

# Ethical.AI

On October 14, 2019, the **Wall Street Journal** published a **Special Report** on Artificial Intelligence. A major portion of the report was devoted to the impact of AI on healthcare – and the ethical concerns raised by human bias baked into algorithms, machine learning that will “worsen” existing economic and racial disparities, and premature diagnostic and treatment uses of AI before it can be validated and before best practice and auditing standards can be agreed upon.

Perhaps even larger than algorithmic bias is what experts are calling the “black box” problem, which leaves unanswered the question: “When AI programs can’t explain how they come up with their results, should we hold back on adopting them?” These concerns raised by experts from Harvard Law School, UC Berkley health policy and Stanford University Medical Center only touch the surface of even more pervasive issues around big data. How do we protect patient information and privacy? Do I own my data or do my health providers? Can providers monetize my health record, making money from it and keeping it from those who aren’t willing to pay? What is the role of government funding in research and regulation?

Before becoming paralyzed by the enormity of the issues, we must recognize that the technological imperative in US business will drive much of the activity in the development and implementation of AI systems in

healthcare. The train is leaving the station, but it’s not too late to catch it. That’s why the Center for Practical Bioethics has teamed up with Cerner to begin developing recommendations for incorporating ethics analysis and evaluation into these development and implementation processes. A number of academic institutions

(e.g, Harvard/MIT, Stanford, and the University of Michigan) have begun introducing collaborative teaching models, considering key questions, and developing ethical frameworks, but much less is being done in the corporate and healthcare institutions to test strategies among stakeholders who are already at work in this space.





GE has identified the importance of AI in its work to “*deliver technology that benefits and protects the patient and empowers the clinician to improve cost, quality and access across the healthcare system,*” and Microsoft’s pledge states its promise to design “*...AI to be trustworthy*” in creating solutions to reflect “*ethical principles that are deeply rooted in important and timeless values.*”

Overall, the barrier for entry is low, the promise of impact looms large and the risks of harm remain largely unknown. Kansas City sits at the center of a massive hub of potential activity in this arena. The stakeholders are here and so is the leadership.



**Background: Project Design and Workshop**

As AI becomes more pervasive in healthcare, “solutions,” tools and applications will continue expanding with an accelerating pace. The window of opportunity to examine

and leverage benefits and mitigate risks is now. To begin to address the ethical challenges of AI in healthcare (see image),

CPB in collaboration with Cerner invited approximately 75 innovators and thought leaders from Kansas City’s health entities to spend the day at Cerner headquarters in discovery mode. Representatives from area health providers, science and technology, faith-based groups, start-ups, academia and advocacy groups eagerly joined in the daylong event.

Three Critical Sites, Stakeholder Groups	
<b>Design &amp; Development</b>	<ul style="list-style-type: none"> <li>• Engineers</li> <li>• Computer Scientists</li> </ul>
<b>Implementation &amp; Dissemination</b>	<ul style="list-style-type: none"> <li>• Clinicians</li> <li>• Payors</li> </ul>
<b>User Experience</b>	<ul style="list-style-type: none"> <li>• Patients</li> <li>• Subjects</li> </ul>

The workshop opened with a welcome by CPB President & CEO John Carney, followed by a crash course on health ethics from one of CPB’s clinical ethicists, along with overview presentations on AI in healthcare from the perspectives of developers, implementers, and subjects of AI tools. Participants addressed questions related to fairness,

inclusion, accountability,

transparency, data privacy and security, and reliability and safety that tied directly to the foundational health ethics principles highlighted earlier in the day. Facilitators gathered more than 360 responses and sorted them into high-level thematic groups that were discussed and further developed at the end of the day.





## Project Summary and Request

Nearly 60 persons accepted the invitation to join the workshop on August 9, 2019. Project staff from the Center for Practical Bioethics and Cerner, with the assistance of advisors, identified participants and KC regional stakeholders to take a first look into the applied ethics of artificial intelligence.

To date, the entire cost of the project has been borne by Cerner and CPB. The initial in-kind and financial investments from January-August 2019 covered the 8 months of planning, designing and execution of the event. Faculty presentations were secured through voluntary commitments. Seven facilitators helped gather participant contributions of the themes as identified below over the course of the day. The pre-workshop design, development and hosting costs are valued at \$25,000 for the all-day event.

Cerner will continue to provide in-kind services in the project co-leadership, final compilation and curation of data collection, data entry, and qualitative analysis through the end of Phase I (December 2020). The report itself will be authored by Project Staff from both Cerner and CPB (see below).

For the 16 months of September 2019 through December 2020, the valuation of in-kind support from Cerner for technical support, analytics along with leadership oversight is budgeted at \$75,000.

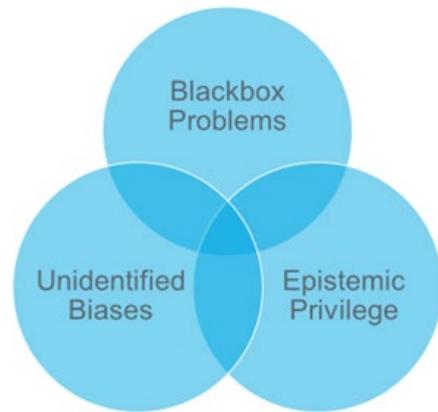
We are seeking support from corporations, stakeholders and foundations to assist in funding the ethics consultation work of Center staff during this period. The qualitative analysis and other analytics resulting from the workshop will be compiled, curated, coded and presented in final form with the publication of a report on the convening and feedback from stakeholders. The Center is seeking support for 500 hours of ethics staff consulting time over the course of that period totaling \$37,500 (@\$75/hr.). This will complete the first phase of the project. Beyond publishing the report, instituting a thorough set of dissemination strategies that will engage a diverse set of stakeholders will be conducted to determine how issues like auditability will be integrated into algorithmic development processes.

### Ethical Dimensions of AI in Healthcare

**Blackbox Problems:** AI systems are difficult to interrogate

**Unidentified Bias:** AI systems can express biases lurking in datasets

**Epistemic Privilege:** AI systems are being approved to make clinical determinations. "It's not me; it's the computer."



The major themes coming from the workshop will be used to engage stakeholders through vetting of the report and generating robust feedback. Work groups convened during 2020 will curate findings and recommendations. Additional stakeholders will be needed to ensure comprehensive participation and stakeholder commitments.



**The Project: Next Steps**

**A. Analyze Workshop Output** – Work is already underway to analyze the structured responses and recorded discussion generated by participants since mid-September. Important themes needing to be addressed in creating sound ethical structures were immediately identified by participants during the workshop but need further refinement. They include **biases and diversity, auditability, feedback loop/process, limitations in models, and data use and ownership**. Ongoing analysis will be completed in the last quarter of 2019 that will address the refinement of the themes and help formulate a set of strategies and recommendations in moving forward. Recommendations emerging from this step of the analysis will become tasks to be undertaken beginning the first quarter of 2020 and progress through the next 12 months.

**B. Identify Institutional Partners** – One of the first efforts beyond finalizing the analysis and report from the workshop will be the formal process of identifying institutional and organizational partners – most likely labs and firms engaged in developing AI systems for use in healthcare

settings. They will be recruited and secured to test recommended strategies that will incorporate the analysis and evaluation into the next steps in the development design that will be adopted and tailored to the unique needs of the KC region.

**C. Set the Stage for Demonstration** – Finally in 2020, we will finalize a set of policies and procedures to test and evaluate the recommended strategies by the end of the year, which will set us up for the testing phase that will begin in early 2021.

**The Inputs: Staff and Administration**

The Ethical.AI Project is led by Matthew Pjecha, MS, a CPB program associate, and Lindsey Jarrett, PhD, a social scientist and clinical researcher at Cerner with more than a decade of experience in program evaluation. An advisory group will be assembled, composed of senior leadership from CPB and Cerner, and experts from

	Recruited	Still Recruiting
Engineers	X	X
Computer Scientists	X	X
Clinicians	X	X
Payors		X
Patient/Community Advocates	X	X
Policymakers		X

local academic institutions (bioinformatics and research) and healthcare technology groups, e.g. BioNexus and Kansas City Digital Drive.

The financial and in-kind investments in the project to date have been supported by CPB and Cerner totaling approximately \$25,000. We have continued in-kind commitments from Cerner estimated at \$75,000 for the period from August to December 2020. The Center is

seeking philanthropic and corporate support to continue work in the project. Support is needed to leverage this investment from theoretical concepts to real-world application and, in so doing, establish Kansas City as a leader in best practices for AI in healthcare.