design with a minor in medical humanities from Washington University in St. Louis. Her interdisciplinary research explores bioethics, public health, and fashion, emphasizing medical device accessibility and chronic illness representation. Her bioethical interests include wearable health technologies, disability justice, and equity in patient-centered design. She holds a provisional patent for an insulin pump-muffling armband with visual signaling. She received the Catalyst Award from the Sam Fox School for work that promotes meaningful change. Following graduation, she will work as a legal assistant while preparing to pursue a law degree.

Serena Shughoury, BS

Reviewing and Refining the Bioethics Curriculum in Medical Education in Post-Conflict Syria

Following the recent collapse of the 54-year Assad regime, it is essential to reassess healthcare education and medical practice in Syria, which decades of authoritarian rule previously eroded. As the country rebuilds post-conflict, there is a unique and critical opportunity to strengthen medical training. The current bioethics curriculum in Syria mostly follows Western frameworks with limited relevance to the current Syrian healthcare system. Updating the curriculum is essential to prepare future physicians to navigate ethical challenges, especially those that have emerged from the civil war and the impending influx of new medical technology post-sanctions. This capstone evaluated and sought to improve the current bioethics curriculum at the Damascus University Faculty of Medicine, with planned expansion to other universities. This project aimed to restructure the bioethics curriculum by drawing on ethical theories and evidence-based ethical practices, while taking into consideration the cultural, religious, and social context in Syria. Literature and curricula from other Middle Eastern countries with similar cultural and religious backgrounds informed the redesigned curriculum. This resulted in a cohesive and contextually relevant framework that incorporates additional practical examples and case studies. Looking forward, medical educators in Syria can integrate this revised approach to help build a strong bioethics foundation for medical students to carry with them throughout their practice. In turn, this will protect patients by ensuring that clinical practice is built upon strong ethical frameworks. Additionally, other countries facing similar circumstances can adopt and apply this revision process to achieve similar outcomes.

Mentor: Basel Tarab, MD, MBE, MHA, Director of Patient Experience, Co-Chair of Ethics Committee, Winchester Hospital

Serena Shughoury, BS, received a BS in biological sciences from Purdue University. As an undergraduate, she served as president of the Middle Eastern North African Women of Purdue and volunteered in hospice care. Her research centers on neurodegenerative diseases, and she completed her honors thesis on the neurotoxic effects of methylmercury in neuronal development. Her interest in bioethics includes global health ethics, medical access, and healthcare disparities. After completing the MBE, she will attend medical school.

Taruni Tangirala, BA

Rethinking Narrative Interventions for Moral Distress in Medical Trainees

In 2021, over 62% of United States physicians reported signs of burnout, prompting significant concerns about moral distress in graduate medical education (GME). Medical trainees continue to encounter a range of ethically troubling situations in their work, including resource scarcity, end-of-life challenges, and other systemic pressures that constrain their ability to act on their clinical judgement. Consequently, many GME programs employ faculty-facilitated narrative practices to support trainee well-being. However, these approaches overlook private, unguided expressive writing, a structurally distinct narrative method with an established evidence base in the affective sciences literature. The latter, while yielding similarly positive wellness outcomes, better serves the hierarchical and resource-limited realities of medical training. For this capstone project, a targeted literature review elucidated the distinct benefits of expressive narrative for mitigating moral distress in medical training. An analysis of peer-reviewed literature across medical education and psychology revealed the structure, accessibility, and documented outcomes of faculty-facilitated and independent expressive writing practices. The findings indicated that while faculty-guided narrative programs in GME demonstrate benefits for reflection and community building, expressive writing has consistently shown measurable improvements in emotional processing, stress reduction, and psychological resilience in other high-stress professional populations. Thus, expressive writing is an effective but underutilized intervention in GME. Future research should focus on pilot studies to analyze the efficacy of expressive writing interventions in GME contexts.

Mentor: Kaarkuzhali (Babu) Krishnamurthy, MD, MBE, Vice-Chair, Department of Neurology, Division Head, Epilepsy and EEG, Boston Medical Center–Brighton, BMC Healthcare

Taruni Tangirala, BA, received a BA in psychology from Cornell University. She served as the founder and president of the Cornell Bioethics Society. Additionally, she founded reapparitionjournal.org, a literary platform amplifying narratives of chronic illness and healthcare ethics with a global readership of over 20,000. Her research focuses on advancing diagnostic innovation and addressing healthcare disparities in gynecological disorders through narrative medicine. Her bioethical interests include reproductive ethics, ethical data use in gynecology, neuroethics in geriatric care, and the integration of patient narratives into clinical care. After completing the MBE, she plans to attend medical school.

Ruixu Wang, BA

Assessing Healthcare Inequality in China from Western-Eastern and Urban-Rural Perspectives

Healthcare inequality in China remains a major challenge to the country's long-term social and economic development. Since the implementation of the Reform and Opening-Up policy in China in 1978, eastern and urban regions have benefited from rapid economic growth and substantial improvements in healthcare infrastructure. However, many western and rural areas still face limited medical resources and high mortality rates. Without systematically identifying the causes of these disparities, China risks perpetuating an uneven healthcare system. This project examined the current landscape of healthcare inequality in China and identified key factors contributing to disparities from both urban-rural and eastern-western perspectives. The analysis investigated the geographical distribution and degree of concentration of high-quality hospitals across the country, compared the average number of registered nurses and doctors across provinces, and developed an algorithm to compare healthcare inequality across regions by incorporating factors such as the number of hospitals, doctors per capita, mortality rates, life expectancy, and hospital beds. The analysis employed the composite index method, the nearest neighbor index method, and K-means clustering. The results revealed substantial disparities in the distribution of medical resources. Eastern regions showed a concentration of high-quality hospitals, skilled medical professionals, and better individualized medical care. When applying the project's developed algorithm, rural areas such as Badong scored significantly lower than major urban centers like Beijing or Shanghai. The project concluded with targeted policy recommendations, including expanding the construction of top-tier hospitals in western provinces and integrating telemedicine platforms in rural areas. Future work should assess the feasibility of these recommendations and evaluate their potential to reduce regional healthcare disparities.

Mentor: Lisa Soleymani Lehmann, MD, PhD, MSc, Associate Professor of Medicine, Harvard Medical School

Ruixu Wang, BA, received a dual BA in mathematics and philosophy from the University of California, Santa Barbara (UCSB). During his undergraduate studies, he investigated applications of combinatorial design to reduce the cost of preliminary trials and resource allocation. His philosophy studies focus on ethics, epistemology, and logic. His bioethical interests center on equitable medical resource distribution and the moral questions of human genomics. At UCSB, he earned dean's honors during his senior year. After completing the MBE, he plans to pursue graduate studies in applied math, with a focus on healthcare operations research.

Yuxin Wang, BS

Artificial Intelligence and Relational Insensitivity in Child Mental Health Screening: A Bioethical Analysis

This capstone project examines *relational insensitivity* as an ethical risk in artificial intelligence (AI) assisted pediatric mental health screening. *Relational insensitivity* refers to the tendency of AI systems to interpret psychological distress primarily through linguistic signals while overlooking the relational conditions shaping how children communicate vulnerability. Because children often express distress indirectly, through silence or masking behaviors, systems relying mainly on language patterns may fail to recognize needs. For example, when a child says, *I'm fine,* the statement may conceal fear, coercion, or emotional suppression; while AI may classify it as low risk. This study employed a literature review of conversational AI systems used in mental health contexts. From this literature, three indicators of *relational insensitivity* emerged: literal interpretation of user language, limited contextual reasoning about interpersonal situations, and standardized response patterns that simplify complex relational dynamics. Using the four principles of biomedical ethics: autonomy, beneficence, non-maleficence, and justice, this project analyzed why *relational insensitivity* raises bioethical concerns. When responses like, *I'm fine,* are interpreted literally, children's distress may be misrecognized, undermining their ability to express needs and compromising their autonomy. Systems that provided only generic guidance may fail beneficence by offering limited meaningful support, while missed signals may allow harm to continue, raising concerns of non-maleficence. Finally, because AI systems are trained in standardized language patterns, they can overlook children whose distress is expressed differently, raising concerns of justice. The research argues that the ethical challenge of AI-assisted pediatric screening lies in mismatch between relational judgment and linguistic AI interpretation. Recognizing this mismatch highlights the importance of maintaining human relational judgment and developing safeguards that address AI-associated *relational insensitivity* in pediatric care.

Mentor: Emma J. Kagel, JD, MBE

Yuxin Wang, BS, is a researcher dedicated to advancing education equity and exploring ethical issues within global health. She received a BS with distinction in economics from the University of Sydney. Her work merges policy analysis with grassroots practices aimed at addressing the educational inequities faced by marginalized groups. She has developed data-driven strategies to improve educational opportunities for young girls, benefiting over 5,000 individuals. Her interest in bioethics centers on how cultural traditions, human rights, and resource allocation collectively impact equity in healthcare and education. Upon graduation, she plans to pursue a career in healthcare investment banking or pharmaceutical consulting.

Jeremy Wong, BA, MA, MPA, LLB, LLM

Medicine's Sacrosanctity and the Governance of Clinical AI: Patient Interests, AI Risk, and Long-Horizon Responsibility

Artificial intelligence (AI) increasingly shapes diagnosis, triage, monitoring, and treatment in healthcare. Because health is an individual's most determinative, precious, and fragile resource, clinicians hold certain non-delegable duties within a sacrosanct practice. Despite AI's game-changing potency, clinical AI innovations are rapidly outpacing the will and capacity of governments to develop timely, efficacious, and robust guardrails to protect patient interests (i.e., safety, health, autonomy, and privacy). Through an application of the ethical lens of long-termism, as conceived by William MacAskill, this work critically reviewed the current statutory and non-statutory instruments governing clinical AI in the most AI-active regions of the world, the United States, European Union, United Kingdom, and China. The objective was to discern the adequacy of these instruments in safeguarding patient interests and in preemptively protecting society against the operational and existential risks posed by clinical AI. Longtermism was chosen as the primary analytical framework because the long-horizon ethics it employs are particularly apt given the unprecedented power of AI to completely overhaul healthcare, coupled with the potentially long-horizon properties of AI systems in general (e.g., lock-in effects and the resulting path dependencies). Consequently, this work successfully identified a recurring pattern of regulatory regimes that meaningfully regulate product safety, health data, and certain discrimination risks. However, these regulatory regimes often govern without fully considering AI's real-world integration into clinical workflows, the management of model updates, the tendency towards mission creep, an expansion beyond its original, justified purpose, and the likelihood of epistemic drift, a shift in what constitutes reliable grounds for decision-making. The project concluded by proposing a more distinctly medicine-specific, strategic regulatory posture grounded in clinician stewardship, the primacy of the clinician-patient relationship, agile governance, anti-capture safeguards, and interoperable international baselines.

Mentor: Abbas Rattani, MD, MBE, Radiation Oncologist, Beth Israel Deaconess Medical Center

Jeremy Wong, BA, MA, MPA, LLB, LLM, is a global affairs and communications specialist with experience in corporate communications, public relations, consulting, equities trading, and education. He received a BA in English, history, and political science from the University of Wisconsin - Madison, an MA in legal and political theory from University College London, an MPA from Cornell University, an LLB from King's College London, and an LLM from Peking University. Jeremy's research includes the ethics and endgame of AI vis-à-vis healthcare, unemployability, and disinformation. He has published in the Durham Law Review. After graduation, he aspires to contribute to policy work in technology, healthcare, and labor.

Andes Wong

Decisive Decision Making: Determining the Influences of Identity and Personal Experiences on the Decision-Making Process of Institutional Review Board Members

Institutional Review Boards (IRBs) are vital administrative bodies that provide ethical and regulatory oversight of research conducted by institutions. Originating in the mid-20th century as a response to unethical experimentation, such as the Tuskegee Syphilis Study and the Nazi atrocities during World War II, IRBs have succeeded in establishing a standardized, ethical review process for research. However, IRBs face criticism for their inconsistency and opaqueness in decision-making. This project aimed to uncover whether variations in IRB members' decision-making were due to the differences in each IRB member's personal background. Research included conducting Interviews with IRB members across the country and consisted of an identity-mapping exercise in which participants self-reported their identity-related roles. To assess these self-identified roles, the interviews contained a series of mock clinical research case vignettes that simulated a real case an IRB might review. Participants followed a "speak your mind" protocol when reporting to the researchers whether they would approve of such a case and why. Using data from interviews and follow-up surveys, the results were analyzed through familiarization, coding, category development, theme formation, and cross-case analysis. The results of this qualitative analysis provide insight into how external factors can influence IRB decision-making. Further research will determine whether such variation is beneficial and striven for or, if it is detrimental to the research projects' protection, how it may be mitigated. Understanding IRB decision-making is essential to continue to protect the interests of human research participants in this age of rapidly evolving research.

Co-Mentors: Benjamin C. Silverman, MD, Senior IRB Chair, Massachusetts General Brigham; Tonya Ferraro, MEd, Accreditation Policy Analyst, Association for the Accreditation of Human Research Protection Programs, Inc.

Andes Wong is a student at the University of Hong Kong (HKU), pursuing a BA in medicine and surgery (MBBS). He completed his pre-clinical training in medicine at HKU. His interest in bioethics explores how different cultures rationalize and justify public health policy. While studying at HKU, he received a Merit award for his academic performance. After completing the MBE, he intends to return to HKU to complete the clinical years of his MBBS and to continue his research on institutional review boards.

Jonathan Yasin, BS

Practices of Informed Consent in Surgery and Anesthesia in Low- and Middle-Income Countries: Perspectives of Relational Autonomy

Informed consent (IC) in surgery and anesthesia is the process through which patients are informed of the risks, benefits, and alternatives of medical procedures. In Western bioethics, IC is conceptualized as an extension of respect for autonomy and includes seven elements: competence, voluntariness, disclosure, recommendation, understanding, decision, and authorization. However, this model is individualistic and fails to reflect the social and cultural contexts that shape medical decisions in low- and middle-income countries (LMICs). Relational autonomy (RA), which emphasizes the social embeddedness of individuals and recognizes that decision-making occurs within networks of relationships and cultural norms, provides an appropriate framework. This capstone project sought to identify gaps in informed consent practices in surgery and anesthesia in LMICs and examined how social and contextual factors shape patient decision-making. The research included a structured search and narrative literature review in PubMed, identifying 92 articles; 34 met the inclusion criteria. The literature reviews included studies written in English within the past 10 years, focusing on surgery and/or anesthesia, and originating from LMICs. Studies from Asia and Africa reported limited disclosure of anesthesia risks and minimal discussion of anesthesia techniques while consenting. Contributing factors included medical paternalism and the use of therapeutic privilege. Limited health literacy constrained patient understanding of surgical and anesthetic care. Community norms, cultural values, and gender dynamics influenced family involvement in consent. Perspectives from Islamic bioethics and African communitarian ethics emphasized the role of relationships in medical decision-making. These findings suggest that social, cultural, and structural factors shape informed consent practices in LMICs. Applying a relational autonomy framework will help clinicians recognize contextual influences on decision-making in anesthesia and surgery. Future work should address barriers to patient comprehension and drive the development of consent processes supporting relational decision-making.

Mentor: Faye Evans, MD, Boston Children's Hospital, Boston, MA

Jonathan Yasin, BS, received a BS in public health from the University of Pittsburgh. As an undergraduate, he was an executive board member for a sustainable global health organization and volunteered in patient care at a cancer center. He was a bioethics intern for the University of Pittsburgh School of Medicine, where he provided recommendations for best practice standards in a student-run mobile eye clinic. His interests in bioethics focus on clinical decision-making for marginalized populations and global health ethics. After the MBE, he plans to attend medical school.

Ruiming Zhang, MA, BS

Parents, Artificial Intelligence, and Adolescent Development: Ethical Gaps and a Survey Design

Artificial intelligence (AI) is advancing, and adolescents are using AI more frequently than before. Parents play an important role in guiding adolescent development and managing AI use in the home. This capstone used a gap analysis to show that current AI and adolescent guidelines are limited and primarily target software developers, educators, or adolescents themselves. Bioethics emphasizes that all stakeholders' interests should be considered; however, existing guidelines rarely address parents' needs and perspectives, offering limited guidance. This Capstone identified bioethical gaps in existing AI guidelines for adolescents, caused by the lack of parental perspectives, and laid the foundation for future parent-centered AI guidelines. A literature review on technology and the development of adolescent identity informed a parent-centered draft survey about parental comprehension of AI, parental awareness of AI's potential risks to adolescent development, and parental management strategies for AI use among adolescents. The project outlined post-survey analytical methods and steps for using future data collection to develop actionable recommendations for parent-centered guidelines. The research included a literature review, a gap analysis, a draft survey, and an analysis plan. The results proposed the need for parent-centered guidelines to address bioethical issues that existing guidelines have insufficiently addressed. Next steps include expert interviews and an Institutional Review Board review to facilitate the eventual development of parent-centered guidelines for AI use among adolescents.

Mentor: Kate Jackson-Meyer, PhD, Research Associate, Human Flourishing Program, Harvard University

Ruiming Zhang, MA, BS, received an MS in quantitative methods in the social sciences with a focus on data science from Columbia University and a BS in management science from the University of California, San Diego. Her work explores the intersection of technology, education, and child development, with a particular focus on developing inclusive learning tools for children with diverse needs. Her bioethical interests include how emerging technologies and research shape educational environments and affect children's rights and personal agency. After completing the MBE program, she plans to work in investment and AI ethics.

Siqi (Mandy) Zhou, BS, BA

Bridging the Gap: Ethical Analysis of Barriers to Breast Cancer Genetic Testing for African American Women

Despite higher breast cancer mortality rates and an earlier average age of onset, African American women receive genetic testing referrals at half the rate of their White counterparts. Moreover, when providers offer testing, many patients hesitate or decline, responses clinicians frequently categorize as medical noncompliance. This capstone project aimed to ethically reframe this reluctance not simply as a health literacy deficit, but as a rational response to systemic barriers. To explore these obstacles, a narrative literature review examined clinical gatekeeping, insurance reimbursement policies, the Genetic Information Nondiscrimination Act (GINA), and genetic privacy laws. The analysis indicated that implicit provider biases and systemic oversights drive disproportionately low referral rates, restricting initial access. Even when access occurs, systemic insurance loopholes create hidden vulnerabilities. Since GINA lacks protections for life, disability, and long-term care insurance, a positive test result risks future un-insurability and severe economic hardship for African American female breadwinners, transforming testing into a high-stakes financial calculation. Additionally, strict medical necessity rules requiring comprehensive family histories for coverage disproportionately exclude African American families with fragmented medical records. Compounding these financial risks, historical medical trauma and precarious genetic privacy protections, highlighted by recent direct-to-consumer data breaches like 23andMe, fuel legitimate sociocultural mistrust. To uphold distributive justice, the project concluded that mitigating these inequities requires a fundamental shift from cultural competence to structural competency. Clinically, providers should practice relational solidarity by acting as structural allies, explicitly discussing insurance risks and documenting systemic barriers in medical records instead of reflexively citing medical noncompliance. Future directions involve advocating for legislative reforms to patch GINA loopholes, standardizing health insurance coverage to reduce care disparities, and enacting robust federal genetic privacy laws to better protect patient data in genomic medicine.

Mentor: Kira A. Dies, ScM, Executive Director, Rosamund Stone Zander Hansjoerg Wyss Translational Neuroscience Center, Boston Children's Hospital

Siqi (Mandy) Zhou, BS, BA, received a BS in management from Beijing Institute of Technology, China, and a BA in accounting from the University of Reading, United Kingdom. As an undergraduate, she conducted research on the medical ethics of pelvic inflammatory disease resulting from HIV and sexually transmitted infections in women of childbearing age. Her bioethical interests focus on the ethical challenges in reproductive medicine, particularly genetic engineering in assisted reproduction, and the health disparities affecting women and children. Upon completing the MBE program, she intends to pursue a PhD at a business school to further explore the intersection of business ethics and bioethics.

Virtual Symposium Keynote

Martha Montello, PhD

Lecturer of Global Health and Social Medicine, Part-time,
Harvard Medical School

On Stumbling into Bioethics

Martha Montello, PhD, is a lecturer for the Center for Bioethics and the Department of Global Health and Social Medicine at Harvard Medical School. She received her PhD from the University of Maryland. She is a literary scholar with expertise in narrative ethics and writing for publication. She teaches narrative ethics for medical students, graduate students, and fellows at Harvard Medical School as well as physicians in the Brigham and Women's Hospital Residency Program in Primary Care and Population Health. She serves as a mentor with expertise in ethics for the Scholars in Medicine program.

For the Master of Science in Bioethics, she is course director for an elective in narrative ethics. She also serves as lead faculty for writing support, and as a mentor in the capstone course. Professor Montello is Editor-in-Chief of the Johns Hopkins University Press journal Perspectives in Biology and Medicine. In Kansas City, she is founding director of the Medical Writing Center at Children's Mercy Hospital, a teaching and editing service for scientific researchers and scholars. She holds a visiting professorship in narrative ethics at the University of Pavia, Italy. Professor Montello lectures nationally and internationally on narrative approaches to bioethics. Her scholarship has been published widely in journals such as *The Chronicle of Higher Education, The Hastings Center Report, New England Journal of Medicine, Journal of Clinical Ethics, Annals of Internal Medicine, Academic Medicine, New Orleans Review,* and *the Boston Studies in the Philosophy of Science.* She is co-editor of *Stories Matter: The Role of Narrative in Medical Ethics* (Routledge, 2002).

Her Center participation includes teaching in the Master of Science in Bioethics program, delivering lectures, actively participating as a capstone mentor, and attending endowed lectures and public forums. In 2022, she received the inaugural Henry K. Beecher Prize for Master's Student Ethics Teaching in recognition of outstanding excellence in master's student ethics teaching at Harvard Medical School.

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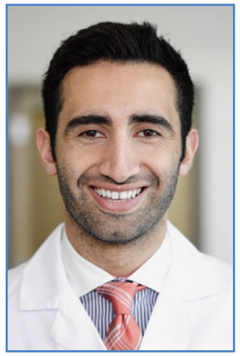
Physician Deference, Culture, and Refusal

At times, trust, culture, religion, and relational obligations are shaped by physician-led decisions that do not fully align with the religious and cultural frameworks that patients utilize in everyday choices. At best, these physician-led decisions are at the behest of modern bioethics' autonomy charter to protect patients, and at worst, an injunction on practitioners to ignore the gap between different interpretations of autonomy. This capstone addressed why this gap matters and attempted to disassemble rigid autonomy models that risk misreading deference as coercion, passivity, or deficient agency. Western bioethical considerations alone cannot solely endorse the ethical significance of autonomy. Culturally situated deference to physicians is common, and, through orientalist eyes, seems unreasonable, extreme, or even irrational. Religious, cultural, social, and family values that have spanned millennia buttress these decisions. Nevertheless, liberal individualism promotes autonomy as a universal value that cannot be negotiated. The research for this project included a narrative review of bioethics, philosophy, health law, and cross-cultural literature. Further research included critiques and analysis of relational autonomy, informed consent, and refusal of care (on religious grounds). In overtly individualistic terms, the review found that autonomy was defended through the default moral grammar of bioethics that did not include pluralist values. Western liberal political thought treats authenticity as most clinically visible when decisions are made independently, free from interference, pressure, or dependence on others. In fact, non-Western traditions of decision-making include a multivariate inclusion criterion that embraces clergy/chaplaincy, family, physicians, and personal values. Thus, physician deference is a distinct and morally serious category that supports culturally responsive care. The findings of this project highlighted the need for a stronger framework to evaluate religious and cultural refusals without collapsing decision-making into either autonomy or paternalism. The implications include a more precise consent process, an improved consultation process, and plurality.

Mentor: Roberto Sirvent, JD, PhD, Faculty, Center for Bioethics, Lecturer, Department of Global Health and Social Medicine, Harvard Medical School



Hany Hamdy Abdallah, MS, MD, is a critical care physician at Montefiore St. Luke's Cornwall. He received a BA in philosophy from New York University (NYU), a MS in molecular biology from Rutgers University Graduate School of Biomedical Science, and a MD from University of Vermont College (UVM) of Medicine. His areas of interest include end of life care, ethics of care, feminist ethics, and neuroethics. He was inducted into the NYU hall of fame and received the gold humanism award from UVM. He plans to pursue an MPH/MBA at UAB following the bioethics program in addition to continued medical ethics consultation.

Daniel Aillaud De Uriarte, MD

Beyond the Patient: Ethical Responsibilities Toward Families Affected by Alcohol Use Disorder

Alcohol use disorder (AUD) is often accompanied by societal stigma, yet the experiences of family members living alongside the illness frequently remain invisible. While addiction treatment and ethical discussions focus on the individual patient, the families experience significant emotional stress, uncertainty, and disruption to daily life. This capstone explored whether healthcare systems have an ethical responsibility to recognize and respond to the needs of families living with a relative with AUD. This project examined how stigma, silence, and structural gaps in addiction care contribute to the neglect of family members and considered whether ethical principles such as beneficence and justice require extending concern beyond the patient. Research consisted of a critical review of interdisciplinary literature from addiction studies, caregiving research, and bioethics, focusing on qualitative studies that documented the lived experiences of family members affected by AUD. The analysis showed that families received limited guidance on how to cope with AUD or how to navigate the emotional and relational consequences it created. In many clinical settings, attention remains centered on the patient receiving treatment, leaving relatives largely excluded from conversations about care and without meaningful support. As a result, families navigate challenges independently, seeking understanding through peer communities such as Al-Anon, while others continue to struggle in isolation. AUD does not affect only the individual with the diagnosis; it generates fear, emotional distress, and deep disruption within the families living alongside the illness. These findings suggest the need for a broader cultural and clinical shift that recognizes addiction as a medical illness, confronts the stigma that continues to shape the treatment of patients and families, and acknowledges the hidden suffering of families affected by AUD.

Mentor: Harié Manzano, MD, Universidad de las Américas Puebla

Daniel Aillaud De Uriarte, MD, is a physician with international clinical and research experience. He received his medical degree from Universidad de las Américas Puebla in Mexico. His academic interests focus on ethical challenges in mental health care, particularly addiction and the stigma surrounding substance use disorders. He is especially interested in how ethical frameworks can better support patients and families affected by addiction. He is pursuing doctoral studies in Bioethics and Health Humanities at the University of Texas Medical Branch. After the MBE, he plans to pursue residency while continuing scholarship in bioethics.

Nada Alyousefi, MBBS

Responsible Use of AI in Bioethical Reasoning: Developing a Novel Assessment Toolkit for Medical Students

Traditional bioethics assessments, often in the form of long essays, inadequately capture students' step-by-step reasoning, leading to impression-based grading that lacks objectivity and consistency. Meanwhile, the widespread availability of artificial ntelligence (AI) tools and their misuse complicate assessment integrity. Thus, creating the need for assessment methods that capture students' reasoning while maintaining human moral accountability and ensuring responsible AI engagement. This capstone project developed a structured assessment toolkit that used objective criteria to evaluate medical students' bioethical reasoning and responsible AI use. A literature review revealed that existing assessment methodologies rarely evaluate students' ability to critique AI outputs, highlighting a gap in current educational practices. Limited evidence supported AI's role in enhancing clinical reasoning, and human oversight was emphasized in grading. The project developed four practice-based target ethics cases from Saudi Arabia. Each case presented brief questions targeting key bioethical reasoning steps, along with an analytic rubric to improve scoring consistency across graders; and featured AI prompts and AI-generated responses. Students critically examined the outputs and revised the prompts. Five faculty reviewers rated the toolkit highly for clarity, level-appropriateness, and ethical depth. Ten senior students in focus groups highlighted the fairness and clarity of the toolkit, attributing it to standardized cases, a detailed rubric, and short, guided questions. They valued the AI critique task and described it as timely and relevant; and they recommended case-based grading to enhance consistency. The project produced an implementation-ready toolkit that supported human-in-the-loop ethical decision-making, offering a robust framework for integrating AI responsibly in medical education. Next steps include piloting the toolkit in a controlled educational setting, conducting grader training sessions to ensure consistency, and studying interrater reliability and learning impact to refine the assessment process and enhance its effectiveness.

Mentor: Maria Leister, JD, MSc, Director, Education and Medical Bioethics, Massachusetts General Hospital Department of Psychiatry and Harvard Program in Refugee Trauma

Nada Alyousefi, MBBS, is a professor and family medicine consultant in the College of Medicine at King Saud University (KSU) in Riyadh. She leads bioethics teaching for medical students, contributes to ethics education for healthcare professionals, serves on the KSU Clinical Ethics Committee, and is a member of the Saudi Society for Health Ethics. Her academic and clinical work focuses on medical ethics education, Islamic bioethics, and ethically grounded patient care, with particular interest in how Islamic moral reasoning informs contemporary healthcare practice. She plans to advance medical ethics education and clinical ethics through teaching, applied research, and academic collaboration.

Radheesh Ameresekere, BA

Sovereignty in the Global Market: A Defense of Compulsory Licensing Mechanisms

International treaty law routinely exercises authority over sovereign states, yet the grounds for the legitimacy of specific regulatory mechanisms remain contested. Compulsory licensing mechanisms are among the most contested aspects of the World Trade Organization's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which allows states to override patent exclusivity when sufficient public interest demands. These mechanisms have become essential, particularly for low- and middle-income countries, to promote population health by increasing access to essential medications, such as pharmaceuticals and vaccines, that would otherwise remain under patent protection. Despite this, legal theorists and multinational organizations have raised significant objections. One important but undertheorized objection, known as the Property Rights Objection, argues that these mechanisms violate the property rights of sovereign states and undermine the potential for a freer global market. This capstone project aimed to diagnose and respond to this objection by examining the nature of patent rights. Through a critical analysis, the project argued that patent rights are legal, state-granted monopolies. It further argued that when these monopolies are extended across borders through international legal arrangements, such as TRIPS, they function as instruments of de facto foreign governance over sovereign states and violate sovereignty unless subjected to reasonable limits. A legal analysis identified compulsory licensing mechanisms as a paradigmatic example of such limits, suggesting that these mechanisms do not undermine sovereignty but instead support it. The project concluded that a robust international order committed to sovereignty requires mechanisms of this kind. Future directions include formally reconceiving sovereignty within TRIPS and developing a more comprehensive account of sovereignty that captures the insights generated by this analysis.

Mentor: J. Wesley Boyd, MD, PhD, Senior Lecturer, Department of Global Health and Social Medicine, Harvard Medical School

Radheesh Ameresekere, BA, is a philosopher pursuing a PhD in philosophy at McGill University. He received a BA in philosophy from the University of Toronto (UT), where he was also a fellow at the UT's Center for Ethics. His interests in bioethics focus on the intersection of ethics and political philosophy, particularly concerning healthcare provider's obligations to vulnerable patients and populations. He has published articles in Health Affairs Forefront and the Journal of Bioethical Inquiry. He is currently finishing his doctoral dissertation on the authority of international law over sovereigns and intends to pursue law school.

Nandita Ammanamanchi, BA

Narrative Threads: Ethical Narratives and Emotional Landscapes of Mental Health Advocates - A Poetic Anthology

While some research has been conducted on the experiences and perspectives of mental health advocates, it continues to be an underexplored and largely siloed space. Disseminating narrative work and stories is a core mission of the bioethics community, yet it often remains confined within academic circles. This capstone focused on developing a collection of poems as an accessible, digestible vehicle for telling the untold stories of mental health advocates. The project included a Harvard Medical School-Institutional Review Board-approved study with a data and technology agreement and involved transforming the stories from five semi-structured, one-on-one interviews with mental health advocates spanning the field. After leveraging qualitative analysis to elucidate key themes and motifs from the interviews, the insights from each conversation were transformed into a poetic piece that captures the emotions and experiences of each interviewee. Throughout the process, interviewees were invited to collaboratively share their ideas and feedback on the key themes selected, as well as all draft poems. Following the completion of the collection of poems, each participant was given the opportunity to reflect on the experience to better understand the impact of both sharing one's story and doing so in a creative, abstract manner that could be understood by a broad audience. Participants reported that, prior to this experience, no one had ever inquired about the emotional weight of their work, and that they had never had the chance to describe their experiences in writing. While small in scale, this project exemplifies the value of amplifying the stories and voices of mental health advocates while sharing these narratives in a form that invites connection and engagement from any reader.

Mentor: AnnMarie White, EdD, University of Rochester

Nandita Ammanamanchi, BA, received a BA in public health from the University of Rochester. She currently works in Life Sciences Consulting as a Project Manager. Previously, she conducted research at the University of Rochester Medical Center examining health disparities predominantly faced by African American women diagnosed with systemic lupus erythematosus. Her interest in bioethics is focused on the legal and ethical issues regarding disparities in maternal and child health and reproductive health. After graduation, she will continue her work in consulting and hopes to continue exploring the intersection of narratives and bioethics.

Lawrence Chyall, RN, MS

Should Informed Consent Precede Brain Death Testing? A Normative Analysis from Nursing Ethics

Brain death (BD), or death by neurologic criteria (DNC), is presented as a clinical determination that yields a settled fact. However, BD and DNC functions less like discovery and more like conversion: a protocolized sequence, performed without consent and sometimes without assent, authorizes a shift in what the patient is understood to be and what families are expected to accept. Physicians ask families not only to understand neurologic criteria, but also to accede to a reinterpretation of a warm, ventilated, perfused body as a dead one. Conflict can arise, destabilizing trust at the threshold between life and death and injuring families and communities. This capstone employed interdisciplinary normative analysis and used the case of Jahi McMath to illustrate how BD and DNC can be experienced as coercive even when clinicians follow protocol. The premise was that brain death testing should be preceded by informed consent, or by a procedurally equivalent authorization process based on four grounds. First, BD and DNC are not merely neutral diagnostic events but assertions of medical authority. Second, family resistance in cases of dissent often expresses moral disagreement, rather than ignorance. Third, because of nurses' prolonged proximity to the patient's body and the family's interpretation of that body, nursing ethics grounds obligations of advocacy for a trustworthy process. Fourth, justice requires attention to the uneven distribution of mistrust and coercion, particularly among families with reason to fear institutional medicine. Drawing on the literature review, the project concluded that informed consent before BD and DNC testing is not a rejection of neurologic criteria for death. It is a trust-preserving and ethically necessary response to the moral work that brain death determination performs.

Mentor: Rev. John Golenski, EdD, Chief Executive Officer, Kairoi Health

Lawrence Chyall, RN, MS, is a neurosciences clinical nurse specialist at Zuckerberg San Francisco General (ZSFG) Hospital. He received a BS in biology from the University of California, Berkeley, and a MS in nursing from the University of California, San Francisco. He supervises the neurosciences nursing program at ZSFG and is co-chairperson of the hospital ethics committee. He is interested in clinical neuroethics, particularly brain death, medical decision- making capacity, and mental illness. He is also interested in the role of culture and religious traditions in bioethics. After graduation he plans to continue his studies in bioethics at the doctoral level.

Mari Costantini, BA, MPH

Ethical Participant Selection in Fentanyl Vaccine Research: A Normative Analysis

Fentanyl-related overdose continues to drive unprecedented mortality in the United States, prompting interest in novel biomedical approaches to overdose prevention. Among these emerging interventions are fentanyl vaccines, which stimulate antibodies that bind fentanyl in the bloodstream and reduce its ability to cross the blood-brain barrier and cause respiratory depression. As these vaccines move toward early clinical trials, ethical questions about participant selection become increasingly important. Enrollment decisions determine how research risks are distributed and which populations bear the burdens of early experimentation. This project examined ethically appropriate participant populations for early-phase fentanyl vaccine trials. The project aimed to clarify how participant selection decisions shape the ethical acceptability of this research and to identify populations that represent ethically defensible candidates for participation. The work applied established ethical principles from the literature on human challenge studies to the emerging context of fentanyl vaccine research. The analysis evaluated several potential participant groups, including individuals with opioid use disorder, individuals in recovery, healthy volunteers, and family members of individuals affected by overdose. Research included synthesizing relevant clinical, ethical, and epidemiological literature using a structured normative framework that assessed risk–benefit proportionality, voluntariness, justice, and the potential for undue influence across these populations. The analysis suggested that family members of overdose patients represent a plausible candidate population for early-phase trials because their participation helped navigate the ethical tension between representation in research and the need to prioritize participant safety. These findings highlight the importance of treating participant selection as a central ethical design decision in fentanyl vaccine research and offer guidance for ethically responsible trial design as vaccine development progresses.

Mentor: Elissa R. Weitzman, ScD, MSc, Director of Research, Division of Addiction Medicine Boston Children's Hospital

Mari Costantini, BA, MPH, received a BA in Public Health and MPH in Epidemiology/Biostatistics from the University of California (UC), Berkeley. Throughout her research career, she worked on several research projects at UC San Francisco (UCSF) in surgical innovations, oncology, digital health, and epidemiology. Her main interest in bioethics is at the intersection of clinical research, health technology, and computational public health. After graduation, she will work in global health research at UCSF focusing on novel testing and population health research.

AnnaBeth Daley, BSN, RN

Considerations for the Organizational Structure of a Hospital Ethics Program

As the field of clinical ethics continues to develop alongside expanding healthcare systems and technological advances, hospitals face increasingly complex ethical dilemmas in both clinical practice and the broader communities they serve. Although The Joint Commission requires all hospitals to have a mechanism for addressing ethical concerns, there is no consensus on how best to do so. Without standard guidance, hospitals across the country have implemented a multitude of structures to address ethical concerns. This capstone project investigated the factors hospitals should consider when structuring an ethics program, including an assessment of current structures seen in local hospital contexts. A literature review revealed several considerations that inform the structuring of a hospital ethics program, with particular attention paid to the contemporary debate on the advantages of an ethics consultation service compared to the traditional ethics committee model. In-person experience with a clinical ethicist at a large urban safety-net hospital provided firsthand experience and insight into a successful hospital ethics program and the key aspects of its previous restructuring process. The project identified several hospital characteristics that influence an ethics program's structure, including hospital size, academic affiliation, organizational buy-in, and the clinical and cultural contexts of the communities served. Key challenges to optimally structuring an ethics program include inadequate funding, underutilization, ignorance of the ethics program or its role, and limited staff access to formal ethics education. Both the literature review and in-person experience highlighted the importance of organizational buy-in for the overall success of a hospital ethics program. Future research should identify successful strategies for securing organizational buy-in for ethics programs in various hospital settings to enhance their long-term success.

Mentor: Elizabeth Sivertsen MBE, CCRN, System Ethicist, Grady Memorial Hospital

AnnaBeth Daley, BSN, RN, works in the neonatal intensive care unit (NICU) at Children's Healthcare of Atlanta. She received a BSN from Emory University. She has worked to improve evidence-based practice and clinical policy in the NICU and serves as their Ethics Liaison. Her interest in bioethics centers on interdisciplinary communication and discussions surrounding end-of-life care in critically ill infants. She received the Nell Hodgson Woodruff Compassion and Caring Award from Emory University and has been recognized by The Atlanta Journal-Constitution as a Celebrating Nursing Excellence nominee. After completion of the program, she plans to continue her work in the NICU and pursue future work in clinical ethics.

Lourena De Abreu, BA

Reimagining Healthcare Evaluation: A Transformative Quality Evaluation Framework

Healthcare quality evaluation frameworks, such as Donabedian's Structure-Process-Outcome (SPO), assess how healthcare is organized and delivered, including the essential factors affecting health outcomes. Understanding what these frameworks measure, and what they miss, is essential for implementing interventions toward more equitable healthcare. However, SPO evaluates care by measuring visible and quantifiable factors, often missing hidden determinants such as power dynamics, non-clinical factors, and community-defined wellness. The Transformative Mixed Methods (TMM) framework addresses this gap by exposing systemic inequity and centering the voices of vulnerable populations. This capstone aimed to develop the Transformative Quality Evaluation (TQE) framework, which includes an assessment rubric that provides healthcare professionals a practical tool for evaluating quality care through the lens of equity, justice, and power. To achieve these aims, the author conducted a literature review synthesizing SPO and TMM scholarship, and a comparative framework analysis applying both TQE and SPO to the clinical ethics case of Adriana Smith, a 30-year-old Black nurse who was nine weeks pregnant when she was declared brain dead. Without her family's input, she was placed on organ support under Georgia's LIFE Act, which prohibits termination of pregnancy when fetal cardiac activity is detected. Application of this process demonstrated that SPO satisfied all clinical quality metrics, while TQE revealed coercive legal structures, symptom dismissal, and violations of autonomy and human dignity, as well as ethical failures invisible to traditional evaluation. TQE exposed how care can satisfy clinical quality metrics while simultaneously violating core ethical principles such as autonomy, justice, and nonmaleficence. Future work includes pilot testing TQE in diverse clinical settings and developing professional training modules. Without explicit attention to who defines quality and whose voice matters, evaluation becomes complicit in the very inequities it claims to measure.

Mentor: Virginia A. Brown, MA, PhD, Research Scholar, The Hastings Center for Bioethics

Lourena De Abreu, BA, is a Project Coordinator at The Hastings Center for Bioethics. She earned her BA in interdisciplinary studies with a bioethics concentration from Howard University. She was named finalist in the Medical Academy of Washington, DC's Bioethics Essay Contest for her senior thesis on psilocybin medicalization and the ethical challenges encountered. Her work engages themes of trust and trustworthiness, quality evaluation and access, mixed methods research, and equity-driven health policy reform. Upon completion of the MBE, she intends to pursue law school.

Nathaniel De Luca, MA, MDiv

How Much Should You Pay for a 'Healthy Baby'? Developing Ethical Frameworks for Preimplantation Genetic Testing

Preimplantation genetic testing (PGT) technologies and in vitro fertilization (IVF) are advancing faster than the ethical frameworks needed to guide parents through embryo selection. Many parents seek to maximize their chances of having a "healthy baby," and for-profit fertility clinics often market genetic testing as a value-neutral consumer choice. Without adequate guidance, intended parents face momentous decisions about genetic selection in an ethical vacuum. This capstone project was informed by personal experience with surrogacy and examined two intersecting decisions prospective parents face during the IVF process. The first decision involves maximizing the chances of having a healthy baby through PGT and embryo selection, and the second involves weighing competing priorities such as cost, clinical risk, personal values, and justice. The research included a literature review drawing on bioethics, disability advocacy, reproductive medicine, theology, and public policy. The project examined divergent theoretical frameworks for understanding justice, conflicts of interest in for-profit reproductive medicine, and cross-cultural perspectives on genetic selection. Patient education materials from fertility clinics and professional societies were analyzed to identify gaps in accessible ethical guidance for intended parents. The analysis found that reliance on an informed consent model fails to prepare intended parents for the ethical complexities of embryo selection. The project concluded that a values-based approach is needed with plain-language communication of PGT efficacy data and meaningful integration of diverse family perspectives. Future work will focus on developing these resources in partnership with clinicians, disability advocates, and intended parents to support more informed and ethically grounded decision-making.

Mentor: Vardit Ravitsky, PhD, President and CEO, The Hastings Center

Nathaniel De Luca, MA, MDiv, is a chaplain at California Hospital Medical Center in Los Angeles. He received a BA in anthropology from New York University, an MA in archaeology from Yale University, a MDiv from Claremont School of Theology, and a certificate in pediatric palliative care from the California State University Shiley Haynes Institute. He specializes in palliative care and serves on weekly bioethics consultations. He is interested in generating narrative ethics for end-of-life decision-making. As the parent of a surrogate child, he is interested in reproductive rights and the future of reproductive technology.

Patrick Delices, MS, EdM, MBA, MPA

Algorithmic Injustice in Psychiatry: A Bioethical Evaluation of AI-Driven Health Disparities in Black Patient Populations

The rapid integration of artificial intelligence (AI) into clinical decision-making raises critical concerns regarding its impact on racial health equity. This project examined whether AI systems, often trained on biased datasets or utilizing flawed proxies for health, perpetuate systemic harm against Black patients. This study applied the four principles of bioethics to current AI implementations in psychiatric care. The research included evaluating autonomy through the lens of informed consent and the transparency of black-box algorithms. Additional research involved analyzing beneficence and non-maleficence by assessing whether predictive models provided equitable care improvements or, conversely, led to underdiagnosis, mistreatment, and restricted access to resources. Justice served as the framework for examining the distribution of technological benefits and the mitigation of algorithmic bias. The analysis suggested that AI frequently violates the principle of non-maleficence by codifying historical prejudices, such as using "cost of care" as a proxy for "health need," which systematically underestimates the severity of psychiatric illness in Black patients. Moreover, the lack of representative data undermines justice, as AI benefits are disproportionately realized by other populations. The opacity of these tools further erodes autonomy, preventing Black patients from making fully informed decisions about their care. The research concluded that without rigorous bioethical oversight and diverse data inclusion, AI poses a significant risk of exacerbating health disparities. Future work should focus on developing practical governance structures and clinical safeguards that mitigate algorithmic bias in psychiatry while respecting the autonomy of Black patients and protecting them from data misuse, medical harm, and injustice.

Mentor: J. Wesley Boyd, MD, PhD, Senior Lecturer, Department of Global Health and Social Medicine, Harvard Medical School

Patrick Delices, MS, EdM, MBA, MPA, is an academic, bibliophile, essayist, and former congressional candidate. He was a research fellow at Columbia University for Pulitzer Prize historian Manning Marable and was an adjunct professor at Hunter College and Adelphi University. He earned a BA/MS from the City College of New York; an EdM from Columbia University, Teachers College; an MBA from New York University; an MPA from Columbia University, School of International and Public Affairs; and an MS in Industrial and Systems Engineering from Binghamton University, SUNY. His research interests include medical/public health ethics, healthcare disparities, and systems science in healthcare. After graduation he will continue his work while pursuing a doctoral degree.

Jeffrey DiMascio, DO

Ground-up Approach to Addressing Barriers to Curative Gene Therapy for Patients with Sickle Cell Disease

Sickle cell disease (SCD) is an inherited, high-morbidity and mortality disorder that affects, almost exclusively, the Black population in the United States. Gene-editing therapy (GET) is a curative treatment; however, utilization of the therapy remains extremely low. This capstone used an ethical lens of social justice to examine the root causes of barriers to accessing GET. Extensive literature review and informal consultations with clinical hematologists and a clinical geneticist identified obstacles to accessing GET for SCD. Social determinants of health (SDOH) are non-medical, social, and environmental factors that significantly affect a person's health and access to care. Studies demonstrate that the SCD patient population in the United States exhibits disproportionately high levels of instability or insufficiency across several key SDOH indicators. These include, but are not limited to, housing instability, food insecurity, unaffordable transportation options, and lack of time off work. GET is an extremely complex and time-consuming procedure and is only performed at specialized centers, requiring patients to have certain social supports in place to engage in the therapy. This project proposed a two-prong, ground-up solution to rectifying these structural inequities: a proof of principle program for recruiting hematology offices in urban settings to screen SCD patients for these risk factors, and intentional coordination efforts with existing social support networks, such as religious organizations, social work services, and food pantries, to mitigate SDOH discrepancies and improve access to GET. Future work will include utilizing questionnaires and semi-structured interviews with patients and their families to evaluate the program's perceived efficacy and ethicality. Because equality of opportunity is a fundamental tenet of social justice and thriving, addressing existing SDOH discrepancies could improve access to GET for SCD and, subsequently, cultivate a more equitable healthcare system.

Mentor: Ingrid Holm, MD, MPH, Division of Genetics and Genomics, Division of Endocrinology, Boston Children's Hospital; Professor of Pediatrics, Harvard Medical School

Jeffrey DiMascio, DO, is a medical oncology and hematology physician. He received a BA in biology from Temple University and was a team member in a molecular biology lab researching Stickler syndrome. He received a DO from the Philadelphia College of Osteopathic Medicine, where he also completed an internal medicine residency. He completed fellowship training in medical oncology and hematology at the Fox Chase Cancer Center followed by practice in clinical medical oncology and hematology. He served on the medical ethics team and as chief of staff of the medical center. Following graduation, he will apply his bioethics education and training in human subject clinical research to future projects.

Taposh Dutta Roy, MS, MBA

The Autonomy Index: A Validated Framework for Evaluating Large Language Models in Clinical Bioethics

Artificial intelligence (AI) systems increasingly influence clinical decision-making, yet healthcare lacks frameworks to evaluate whether these systems protect or undermine patient autonomy. Existing approaches reduce autonomy to a binary capacity determination, failing to capture the multidimensional moral agency underlying ethical clinical care. This capstone project developed, validated, and empirically tested an autonomy index, a mathematical framework operationalizing autonomous agency as a weighted composite of values awareness, factual understanding, rational deliberation, and intentional action. A thirteen-item instrument with behavioral anchors scored from zero to four and rescaled to a 100-point metric was validated against the MacArthur Competence Assessment Tool-Treatment (MacCAT-T) and the Assessment of Capacity for Everyday Decision-Making (ACED). The Institutional Review Board (IRB) protocol, IRB26-0146, was approved for human subject administration alongside large language models (LLMs). To test whether LLMs supported patient autonomy in practice, nine models were evaluated across 89 clinical bioethics vignettes with ten repeated runs, yielding 7,524 scored cases. No model reached the adequate threshold of 60 out of 100. The mean autonomy index score was 37.6, with 78.3% of cases falling in the reassess category, at less than 60, and only 8.9% reaching the strong category, at greater than or equal to 80. Floor effects were most severe in intentional action where planfulness and follow-through feasibility were the lowest-scoring items, indicating that LLMs characterize ethical situations without producing actionable plans. The results showed that rational deliberation is the strongest domain predictor, demonstrating that reasoning architecture, rather than factual recall, is the primary limitation. Inter-model disagreement on contested vignettes confirms that LLMs reflect rather than resolve moral disagreement. In conclusion, this project established a replicable, mathematically grounded framework for evaluating AI systems against the foundational bioethical commitment of respect for persons.

Mentor: Rebecca Weintraub Brendel, MD, JD, Director, Center for Bioethics, Harvard Medical School

Taposh Dutta Roy, MS, MBA, serves as the Director of the Innovation and AI Team at Kaiser Permanente. He received a MS in electrical engineering from the Illinois Institute of Technology, Chicago, and MBA from the University of California, Davis. His work focuses on advancing technologies such as Digital Twins and AI/ML and developing strategies for responsible AI. He has a keen interest in bioethical issues related to AI in healthcare. He is an author of several books such as Intelligent Governance: Navigating the Complexities of Artificial Intelligence in Quantum & Classical Computing and Medical Image Processing with Deep Learning.

Julia S. Etkin, BA

Regulating Consciousness: Epistemic and Exceptional Risks of Altered States

The therapeutic landscape for treatment-resistant psychiatric conditions is undergoing a paradigm shift from chronic daily pharmacotherapy toward episodic interventions that leverage altered states of consciousness. However, the August 2024 rejection of midomafetamine (commonly known as MDMA) for treatment of post-traumatic stress disorder by the United States Food and Drug Administration (FDA) exposed a profound epistemic fracture in current regulatory architecture. Existing safety frameworks, primarily Risk Evaluation and Mitigation Strategies (REMS), are designed to manage physiological toxicities or discrete behavioral risks, such as suicide, but lack the jurisdictional tools to address the subjective vulnerabilities inherent in these treatments. This capstone taxonomized the distinct risks of altered states and constructed a robust regulatory framework that prioritizes epistemic sovereignty. The research included a multidisciplinary investigation that synthesized federal statutes, including the Federal Food, Drug, and Cosmetic Act, and the state-regulated Practice of Medicine doctrine. Additional work included analyzing data from clinical trials of novel psychoactive substances, with and without psychotherapeutic adjuvants, and integrating philosophical theories of cognitive liberty and epistemic (in)justice to address the suggestibility loophole in the regulation of altered states. The project utilized REMS with Elements to Assure Safe Use as frameworks to leverage and reveal that the FDA possesses sufficient statutory authority to address jurisdictional tension between federal drug regulation and state-regulated medical practice. The project concluded that to move beyond administrative inertia, risk analysis must be more broadly conceptualized to incorporate behavioral safeguards within the regulatory model, creating a biopsychosocial approach that provides a viable pathway for broader medical interventions that include or rely on altered states of consciousness.

Mentor: Rebecca Weintraub Brendel, MD, JD, Director, Center for Bioethics, Harvard Medical School

Julia S. Etkin, BA, is a Harvard Dean's Scholar and a student fellow at the Petrie Flom Center for Health Law Policy, Biotechnology, and Bioethics. Her current research appointment is in the Department of Global Health Social Medicine at Harvard Medical School; and previously at the Multi-Regional Clinical Trials Center of Brigham and Women's Hospital and Harvard, and Yale School of Medicine with the Yale Collaboration for Regulatory Rigor, Integrity, and Transparency. She graduated from Union College with a degree in science, medicine, and technology in culture with political science and law and humanities. She has published in various outlets, focusing on the intersection of bioethics, regulation, policy, and psychiatry. She will continue her research and pursue doctoral studies in psychiatry after the MBE.

Erica Fernandez-Benavidez, BSN, RN

Care Beyond Words: Bioethical Perspectives on Artificial Intelligence Translation Applications in Healthcare

Language barriers remain a significant contributor to health disparities among non-English speakers in the United States, causing challenges in informed consent, medication safety, and treatment planning. Although artificial intelligence (AI) translation tools using large language models (LLMs) improve communication, efficiency, and access to care, their development often lacks ethical frameworks addressing inclusivity, cultural sensitivity, and equitable representation. This capstone examined ethical gaps in the development of healthcare translation applications, particularly how limited diversity among developers and datasets contributes to structural inequalities in digital health technologies. The underrepresentation of minority languages and the prevalence of cultural uniformity in LLM datasets lead to translation inaccuracies and culturally insensitive interpretations, compromising informed consent, patient autonomy, and safety. These challenges reflect broader systemic inequalities in data collection and technology design, raising important ethical questions regarding justice, equity, and inclusivity. The research employed a methodological approach, including a narrative literature review of AI in healthcare, health equity, linguistics, and digital innovation. Additional work involved an ethical analysis drawing on Paul Farmer's *view from below* methodology, feminist ethics, Confucian ethics, and Iris Marion Young's theory of structural injustice. The analysis revealed that many healthcare AI applications prioritize efficiency, scalability, and financial incentive while overlooking patient narratives, accessibility barriers, and the lived experiences of marginalized communities. The project concluded that integrating robust ethical frameworks into the design and development of healthcare AI can lead to more culturally responsive, equitable, and justice-oriented translation tools. Future efforts will focus on interdisciplinary collaboration among technologists, healthcare providers, ethicists, and community stakeholders. The goal is to ensure that translation tools reflect diverse perspectives and provide cultural sensitivity, accessibility, and inclusivity. This approach will advance AI healthcare technology, reduce health disparities and injustice in global linguistics, and avoid reinforcing existing inequities.

Mentor: Rémy Enoch, MS, MBE, Teaching Affiliate, Center for Bioethics, Harvard Medical School

Erica Fernandez-Benavidez, BSN, RN, is a hematology/oncology and infusion nurse at Texas Children's Hospital. She graduated from the University of Texas Health Science Center in Houston. She has addressed various ethical dilemmas at the bedside, including end-of-life medical decision-making in pediatrics and resource allocation inequalities. She has a passion for patient advocacy and wants to improve medical care for underrepresented communities. She has been recognized by the Houston Chronicle as one of the top 100 nurses in Houston. After graduation she aims to pursue a PhD in global or public health to expand her advocacy efforts to advance equitable healthcare and reduce disparities.

Esther Ho, MD

Navigating the Grey Zone: Supported Decision-Making for Older Adults in the Margins of Capacity

Older adults experiencing cognitive impairment often demonstrate variable decision-making capacity, best understood as a continuum rather than an absolute condition. Traditional approaches that depend on surrogate or guardianship-based decision-making can result in either excessive protection or insufficient support, posing risks to the individual's autonomy and dignity. Given that both cognitive impairment and decisional capacity are non-binary and exist on a spectrum, conventional decision-making frameworks fail to adequately capture an individual's ability to engage in choices impacting their lives. Supported decision making is an alternative model that enables individuals with marginal or dynamic capacity to participate meaningfully in decisions affecting their health and well-being, aligning with relational and rights based understandings of autonomy. This capstone examined supported decision-making as a central concept in enhancing autonomy for older adults experiencing cognitive impairment and diminished capacity. The project focused on identifying and evaluating existing frameworks that facilitate and strengthen an individual's ability to make and communicate their own decisions, thus promoting meaningful participation and respect for personhood. To achieve these aims, the project adopted an in depth literature review, drawing on empirical studies and theoretical analyses. The review incorporated evidence describing the limitations of binary capacity models and tools designed to enhance understanding, communication, and value based decision support. The findings indicate that supported decision making enhances participation and upholds autonomy, though implementation in clinical practice remains inconsistent. In Asia, informal elements of supported decision making already exist, as family members are commonly involved in decision processes. Future initiatives should prioritize developing practical frameworks that address the specific needs of older adults, accommodate differences in decisional capacity, safeguard against undue influence, and uphold patient dignity and autonomy.

Mentor: Aaron Ang, MD, Department of Psychiatry, Tan Tock Seng Hospital

Esther Ho, MD, is a geriatrician at Tan Tock Seng Hospital, Singapore. She received a BSc in biochemistry and genetics from the University of Melbourne and a MBBS from the University of Sydney. She completed her geriatric medicine senior residency training at Tan Tock Seng Hospital. Her clinical interests include dementia, complex decision making, advance care planning, and clinical ethics. She is particularly interested in decision-making capacity in older adults with cognitive impairment and vulnerable adults. After completing the MBE, she hopes to deepen her ability to advocate for older adults, while becoming even more comfortable navigating uncertainty and complexity.

Carmen Holmes, MD

Ethical Stewardship in Neurology: Protecting Brain Death Determination in Organ Donation Systems

Determining brain death (BD), or death by neurologic criteria, is a nuanced evaluation that has significant clinical, ethical, and legal implications, especially in the context of organ donation. Neurologists are frequently called upon to make this determination without formalized training requirements or evaluation. Organ procurement organizations (OPOs) were designed to increase organ utilization through organ donor identification and assessing procurement methods. The interplay between clinical practice and OPO dynamics can result in substantial ethical dilemmas, including outcome-oriented pressure influencing clinical reasoning, identifying the primary ethical obligation of the diagnosing physician, and understanding the role of clinical teams in the organ donation process. The research included a narrative literature review on the current state of BD training requirements, the ethical ramifications of BD testing, organ procurement logistics, and outcomes of donation method allocation. Ultimately, neurologists must act as stewards of death determination in their role as the primary diagnosticians declaring BD. As a specialty, neurology is ethically responsible for maintaining the integrity of BD diagnosis and public trust in the clinical assessment of BD. To best support ethical organ donation, neurologic death determination must remain clinically grounded and independent of the outcome-driven pressures of organ donation. Greater education must be provided both during neurology training and beyond to recognize and practically address the ethical tensions that OPOs impose on clinical teams. This is essential to sustain public trust and grow the long-term success of life-saving organ utilization.

Mentor: Evie Marcolini, MD, MBE, Associate Professor of Emergency Medicine and Neurology, Geisel School of Medicine at Dartmouth

Carmen Holmes, MD, is a neuro-hospitalist at Morton-Plant Hospital in Clearwater, FL. She received a MD from the University of Missouri School of Medicine and completed a neurology residency at Mayo Clinic in Rochester, MN. Currently, she researches the expansion of ethical dilemmas encountered following acute severe brain injury as she completes a neurocritical care fellowship at Mayo Clinic. In the second-year of her critical care fellowship she will continue to gain knowledge pertaining to the intersection of bioethics and high acuity care. Upon completion of the MBE, her research within this niche will continue with the intention to become an impactful voice in the field of critical care ethics over the course of her career.

Kelly Ivins-O'Keefe, MD

Exploring Knowledge, Beliefs, and Attitudes Regarding Perioperative Do-Not-Resuscitate Orders

Honoring a patient's end-of-life wishes, including do-not-resuscitate (DNR) orders, is a legal and ethical imperative. Although physicians generally respect DNR orders in other clinical settings, many surgeons and anesthesiologists remain uncomfortable with these directives in the perioperative period (i.e., immediately prior to, during, and after surgery). Despite society guidelines to the contrary, automatic or forced suspension of perioperative DNR orders remains common. As patients with DNR orders represent one to two percent of all patients undergoing surgery and up to 15% of patients undergoing non-elective surgeries, it is crucial to address this behavior. This capstone aimed to characterize current decision-making practices regarding the management of perioperative DNR orders, to explore the underlying beliefs that drive these decisions, and to examine the ethical tensions that contribute to physicians' reluctance to fully accept perioperative DNR orders. This project involved designing a three-part study consisting of a literature review focused on previously theorized reasons for this resistance, an anonymous survey of anesthesiologists, general surgeons, and orthopedic surgeons, and semi-structured interviews with volunteer physicians. The literature review identified several key themes, including the tension between the identity of surgeons and anesthesiologists as "doers" and the idea of allowing a patient to die without attempting resuscitation, the "surgical buy-in" framework wherein the proceduralist expects the patient to commit to the intervention in its entirety, and the fear of guilt regarding potentially preventable or iatrogenic intraoperative deaths. The project designed the survey and interview guide to explore these themes directly and to assess physician responses to hypothetical scenarios with varying patient capacity and procedural urgency. Although the study remains underway, future work will use the findings to develop curricula and policy initiatives with an overarching goal of increasing physicians' respect for patients' wishes regarding their DNR status.

Mentor: Jeanne Krick, MD, Neonatologist and Chair of Bioethics, Brooke Army Medical Center

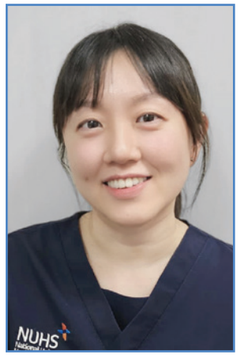
Kelly Ivins-O'Keefe, MD, is a critical care anesthesiologist at the US Army Institute of Surgical Research. She received an AB in chemistry from Princeton University and an MD from the Uniformed Services University of the Health Sciences. She completed an anesthesiology residency at Brooke Army Medical Center and a critical care fellowship at Duke. Her clinical interests include burn anesthesiology, extracorporeal membrane oxygenation, and the ethical issues surrounding complex decision-making in critically-ill patients. She was the valedictorian of her medical school class, and received awards throughout residency and as an attending for exceptional performance. After the MBE, she will continue to work as a bioethicist through involvement in committees, empirical ethics research, and curricular development.

Ying Yin Lim, MD

Organizational Ethics and Moral Distress in Palliative Care: Balancing Sustainability and Standards of Care in Singapore

Moral distress among healthcare professionals is common and associated with burnout, loss of professional integrity, and workforce attrition. This phenomenon occurs frequently in palliative care (PC), where clinicians face complex ethical decisions related to end-of-life care, resource allocation, and patient autonomy. Much of the existing literature examines individual and clinical contributors, but growing attention has shifted toward structural and organizational influences, particularly following the COVID-19 pandemic. Healthcare systems operate within financial constraints and policy-driven sustainability goals, particularly amid rising healthcare costs and rapidly aging populations. Clinicians increasingly face tensions between institutional priorities for efficiency and sustainability and their professional commitment to maintain high standards of patient care. These tensions create ethically challenging situations and highlight the importance of organizational responsibility in supporting ethical clinical practice. This capstone project examined structural contributors to moral distress in PC and explored how organizational ethics frameworks guide healthcare institutions in addressing these challenges. Research included a literature review and structured interviews with four healthcare leaders in Singapore to analyze current scholarship on moral distress and organizational ethics in healthcare systems and to identify an organizational ethics framework that provides a structured guide for clinical practice. The review found that empirical research examining the structural and organizational determinants of moral distress remains limited and that systems-level analyses in PC contexts are underdeveloped. These findings suggest the need for further cross-level research, including surveys of healthcare workers, to better understand how institutional structures, policies, and resource constraints contribute to moral distress in Singapore. Such research will inform the development of context-sensitive organizational ethics frameworks and sustainable institutional mechanisms that support PC clinicians and promote ethically grounded care in rapidly evolving healthcare systems in Singapore.

Mentor: Anthony P. Weiss, MD, MBA, MSc, Associate Professor of Psychiatry, Harvard Medical School



Ying Yin Lim, MD, serves as a supportive and palliative care physician at Alexandra Hospital, National University of Singapore (NUHS). She received a MBBS from the University of Malaya, followed by a post-graduate Membership of the Royal Colleges of Physicians and a MM degree from the NUHS. She furthered her expertise in palliative medicine through the Singapore Advanced Specialist Training program. She is passionate about bioethics in end-of-life care, medical education, and humanitarian work. She actively contributes as a member of the clinical ethics committee at both the National Cancer Centre Singapore and Alexandra Hospital. After completing the MBE, she aims to further her work in clinical ethics, medical education, global health, and healthcare leadership.

Harvey J. Mamon, MD, PhD

A Bioethical Analysis of Lab-Grown Meat

Global meat consumption doubled from 1990 to 2020 and is anticipated to increase by another 70% by 2050. Each year, 70 billion animals are farmed, and an estimated one to three trillion fish are caught for food production. Current systems of fishing, factory farming, and industrial slaughterhouses are cruel to animals and human workers, threaten public health and the environment, and are unable to keep up with growing demand. Substituting plant-based protein sources for animal sources is the environmentally optimal response to this problem, but most people continue to prefer a meat-based diet. Lab-grown meat is another emerging approach to addressing these concerns. This project sought to evaluate the bioethical arguments and ethical concerns supporting the development of lab-grown meat. Research included a critical review of philosophical and ethical literature. Further analysis explored the utilitarian, consequentialist, deontological, and virtue ethics approaches to meat consumption, as well as contributions from religion, social influences such as gendered attitudes toward meat eating, and the debate concerning rational versus emotional ethical decision-making. The research process paid particular attention to the moral status of lab-grown meat. Additional bioethical issues identified included animal sentience and suffering, global warming, habitat destruction and loss of biodiversity, antibiotic misuse, pollution from industrial slaughterhouses, and food security. Examination of the literature suggested that lab-grown meat has a different moral status than meat obtained from killing an animal. Consideration of the competing ethical arguments indicated that the development of lab-grown meat is justifiable, while recognizing that lab-grown meat production has not yet achieved industrial scale, making much of this analysis, such as environmental impact and consumer acceptance, conjectural. Future directions include updating the ethical inquiry once the industry is more mature.

Mentor: Lisa Moses, VMD, DACVIM, Faculty, Center for Bioethics, Department of Global Health and Social Medicine, Harvard Medical School

Harvey J. Mamon, MD, PhD, is a radiation oncologist at the Brigham and Women's Hospital and Dana Farber Cancer Institute (DFCI) and an associate professor of radiation oncology at Harvard Medical School. He received a BA in psychobiology from Yale University, a PhD in cell and developmental biology from Harvard University, and an MD from the University of Massachusetts. His clinical work focuses on the treatment of gastrointestinal malignancies. He is interested in ethical issues underlying routine clinical interactions and in research ethics. He currently serves on the ethics committees of DFCI and the Alliance for Clinical Trials in Oncology and is looking forward to expanding his teaching role with both medical students and residents.

William (Marty) Martin, PsyD, MPH

Ethical Leadership in Healthcare: A Multi-Level Framework for Physician Leaders Navigating Organizational Complexity

Ethical leadership among physician leaders has become increasingly critical as healthcare systems confront rapid technological change, private equity acquisition, clinician burnout, and growing organizational pressures that often prioritize financial performance over patient and staff welfare. While clinical ethics is foundational in medical education, physician leaders receive limited preparation for organizational ethical dilemmas arising at the intersection of clinical care and management. This capstone project explored how ethical and unethical leadership behaviors emerge among physician leaders and how these behaviors shape organizational culture, clinician well-being, and patient outcomes. The project hypothesized that ethical leadership is best understood not as an abstract moral trait, but as a set of visible behaviors shaped by psychological, relational, situational, and institutional factors. Currently, limited integrative frameworks exist that translate leadership ethics into observable, learnable practices tailored to healthcare contexts. This project synthesized literature from bioethics, organizational behavior, and business ethics to develop a multi-level Antecedents-Behaviors-Consequences (ABC) framework examining ethical leadership across individual, dyadic, group, and organizational levels. As a primary goal, a physician-specific ethical leadership model was developed to distinguish ethical from unethical leadership manifestations while identifying practical phases of ethical leadership: recognizing ethical dimensions early, modeling moral courage, designing systems that support ethical conduct, and aligning incentives with professional values. This capstone project provides actionable insights for physician leaders, healthcare organizations, and leadership development programs by offering a pragmatic framework for strengthening the ethical climate, mitigating moral distress, and supporting patient-centered care through the systems-level integration of organizational ethics and bioethics. This work will continue with the submission of articles in both peer-reviewed and trade journals, as well as the completion of a book on the same topic to be published by the American Association for Physician Leadership.

Mentor: Edward M. Hundert, MD, Associate Director, Center for Bioethics, Harvard Medical School

William (Marty) Martin, PsyD, MPH, is a professor at DePaul University. He received his BS in biology from Xavier University of Louisiana, an MPH and PsyD from Rutgers University. His areas of interest include the integration of business and bioethics, workplace bullying, and insomnia disorders. He has published three books and numerous peer-review articles on topics related to disruptive physician behavior and organizational ethics. He is also involved in professional societies such as the American Association for Physician Leadership. Upon completion of the MBE, he will continue working with individuals, groups, teams, and organizations to optimize their performance in ethically responsive ways.

Kiley Moran, BSN, RN

Justice Begins at Birth: The Ethical Case for Universal Genomic Sequencing in the Neonatal Intensive Care Unit

The absence of universal genomic sequencing as a standard of care in the neonatal intensive care unit (NICU) creates a persistent ethical tension in neonatal medicine. Although genomic testing increasingly identifies underlying causes of critical illness, many neonates enter prolonged diagnostic odysseys that delay treatment decisions, extend hospitalizations, and produce avoidable suffering for families already navigating a crisis, raising important questions of justice in access to timely diagnosis. This project examined whether universal genomic sequencing in the NICU is ethically justified not only as a diagnostic tool, but also as a mechanism that promotes justice and reduces avoidable suffering. The analysis evaluated how earlier genomic diagnosis influenced clinical decision-making, family well-being, and long-term care planning within the ethically complex environment of neonatal intensive care. To explore this question, the project applied a bioethical framework grounded in beneficence, non-maleficence, justice, and relational autonomy to three representative patient journey pathways. These pathways reflected common clinical trajectories in the NICU, including diagnostic uncertainty during critical illness, prolonged testing cascades, and family decision-making under conditions of incomplete information. Each pathway examined how the timing of genomic diagnosis shaped medical management, communication with families, and the broader experience of uncertainty. The analysis found that earlier sequencing shortened diagnostic timelines, supported more informed clinical decision-making, and allowed families to engage in care planning with greater clarity and agency. These findings suggest that universal genomic sequencing functions not only as a clinical intervention but also as an ethically relevant practice that aligns neonatal medicine with principles of justice by reducing unnecessary diagnostic suffering. The project concluded that the broader adoption of universal genomic sequencing in NICUs warrants serious consideration and highlights the need for implementation frameworks, equitable access strategies, and future policy development to support the responsible integration of genomic medicine into neonatal care.

Mentor: Ingrid Holm, MD, MPH, Division of Genetics and Genomics, Division of Endocrinology, Boston Children's Hospital; Professor of Pediatrics, Harvard Medical School

Kiley Moran, BSN, RN, is the Senior Director of Growth specializing in the neonatal intensive care unit sector at GeneDx, a leader in the genomics healthcare industry whose goal is to diagnose genetic diseases as soon as possible. She received a BSN from Southern New Hampshire University. She has worked within the women and infant healthcare space throughout both her clinical and corporate careers. Her interest in bioethics originated through extensive work and research involving standards of care and products specifically utilized in maternity and neonatal intensive care units. After graduation, she plans to continue examining the ethical implications surrounding access to precision medicine and genomic testing in pediatric intensive care settings.

Sarah Obenauer, BA

Everyday Care in a Landscape of Abandonment: Chronic Illness and Moral Life in Central Appalachia

This project examined how communities living with chronic illness in epistemically under-observed Central Appalachia build, negotiate, and sustain collective forms of care under conditions of structural abandonment as well as the moral worldviews that emerged through these practices. The aims of this research were to study chronic illness as a socially produced outcome, rather than simply an individual biomedical condition, and to track community responses. Based on primary ethnographic research in Central Appalachia, this study employed semi-structured interviews and narrative elicitation with individuals living with chronic illness and those involved in everyday care. The study traced how structural abandonment produces illness and reorganizes daily life around ongoing care labor distributed across societal networks. The analysis drew on care ethics, theories of structural violence, and communitarian approaches to moral life. The research revealed that community members define care as the collective, relational labor by which they sustain life, dignity, and continuity under conditions of precarity. Care, in turn, is practiced through resilience, reciprocity, and resistance. Care as resilience highlights how survival is made possible through social ties rather than self-sufficiency. Care as reciprocity reflects how acts of care circulate through community networks, creating moral obligations, debts, and expectations that unevenly distribute responsibility. Care as resistance captures how everyday survival functions as a refusal of erasure and moral blame, not through oppositional protest, but through the ongoing work of making chronicity livable. By attending to how communities reason, justify, and endure the course of everyday care, this project concluded that bioethics must move beyond individual choice and professional obligation to evaluate how collective care practices both expose the ethical failures of systems that offload responsibility onto structurally abandoned communities and work to sustain life.

Mentor: Lindsey Marten Zeve, PhD, Lecturer, Global Health and Social Medicine, Harvard Medical School

Sarah Obenauer, BA, is a researcher, designer, and writer whose work centers on the social, structural, and systemic forces that shape health outcomes and access to care. She earned a BA in Communication from Virginia Polytechnic Institute and State University. Early in her career, she combined design, storytelling, and advocacy to support nonprofits and social justice organizations. Her current research examines healthcare inequalities with particular attention to the experiences of people with disabilities and chronic conditions, with a regional focus on Central Appalachia. Following the MBE, she will continue her research in Appalachia with an emphasis on immersive education.

Tjörvi E. Perry, MMSc, MD

Governing Machine Learning as Care Mediation: A Normative Framework Beyond Rights-Based Compliance

Artificial intelligence/machine learning (AI/ML) is improving early illness detection, prognostication, clinical efficiency, and patient outcomes. AI/ML algorithms learn from available data, produce probabilistic outputs from complex patterns, perform differently when introduced into new clinical settings, and distribute responsibility across clinicians, workflows, and institutions. For these reasons, AI/ML systems often reduce intelligibility and explainability in practice, complicating the assignment of responsibility and accountability. Despite these realities, emerging rights-based governance frameworks treat AI/ML systems as morally neutral tools in clinical decision-making, ignoring how this technology might mediate core principles of care, namely clinician attentiveness, responsibility and competence, and responsiveness to patient needs. By building a conceptual synthesis across the fields of care ethics, post-phenomenology, and responsible healthcare AI governance, this project developed a normative governance framework for assessing the mediating effects of AI/ML-based technology so that AI-mediated care remains in tune with these core care principles in settings marked by vulnerability, dependence, and power dynamics. Seven evaluative commitments were treated as foundational conditions for high-quality, just care: relational trust, contextual responsiveness, attentiveness, ethical competence, responsibility and accountability, and power awareness. For each commitment, this project proposed foHarvur mediation prompts that ask how technology mediates: what is clinically noticed and known (epistemological magnification-reduction), what others become to us (ontological revealing-concealing), what actions are supported (practical enabling-constraining), and who feels included (ethical involving-alienating) during the care continuum. This framework moves AI governance in healthcare beyond compliance checklists and offers a way to assess whether a technology supports the moral aims of care at the bedside across design, implementation, and use. Next steps include testing the framework on hypothetical systems to understand its impact on design, implementation, and use in clinical settings.

Mentor: David S. Jones, PhD, MD, Ackerman Professor of the Culture of Medicine, Harvard Medical School

Tjörvi E. Perry, MMSc, MD, is a cardiothoracic and vascular anesthesiologist at the University of Minnesota Medical Center. He received a MD from the University of Iceland and a MMSc in translation and clinical research from Harvard Medical School. He completed his medical training at the Brigham and Women's Hospital and Harvard Medical School. His clinical work and research have focused on acute right ventricular heart failure after cardiac surgery and developing multimodal educational tools to enhance trainee performance in the operating room. He is interested in exploring artificial systems and moral responsibility in the perioperative space; and will continue to explore how principles of care ethics might strengthen current and emerging governance frameworks for AI in healthcare.

Illisa Rooke-Ley, JD

Confinement as Treatment? Not So Fast: A Principled Analysis of Civil Commitment for Substance Use Disorders

Civil commitment for substance use disorders (SUDs) has increased significantly over the past decade. Despite ongoing debates about its ethical appropriateness and clinical effectiveness, 38 states have adopted laws authorizing civil commitment for SUD. This project examined whether involuntary commitment for SUD is ethically justified by applying Beauchamp and Childress' four principles of respect for autonomy, beneficence, nonmaleficence, and justice. The analysis used normative bioethical reasoning and referenced current legal and empirical literature. Additional work included evaluating decision-making capacity, substantive and procedural due process, treatment outcomes, stakeholder experiences, medication for opioid use disorder (MOUD), and post-discharge mortality and relapse. Professional experience with civil commitment procedures and treatment courts also informed this examination. The analysis concluded that civil commitment for SUD is ethically justified in narrowly defined and carefully limited circumstances: when SUD significantly impairs decision-making capacity, when an imminent risk of serious harm exists and less restrictive options failed or are unavailable, and when clinicians administer evidence-based treatment. Current research does not support claims that coercive treatment leads to better long-term outcomes. Instead, the literature highlights important ethical concerns, including loss of autonomy, stigma, inconsistent treatment quality, prison-like conditions, and increased overdose risk after discharge. Any ethically justified SUD commitment system must be proportional, treatment-focused, and tightly restricted. Policy suggestions include comprehensive and individualized capacity assessments before commitment with regular reviews; access to evidence-based, trauma-informed treatment, including MOUD; discharge planning to incorporate naloxone and direct linkage to community care; parity with civil commitment procedures in mental health regarding protections and standards; systematic outcome monitoring; and continuous investment in voluntary, community-based treatment infrastructure. Without these safeguards, civil commitment becomes a coercive alternative to broken care systems rather than a justified therapeutic intervention.

Mentor: Rebecca Weintraub Brendel, MD, JD, Director, Center for Bioethics, Harvard Medical School

Ilisa Rooke-Ley, JD, is a Senior Judge with the Oregon Judicial Department. She received a BA from William Smith College and a JD from Nova Southeastern University School of Law. She served for thirteen years as a public defender and for twelve years as a circuit court judge. Her interests in bioethics span many subjects, including healthcare inequities, the intersection of criminal justice and mental health, reproductive rights, and corporate influence in medicine. She specializes in treatment courts and teaches ethics to judges. After completing the MBE, she hopes to work in clinical ethics, helping patients, families, and healthcare teams navigate ethically complex decisions with compassion, fairness, and integrity.

Rebecca Salky, BSN, RN

Beyond Tokenism: Ethical Patient Engagement in Research

Patient engagement in research, conducting studies *with*, rather than solely *on,* patients, is gaining traction among researchers, especially in rare diseases. However, it is unclear how often meaningful engagement occurs and what it should look like when it does. Patients with rare diseases bring essential experiential knowledge of conditions affecting relatively few, making them critical partners in shaping research priorities, study design, and drug development. Although engagement has become more common, organizations such as the Patient-Centered Outcomes Research Institute have developed resources to support it, the extent to which these recommendations are followed remains uncertain. Too often, patients are invited into research spaces without real power, clear roles, or opportunities to meaningfully shape decisions. In these cases, where brief patient input is the first and last step, engagement is more symbolic than meaningful. This capstone examined the ethical involvement of patients in research and explored what separates tokenism from partnership. The project asked what meaningful patient engagement should look like, whose voices are heard and valued, and what responsibilities researchers, institutions, and patient partners have in this research. To achieve these aims, research included a narrative review drawing on scholarship in bioethics, patient-centered outcomes research, participatory research, and rare disease advocacy. The project synthesized key themes such as epistemic injustice, moral authority, representation, and trust, while identifying structural and practical barriers to ethical patient partnership. This capstone emphasizes that patient engagement requires more than soliciting patient input. Meaningful partnership depends on whether patients have genuine influence, whether their labor and expertise are respected, and whether stakeholders are willing to share power. Future efforts should focus on building structures and practices that respect the knowledge patients bring, ensuring that it meaningfully informs research priorities and processes.

Mentor: Rebecca Li, PhD, Member, Center for Bioethics, Harvard Medical School; CEO, Vivli, Center for Global Data Research

Rebecca Salky, BSN, RN, is a clinical research coordinator at Massachusetts General Hospital (MGH). She received a BA in psychology from Skidmore College and a BSN from New York University. At MGH, she oversees clinical trials and works towards advancing research in myelin oligodendrocyte glycoprotein antibody disease, a condition she has lived with since childhood. Her primary interests in bioethics center around advocating for the rights of patients and ensuring ethical standards in research. She has contributed to numerous publications in neuroimmunology and received a 2023 Pillars of Excellence award from MGH. Upon graduation from the MBE program, she plans to pursue roles that integrate bioethics with patient-centered clinical research and meaningful patient partnerships.

Leslie Schaar, JD, MPH

From Nonmaleficence to Non-Extraction: Reclaiming Bioethics from the Political Economy of Harm

Although bioethics claims a commitment to justice, it has failed to address how market fundamentalism enables corporations to profit from illness by externalizing health costs onto the public through regulatory capture, liability shields, epistemic manipulation, and actuarial harm budgeting. As a result, bioethics has functioned, often unintentionally, as a legitimizing instrument within an extractive health economy, refining ethical discourse without challenging the conditions that make preventable suffering profitable. The focus of this capstone project was to advance a political economy of bioethics, arguing that the field has been structurally oriented toward downstream clinical dilemmas while leaving upstream systems of harm production unexamined. To address this ethical blind spot, a literature review culminating in a comprehensive report introduced non-extraction as a new bioethical principle, which is derived from medicine's tradition of nonmaleficence but oriented toward structural harm. Non-extraction asserts that no corporate, governmental, or institutional actor may ethically generate profit by transferring the burden of harm onto the public. By framing harm externalization as a bioethical violation rather than a market inevitability, this work calls for transforming bioethics from a consultative discipline into a public-interest ethics capable of confronting corporate governance, policy authorship, and knowledge manipulation as primary ethical terrains. The report concludes by proposing an insurgent model of public-interest bioethics that rejects neutrality, aligns with democratic accountability, and asserts ethical jurisdiction over the political economy of health. In doing so, it reclaims bioethics not as a language of institutional reassurance but as a structural defense of life against extraction.

Mentor: Joni R. Beshansky, MPH, LP.D., Senior Associate Director of Education, Center for Bioethics; Lecturer, Department of Global Health and Social Medicine, Harvard Medical School

Leslie Schaar, JD, MPH, serves as review judge and policy counsel to the Secretary of Health of the Washington State Department of Health. She received a BA in journalism and history from Southern Methodist University, an MPH from the University of California at Berkeley, and a JD from the University of New Mexico School of Law. She has served in public health law and policy leadership roles for over 20 years, including as a senior health law attorney, health law judge, senior policy counsel, legislative counsel, advocacy director, and civil rights litigator. She provides pro bono legal assistance to underserved populations. Her bioethics interests include reducing health disparities to advance health equity. After the MBE, she will assume her role as an Industrial Appeals Judge with the Board of Industrial Insurance Appeals.

SK Sharma, PhD

Ethical and Responsible AI in Biomedical Innovation: A Framework for Global Health Governance and Policy

Artificial intelligence (AI)-driven drug discovery has concentrated pharmaceutical innovation capacity in five wealthy nations. These countries capture 98% of global investment while bearing only 25% of the global disease burden. This systematically excludes populations in low- and middle-income countries that bear 75% of the global disease burden. This project examined how AI pharmaceutical development creates natural monopoly market structures that potentially violate binding international human rights obligations under the International Covenant on Economic, Social and Cultural Rights. The project developed an integrated analytical framework combining distributive justice principles, human rights law, competition policy, and global public goods economics to evaluate governance mechanisms for AI pharmaceutical technologies. The research involved an extensive literature review synthesizing scholarly sources across regulatory science, bioethics, health economics, and international law, including a review of the report on digital innovation found in the United Nations Special Rapporteur on the Right to Health 2023. The analysis revealed that AI pharmaceutical monopolies emerge through self-reinforcing mechanisms, including high fixed costs, network effects, data accumulation advantages, and intellectual property portfolio expansion, which creates insurmountable entry barriers for developing country institutions. The research concluded that voluntary ethical guidelines and incremental competition policy reforms remain insufficient to address these disparities. Instead, governance mechanisms must transform AI pharmaceutical technologies from artificially excludable private goods into genuine global public goods through patent pools, open-access requirements, and mandatory benefit-sharing commitments. This project resulted in a manuscript for journal submission and a policy brief, both of which demonstrate that bioethics scholarship must engage more directly with international law and the structural determinants of health. Subsequent research will examine enforcement mechanisms and political economy barriers to public goods approaches.

Mentor: J. Wesley Boyd, MD, PhD, Senior Lecturer, Department of Global Health and Social Medicine, Harvard Medical School

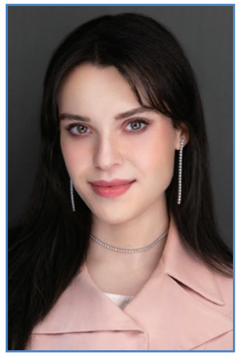
SK Sharma, PhD, is the Senior Advisor for AI and technology at Warburg Pincus and retired Chief Analytics & AI Officer at Universal Music Group. He received a PhD in physical chemistry and chemical physics from Caltech, where he conducted structure-function studies on the GPCR CCR1. His research focuses on molecular design for antimicrobial host defense, viral fusion, and pulmonary surfactants. He holds multiple AI patents, is a co-author of 18 scientific publications, a Billboard *40 Under 40* and Constellation Research AI 150 honoree, and an Entrepreneur in Residence at Caltech. Upon completion of the MBE, he will undertake an appointment as a Senior Fellow at the Harvard Kenedy School and on the Board of Directors of the Caltech Alumni Association.

Chaya Shor, BS

Forever Empathy: An Arts- and Humanities-Infused Empathy Training Curriculum for Medical Students

Empathy is fundamental to patient-centered clinical care; however, research suggests that it often declines during medical training due to demanding workloads, hidden curricula, and limited emphasis on humanistic competencies in formal medical education. Empathetic practice has been shown to improve patient experience, satisfaction, treatment adherence, and clinician well-being. However, most curricula rely heavily on traditional didactic instruction and provide little structured training to cultivate empathy as a clinical skill. This educational gap was addressed by development of a framework for empathy training curriculum complementing existing didactic methods. The project specifically explored how experiential learning informed by the arts and humanities can enrich the educational process. A comprehensive literature review examined current approaches to empathy training, barriers to cultivating empathy during clinical practice, and evidence supporting arts- and humanities-based pedagogical modalities. Drawing on these findings, the project developed Forever Empathy, a framework with several curricular components. These include evidence-based didactic modules covering the definitional, evolutionary, neurobiological, ethical, psychosocial, and clinical dimensions of empathy. The curricular components also feature simulation programming using applied improvisation to help trainees embody diverse patient perspectives and experiences, as well as reflective writing exercises to promote self-empathy, narrative sensitivity, and appreciation for storytelling in patient care. The Forever Empathy framework demonstrated the need for intentional curricular design complementary to traditional didactic models, treating empathy as a teachable clinical competency. It also illustrated how combining experiential learning with a humanities focus can strengthen empathetic behavior. Future work will involve piloting Forever Empathy with medical students and evaluating its impact on both their understanding of empathy and their practical, actionable patient care skills. The pilot study will also assess changes in empathetic practice compared with conventional approaches and explore adaptations for other healthcare workers and clinical specialties.

Mentor: Rémy Enoch, MS, MBE, Teaching Affiliate, Center for Bioethics, Harvard Medical School



Chaya Shor, BS, received a BS in biology with a minor in psychology from Touro University. She has worked as a science tutor and STEM educator and has experience in basic science and clinical research, as well as medical simulation acting. She also supports the patient experience through her nonprofit work and training and mentorship of volunteers involved in patient care. Her bioethical interests include empathetic clinical care, patient advocacy, narrative methods, clinician and patient well-being, and the integration of arts and humanities in medical education. She has contributed to several academic publications and received multiple awards for service and leadership. After completing the MBE, she plans to attend medical school.

Sydney Stupp, MSW

Ethical Considerations in the Pediatric HSCT Consent Process: An Observational Study

Informed consent is a cornerstone of bioethics in clinical medicine, grounding ethical practice in respect for patient autonomy, transparency, and shared decision-making. In pediatric hematopoietic stem cell transplantation (HSCT), the consent process is particularly complex because families must navigate high-risk treatment decisions while processing large amounts of medical information under emotional stress. Despite the ethical importance of these discussions, there is limited research examining how HSCT consent conversations unfold in real time or how communication dynamics influence understanding, emotional experience, and trust among patients, families, and physicians. This project aimed to develop a study design exploring the ethical considerations present during HSCT consent discussions and to examine how communication behaviors, emotional tone, and trust-building occur during these interactions. Research included designing a pilot observational study in which licensed clinical social workers observe HSCT consent conferences using a structured checklist to document communication patterns and relational dynamics. After the conferences, patients, families, and physicians will complete surveys assessing communication clarity, trust, and emotional experience. The study is designed to collect demographic information to better understand participant characteristics. As a pilot feasibility study, the primary goal is to determine whether real-time observation and follow-up surveys are practical methods for studying the ethical and relational dimensions of HSCT consent discussions. The study received approval from the Children's Hospital Los Angeles' Institutional Review Board, and the next step is study implementation and data collection. The results from the pilot study will inform future research and potential improvements in transplant consent practices to better support patients, families, and clinical teams.

Mentor: Sabrina Derrington, MD, Director for the Center for Bioethics, Children's Hospital Los Angeles

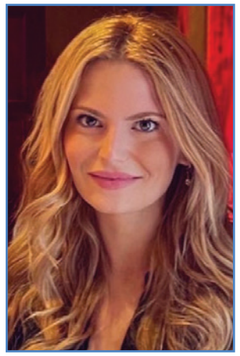
Sydney Stupp, MSW, is a transplantation and cellular therapy (TCT) clinical social worker at Children's Hospital Los Angeles. She received a BA in sociology from California State University Northridge and an MSW from the University of Southern California. Her clinical work focuses on providing psychosocial support to families in the TCT clinic and inpatient unit, and creating programs to provide emotional/financial support and medication compliance. Her interests include end-of-life care, transplant ethics, and reproductive rights. She serves on the board of the Association of Pediatric Oncology Social Workers and is a member of the Ethics Resource Committee at CHLA. After the MBE, she plans to pursue her HEC-C credential and advance her work in the pediatric ethics and transplant space.

Dimitra Tzeferakou, JD, MS

Navigating BRCA Testing: Previvor Decision-Making and Healthcare System Support in the US, UK, and Greece

BRCA1 and BRCA2 (BRCA) are genes that help repair damaged DNA. Individuals with a BRCA mutation face a significantly increased risk of cancer, including breast, ovarian, prostate, and pancreatic cancer. BRCA previvors are individuals with a known family mutation who have not undergone BRCA testing, or individuals with a confirmed BRCA mutation who have not developed cancer. The capstone project explored how previvors live in a liminal space between health and disease as patients-in-waiting, raising bioethical questions about autonomy and justice. The project aimed to identify factors that determine whether and when individuals undergo BRCA testing, and to examine how previvors navigate test results in the US, UK, and Greece. The project relied on analysis of the academic literature, professional guidelines, and relevant regulations, and adopted a comparative approach across the US, UK, and Greece. This involved mapping the entire process of becoming a previvor. The project focused on the decision to undergo testing and, by synthesizing empirical data, identified factors that influence this decision across contexts: perceived actionability of the result; economic factors; existence of legal protections; responsibility toward family members; and psychological factors including intolerance of uncertainty, narrative identity, and emotional bandwidth. A previvor's experience materially differs depending on where they are located. The UK's healthcare structure made BRCA knowledge actionable, whereas in the US, access to follow-up care was limited due to costs and insurance coverage, and in Greece there was limited visibility regarding life after the result. The project concluded that healthcare design shapes previvors' autonomy and recommended further empirical research mapping the previvor journey alongside policy reforms to meaningfully support previvors.

Mentor: Anna C.F. Lewis, DPhil, Instructor in Medicine, Mass General Brigham, Harvard Medical School



Dimitra Tzeferakou, JD, MS, is an international lawyer, founder, and researcher. She received a JD from the European University Cyprus Law School and a MS in new drug development from the University of Athens Medical School. Dimitra has worked and conducted research at the University of Oxford, the Council of Europe, and the Greek Parliament. She focuses on the intersection of law and medicine, with particular emphasis on bioethics and AI, data privacy considerations in clinical trials, and patient rights. She is a registered expert with the European Commission and has published with Stanford Law School's transatlantic technology law forum. After the MBE, she will continue her work as a lawyer in clinical trials and health technology matters while contributing to the development of public health reform.

David Zheng, MD

Deep Brain Stimulation, Authenticity, and Autonomy: A Dual-Basis Approach to Memory Changes in Alzheimer's Disease

Neuromodulation techniques such as deep brain stimulation (DBS) increasingly appear in research on cognitive enhancement and treatment for Alzheimer's disease (AD). Although existing studies have examined cognitive outcomes in executive function and working memory, researchers have paid comparatively little attention to episodic memory and its ethical significance. Episodic memory plays a central role in autobiographical identity and value formation, and its disruption in AD raises questions about whether patients retain the autonomy required to provide informed consent for medical interventions. This capstone project examined how episodic memory loss in AD affected the authenticity of a patient's values and their capacity to provide informed consent for medical procedures. The project involved a review of empirical literature on neuromodulation for AD and an ethical analysis using philosophical theories of autonomy, authenticity, and personal identity. The analysis drew particularly on Pugh, Savulescu, and Maslen's dual-basis, diachronic account of authenticity, which defines the authentic self as the coherent set of an individual's enduring values and rational beliefs across time ("character system"). The analysis suggested that memory restoration through DBS can sometimes strengthen autonomy by reestablishing connections between autobiographical experiences and the values, desires, beliefs, and preferences they originally produced. However, the reversible and stimulation-dependent effects of DBS may also create situations in which patients express conflicting treatment preferences across cognitive states influenced by DBS. The project concluded that clinicians should evaluate consent in AD by assessing whether a patient's current values remain coherent within their broader diachronic character system. Future research should address how ongoing, diachronic consent should function in neuromodulation therapies that alter memory and identity, with particular attention to empirical research on how patients and caregivers perceive these memory changes and their impact on authenticity.

Mentor: Lukas Meier, PhD, Associate, Edmond and Lily Safra Center for Ethics, Harvard University

David Zheng, MD, is a neurology/psychiatry double-board resident at New York University (NYU) Langone Health. He received a BA in philosophy from Princeton University and an MD from the Perelman School of Medicine, University of Pennsylvania. His interest in bioethics stems from practical and philosophical questions at the intersection of neuroethics, philosophy of mind, consciousness studies, and forensic psychiatry. He received the John Martyn Warbeke Prize in Metaphysics and Epistemology and has published in multiple journals, including *Molecular Psychiatry* and *Neuropsychologia*. After graduation, he will be completing his final year as chief resident at NYU followed by a clinical fellowship in Cognitive Neurology and Movement Disorders at Massachusetts General Hospital and Harvard Medical School.

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