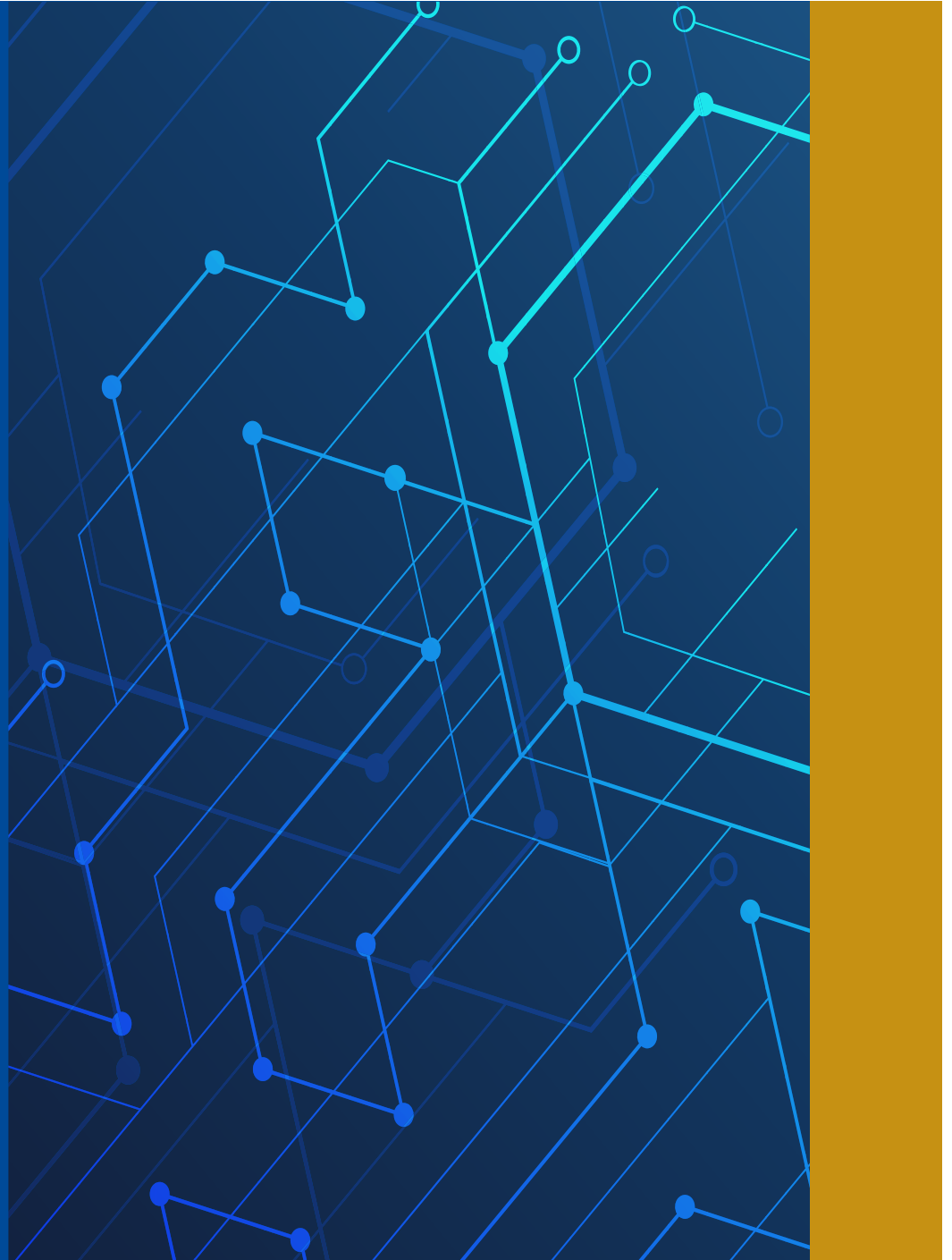# Artificial Intelligence in Health Services Research:

The Future of the Field

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EXECUTIVE SUMMARY

Introduction

Artificial intelligence (AI) holds incredible potential to advance health research, inform health care, and improve health outcomes. However, given the rapid innovation and evolution of this technology, trustworthy information on AI use and its impact is limited. At this pivotal moment, health services research (HSR) can play an important role in generating needed evidence on the use and impact of AI—demonstrating what works, for whom, and in what contexts.

AcademyHealth convened a group of experts across the HSR ecosystem to identify priorities and potential next steps to prepare the field for AI use and study in health care and research settings. This work aimed to (1) establish a common understanding of the current state of AI use and study in HSR; and (2) identify challenges and opportunities related to the use and study of AI in HSR to inform the field's next steps. The following framework guided expert discussion and prioritization across three key intersecting areas of AI, health care, and the research landscape.

1. **AI in Health Care:** Machine learning (ML), natural language processing (NLP), and other AI-enabled or predictive analytics technologies are increasingly used to support clinical decision-making, streamline administrative tasks, and enhance patient care and engagement.

2. **HSR *with* AI:** AI tools and technologies can enhance the research process by quickly collecting, curating, integrating, analyzing, synthesizing, translating, and even disseminating information in ways that were previously complex or labor-intensive.

3. **HSR *on* AI:** The field of HSR is positioned to critically assess AI's effectiveness, safety, and equity in health systems and to evaluate the impact of AI use in different contexts and/or communities.

Summary of Findings

This work surfaced priority challenges and opportunities, as well as related next steps, for the field.

Trust and Transparency

Participants highlighted the impact of patient and provider mistrust in AI, stemming from knowledge gaps around how AI is developed and deployed in health care. Patients may not fully recognize how they currently interact with AI-driven tools in their routine care, and providers may have concerns around the reliability and oversight of AI systems in clinical settings. The field of HSR can generate needed evidence on patient and provider awareness and perceptions of AI, as well as the underlying factors that promote AI-related trust and transparency. Priority next steps may include:

- **Establishing best practices for ethical, effective AI use in health care and research settings.** These must be evidence-based and adaptable enough to accommodate the evolving nature of AI technology.

- **Developing processes and resources for independent evaluation** to promote trust and transparency of emerging AI tools and technologies (beyond developers' existing evaluation activities). This could be done through independent, interdisciplinary evaluative bodies or quality assurance labs.

- **Increase collaboration** to ensure that the needs and perspectives of all users (e.g., patients, providers, policymakers, developers, decision-makers) are reflected in AI tool and technology design—as well as the policies governing their use.

AI Literacy

Limited AI literacy creates barriers to ethical, effective adoption of AI tools and technologies in health care and research. Measuring baseline AI literacy across groups (e.g., patients, providers, policymakers) could provide insight into knowledge or training needs; however, it is difficult to accurately measure baseline literacy. Additionally, it can be challenging for users to maintain literacy as technology evolves. The field will benefit from additional research on AI-related education and training gaps, which can inform learning opportunities and resource development to best meet user needs. Priority next steps may include:

- **Assessing existing AI literacy** to gain a more accurate understanding of people's AI-related knowledge, exposure, or familiarity. This includes studying how attitudes or experiences may impact comfort with AI use for health care and research.

- **Creating educational resources** that are available outside of formal academic settings or updated as the technology changes. These resources can be tailored to meet diverse learning and training needs based on baseline AI literacy across groups.

- **Providing safe spaces for experimentation** to support skill-building and experimental learning. This promotes workforce training and development by providing opportunities to build critical thinking skills and practice using AI tools without real-world consequences.

Regulations, Guidelines and Governance

Meeting participants highlighted that the nascence and fragmentation of policy, regulatory, and governance structures can lead to inconsistent AI use and study across institutions. Given the exponential growth of AI capabilities, there are ever-expanding use cases for AI in health care and research settings—which poses unique challenges for establishing overarching policies and standards. While policy, regulatory, and governance frameworks need to be tailored for the individual communities and contexts in which AI is being used, priority next steps for improving clarity and coherence in the regulatory environment may include:

- **Establishing novel evaluation methods** that account for the evolving nature of AI technology, but also uphold rigorous standards. This can include standardizing key performance indicators, reporting practices, and accountability measures as needed to inform AI policy and regulation development and enforcement.

- **Set standards** specifically for (1) data quality and data sharing; (2) collecting data used to train or support AI tools and technologies; (3) AI use reporting and documentation, including key metadata for underlying algorithms; and (4) implementing or evaluating the use of AI in health care or research settings.

- **Draft ethical guidelines** informed by the growing body of evidence on AI to provide general guardrails for those tasked with institution- or setting-specific policies, regulations, or governance.

Conclusion

Rapid development and evolution of AI technology underscores the urgent need for robust evidence on what works, for whom, and in what contexts. The field of HSR can play a critical role in generating needed evidence on the use and impact of AI; however, doing so will require agile approaches to evaluating, regulating, and educating people about AI tools and technologies. Addressing current, priority challenges for the field can prepare the partners across the health care and research ecosystems to embrace innovation and optimize the ways AI can be used to help improve health equity and outcomes for all.

INTRODUCTION

Artificial intelligence (AI) holds incredible potential to advance health research, inform health care, and improve health outcomes. However, given the rapid innovation and evolution of this technology, evidence on AI use and its impact remains limited. At this pivotal moment, the field of health services research (HSR) can play an important role in demonstrating what works, for whom, and in what contexts.

Recognizing this opportunity, AcademyHealth convened diverse experts across the HSR ecosystem to facilitate dialogue and foster collaboration. This work, intended as a precursor for future efforts, was designed to prepare the field for undertaking the use and study of AI by:

- Establishing a common understanding of the current state of AI use and study in HSR, and

- Identifying related challenges and opportunities to inform next steps for the field.

This document presents synthesized insights from a series of meeting and prioritization activities, further detailed in *Appendix 1*. It also offers new resources created by AcademyHealth (e.g., AI for HSR: Glossary of Key Terms and Use Cases across the Research Lifecycle) with expert input from convening participants and Guiding Council members (*Appendix 2*).

Outputs of this work can inform intentional, strategic thinking as the field undertakes AI use and study to optimize high-impact, equitable research and improve health for all.

Framing: Domains of AI in Health Care and Health Services Research

The framework below provides a scaffolding for understanding how AI intersects with each of three related domains of the health care and research landscape.

- **Domain 1:** AI in Health Care

- **Domain 2:** Health Services Research *with* AI

- **Domain 3:** Health Services Research *on* AI

While some aspects of AI use and study are cross-cutting, each domain also poses distinct challenges, opportunities, and considerations. A preliminary survey revealed that meeting participants had the greatest clarity and familiarity with existing work in Domain 1. When asked to help identify leaders and innovators in this space, participants most commonly named organizations or entities focused on building capacity, creating guidelines, or sharing resources specifically focused on AI *in health care*. While they articulated clear, concrete challenges and opportunities related to Domain 1 (i.e., AI in health care), their responses related to Domains 2 and 3 (i.e., HSR conducted with or on AI) were more abstract and conceptual. This could suggest that AI use is farther along or better established in health care contexts relative to health

research settings. At minimum, it signaled that respondents were less familiar with the ways AI might influence the conduct or implementation of HSR.

Responding to this need for deeper exploration, evidence, and education regarding the "HSR angle" of this landscape, AcademyHealth's activities specifically focused on Domains 2 and 3.

AI in Health Care

As AI tools and technologies developed over the course of several decades—beginning with deep learning and predictive analytics, and expanding to now include generative AI—these have become increasingly integrated into health care delivery and clinical decision-making.[i] Keeping in mind important caveats and considerations for ethical use, there are almost innumerable use cases for AI to enhance and improve health care delivery. Machine learning (ML), natural language processing (NLP), and other AI technologies are already used in these settings for various purposes including but not limited to:

- **Supporting medical interventions.** Multiple tools and technologies used in patient care are driven by underlying AI technology. This includes, for example, remote sensors and medical devices (e.g., EpiPens that deliver personalized insulin doses based on real-time data) and tailored chatbot avatars designed to build patient-provider rapport.[ii]

- **Facilitating documentation and administrative burdens.** By streamlining administrative or operational processes, NLP and ambient listening technologies can streamline clinical documentation (e.g., summarizing conversations and drafting notes during patient visits to afford practitioners more time for direct patient care).[iii,iv]

- **Improving the pace and accuracy of diagnosis.** AI-driven imaging equipment and clinical decision-support tools can help clinicians make quick and accurate diagnoses and develop treatment plans appropriately aligned with existing clinical guidelines.[v,vi]

HSR with AI

AI has supported the conduct of health research for years, dating back to early uses of computers for data management and clinical diagnosis.[vii] Early rule-based decision tools have since evolved through more dynamic machine learning (ML) models that can learn from and identify patterns in data entered into the system. This affords new capacity to quickly integrate and analyze information from big data or unstructured data (e.g., notes, images, audio samples, genomic sequences). Now, some previously time- and labor-intensive research steps (e.g., data collection, cleaning and curation, literature sourcing and synthesis) can be done more efficiently. Further, the growing generative capacities of AI can assist HSR professionals in formulating new research questions, approaches, or even data. These Use Cases demonstrate how AI tools and technologies can support various stages of research including:

- Open-text response translation (e.g., from a health record or survey) into a standardized format, which facilitates integration with data from other sources or in other formats and languages.[viii]

- Generation of novel research questions or study designs, and ideas of how to adapt them for different contexts, conditions, or communities.[ix]

- Anticipation or generation of "synthesized" data that approximates valid data points. Though using these data requires excess caution, it can be helpful in cases where real data are missing, sensitive, unavailable, or too limited to support generalizable conclusions (as in the case of some rare disease research).[x,xi]

HSR on AI

HSR can be thought of as "the science of study that questions what works, for whom in what context, and at what cost within our health system."[xii] In ways, the field has a guiding ethos or charge: apply critical inquiry and rigorous methods to build evidence to improve health systems, services, and outcomes.

Just as HSR models and methods can be used to study drug effectiveness or clinician accuracy, they can also be used to study what works, for whom, in what context, and at what cost—with respect to AI tools and technologies. While the ever-evolving nature of AI poses challenges for evaluation and implementation using traditional methods, some promising approaches to AI-focused research include:

- **Real-World Evidence (RWE) studies** leveraging data from electronic health records (EHRs), wearable devices, and patient-reported outcomes to assess how AI-driven interventions perform in real-world settings.

- **Federated learning studies** whereby AI models trained across multiple institutions are evaluated via cross-institution comparison of outcomes.[xiii]

- **Adaptive trials**[xiv] that evolve clinical trial design based on interim results, or **Continual Learning (CL) frameworks**[xv] that account for AI system improvements over time.

- **Human-AI collaboration studies**[xvi] evaluating how AI augments or impedes human decision-making by assessing workflow integration, cognitive load, decision accuracy, and outcome equity.

Using these and other approaches, researchers can play a critical role in evaluating the impact of AI in different contexts, conditions, or communities. This evidence can guide decisions about what constitutes ethical, effective, equitable AI use—and inform policy and practice solutions that improve health for all.

SUMMARY OF FINDINGS

Key Players: Established and Emerging Leaders

Prior to the meeting via a survey, participants helped identify established "key players" and emerging leaders in the AI space. Of the groups most commonly referenced, most were recognized as doing work broadly focused on the intersection of AI and health care. Several were also cited for creating tools or resources that benefit the research community. Generally, these include:

- Standing organizations with AI-focused outlets (e.g., the National Academy of Medicine AI Code of Conduct Steering Committee).

- Newly launched independent NGOs (e.g., Coalition for Health in AI, or CHAI).

- Health systems (e.g., Kaiser Permanente) with demonstrated progress or success in AI implementation and/or evaluation, specifically in care delivery settings.

- Funders recognized for supporting research on AI-related topics or involving AI in research conduct (e.g., AHRQ, PCORI).

- "Gatekeepers" (e.g., academic institutions, ethical review boards, peer-reviewed publications) whose policies and parameters for acceptable AI use in research conduct and documentation have significant implications for the field.

Key Features of the Landscape: Challenges and Opportunities

This work surfaced several current challenges and emerging opportunities for the field of HSR. Challenges and concerns were often seen as "signals" pointing to areas where advancement, improvement, or innovation could prepare HSR professionals to embrace these new opportunities. The most

commonly referenced challenges related to *trust and transparency*, *AI literacy*, and *regulations, guidelines and governance*. These challenges, described below, were often seen as interconnected and even overlapping. For example: limited AI literacy can be deeply intertwined with mistrust of AI, which in turn is impacted by guidelines and standards for ethical AI use.

Participants identified and prioritized 1) potential next steps toward addressing these challenges, and 2) potential indicators of success as the field prepares to embrace emerging opportunities.

Trust and Transparency

Challenges and Concerns

Participants highlighted that factors affecting AI mistrust include limited awareness of how AI tools are developed, and knowledge gaps around how these tools are already used in routine health care and research activities. They also acknowledged the undercurrent of broader social mistrust in science, evidence, and the health care system, especially among those in sociocultural or other groups that have historically experienced harm. As AI is increasingly integrated into health care and research processes, overcoming doubts and bolstering trustworthiness will require solutions (e.g., proactive assessment, thoughtful communication) for targeting mis- and distrust on multiple levels.

- **In health care:** Patients may not realize they already routinely trust and interact with AI-driven tools and systems (e.g., patient portal chat functions, appointment scheduling bots) as part of regular clinical encounters. Confusion about how patient data are used and for what purposes further undermines trust that health systems and providers are centering patients' best interests. Providing patients with information about AI use in their care, and related data privacy protection, can build patient comfort and confidence in health systems and providers. Unless careful thought is given to the presentation of technical information, however, this approach might further contribute to mistrust and raise new questions or concerns rather than reinforce trust. To this point, participants stressed the need to build patients' underlying trust in clinicians—regardless of their use of AI as an information source or decision-support tool used to inform recommendations.

Providers, often responsible for deploying AI-enabled tools in clinical care, express similar concerns around AI trustworthiness and needed oversight. Providing transparent information about AI tool construction (e.g., algorithm metadata) and relevant trainings might build providers' overall trust in AI tools, and ultimately increase their confidence and ability to use these tools to support clinical encounters. Among other approaches, involving both patients and providers in AI tool co-design—as well as the development process, implementation, and monitoring—can help promote transparency.[xvii] This can also build trust that AI tools and related processes will be designed to account for and meet their needs.

WHAT'S THE HSR ANGLE?

Participants expressed the need for data and research on the AI-related awareness and attitudes of both patients (e.g., preferences regarding their data being used to train and build AI tools and models) and providers (e.g., preferences regarding how AI tools are embedded in clinical workflows). The field of HSR could also build the evidence base on factors that broadly affect patient-provider trust.[xviii]

- **In HSR:** In research communities, often subject to high standards of rigor, trustworthiness is often reinforced through verification and validation. AI tools and technologies, however, are especially challenging to evaluate as some have the capacity to rapidly evolve by learning from or even manufacturing new data. Without clear and transparent reporting on how underlying algorithms are designed (e.g., algorithm metadata) or how they pull and use data, it can be difficult to understand how "black box" systems work.[xix] Seeking to avoid liability and preserve credibility, researchers may be hesitant to use AI tools or technologies not yet seen as evidence-based even if they can potentially enhance or expedite research activities. Further, researchers may face challenges incorporating AI into their workflows without full buy-in from those funding or supporting their work. While AI could help reduce costs or optimize processes, researchers—required to detail their research methods and limitations—may hesitate to adopt AI without clear guidance on how to report and document AI use in their research.

Indicators of Success

Measuring success and openly learning from failures can promote transparency around AI use and strengthen trust in those developing or deploying it. Meeting participants suggested the following ways to monitor the field's progress in using and studying AI:

- Regularly audit AI projects for adherence to ethical guidelines and regulatory compliance to ensure responsible AI use.

- Collect feedback from users to measure satisfaction, identify challenges, and gather suggestions for improvement.

- Measure and report improvements to the efficiency and/or rigor, quality, or expediency of HSR (e.g., conduct, translation, dissemination) with AI use.

- Measure the success of interdisciplinary collaborations (e.g., codesign with patients and other stakeholders) by tracking joint projects, shared resources, and combined outputs using AI.

- Track and analyze media coverage, public opinion, and market perception to understand the societal impact and acceptance of AI initiatives.

- Monitor the number and impact of AI-related research publications, patents, and innovations.

WHAT CAN WE DO?

- **Draft guidelines for clear, understandable documentation of how AI tools and technologies were designed or developed (e.g., metadata on how algorithms were trained, and which data sources were used).**

- **Create a third-party certification process that provides a "seal of approval" for AI-assisted research designated as trustworthy.**

- **Establish independent mechanisms for assessing AI use for equity and effectiveness.**

- **Develop new models to vet and validate tools (e.g., quality assurance labs that operate independently of AI developers).**

- **Publicize standard processes and best practices to encourage evidence-based implementation.**

Priority Next Steps

Participants suggested several next steps for reinforcing trust, building confidence, and alleviating concerns, by improving transparency around AI development and suggested use.

- **Establishing best practices.** As the number of AI tools and use cases grows exponentially, the field needs a core set of best practices that can be adapted for context or purpose. While these should be informed by patient and provider views, information remains limited about their respective attitudes, awareness, adoption, or acceptance of AI. The field of HSR can play a role in gathering these data to inform new evidence-based practices. The field can also evaluate best practices for co-designing AI with key partners (e.g., patients, providers, policymakers) or adapting successful approaches from other fields. In both cases, awareness and understanding of best practices will continue to evolve with technological advancements and our ability to evaluate them. Living reviews, updated iteratively as new information becomes available,[xx] may offer one approach for providing trustworthy and systematic evidence on current best practices—even as these change over time. Other approaches to building trust may include creating guidelines for transparent reporting and documentation of (1) AI metadata (e.g., how an algorithm was trained, or the provenance and limitations of underlying data); and (2) the specific ways AI tools or technologies were used in research conduct.

- **Developing processes and resources for independent evaluation.** Meeting participants emphasized the need for improved verification and validation of AI tools, and suggested this should be separate from developers' existing evaluation activities. This might require establishing independent quality assurance labs, launching Centers of Excellence, or creating expert groups charged with setting industry-wide standards for AI implementation and evaluation. For example, developing a third-party certification process for reviewing and vetting ethical, effective AI use could offer a "seal of approval" for trustworthy AI-assisted research.

- **Increasing collaboration.** Collaboration across sectors and among stakeholders can promote transparency, accountability, and communication about the risks and benefits of using AI. One meeting participant noted that "AI is a team sport," and treating it as such can build collective trust. Another participant suggested that "expand[ing] the apertures of the HSR community to include anthropologists, engineers, etc." can enhance innovation and impact by leveraging different knowledge about what works, for whom, and in what contexts. In these ways, involving diverse partners throughout the design and deployment of AI tools and technologies—and creation of related guidance and resources—can support ethical, equitable, and effective AI use.

AI Literacy

Challenges and Concerns

The rapid pace of technological innovation and ever-expanding number of AI use cases makes it challenging to maintain baseline AI literacy. Distinct from general or digital literacy,

"AI literacy"[xxi] references the ability to understand, use, and evaluate AI systems and tools in a safe and ethical way. Participants recognized the need for increased training and educational opportunities focused on building basic awareness of AI terms, core concepts, and best practices among both public and professional (research or clinical) audiences. HSR professionals need tailored, discipline-specific resources to build confidence and competency in using AI tools. These needs may vary—students and HSR trainees may need foundational education on the underlying logic and approaches for using AI in HSR, while tenured researchers may have deeper technical knowledge. Both groups will need to keep apprised of AI technology advancement, and the ways it might prompt revisions of methods or frameworks traditionally used in their work.

As the number of AI functions and applications expands—exploring models for agile, timely education can help people keep pace with the changing field.

Indicators of Success

AI literacy is vital for safe and effective integration of AI tools in health research and care delivery. End-users are best positioned to approach AI use as critical thinkers and responsible actors, if adequately educated about the embedded logic and intended functions of a tool or technology. Having baseline AI literacy can also inform how end-users interpret and communicate results, to the extent that AI-informed findings are reliable, generalizable, or subject to limitations. Improving competence and instilling confidence in AI use reduces the risk of error or unintended harm. To gauge progress in building AI literacy among HSR professionals, participants suggested tracking trends and indicators such as:

- The amount of funding invested and number of grants awarded for research on the use and impact of AI.

- The number of professionals trained and certified in AI-related skills, as well as their performance and contributions to AI projects.

- The results of regular benchmark studies to compare AI capabilities and advancements in HSR with industry standards and best practices.

- The number of HSR professionals confident in their abilities to effectively and ethically deploy AI in their work.

- The number of HSR publications that used AI (methods, analysis, dissemination, writing of manuscript, etc.).

WHAT CAN WE DO?

- **Create learning environments for practice and testing of new tools in safe "sandboxes" or collaboration spaces.**
- **Develop learning resources and trainings made available beyond formal or academic institutions.**
- **Gather baseline data on AI literacy (e.g., awareness, acceptance, confidence, competency) from patients, providers, researchers, etc.**

Priority Next Steps

Participants suggested the following next steps for understanding and then meeting the diverse AI-related learning needs of health care and research stakeholders (e.g., patients, providers, policymakers).

- **Assessing existing literacy.** Collecting baseline data on AI use, knowledge, and acceptability among different groups in the HSR ecosystem can highlight knowledge and training gaps. This information can also guide the creation and tailoring of AI-related educational materials to ensure these are designed and delivered in ways that best meet each group's learning needs. Collecting data on AI literacy may be challenging given the variability of current training offerings, where they are offered, and how people access them. Accounting for this, approaches to assessing baseline AI literacy across the HSR ecosystem might include collecting self-reported data (e.g., to assess confidence/competency using or understanding AI tools), or monitoring changes in the number and types of formal training programs and the participants attending them.

- **Creating educational resources.** Keeping pace with a rapidly evolving landscape requires an ever evolving toolkit of resources to help people understand and interrogate that landscape. Solution-specific training educates researchers on individual tools or use cases but should be viewed as supplementary to foundational AI literacy training (e.g., introducing core concepts, explaining underlying logic, addressing misconceptions). Basic education offers critical thinking skills that will remain relevant even as technology evolves by orienting people to the kinds of questions to ask when using AI in any context: *What questions should I think through to*

assess if a tool is fit for purpose? Whose input or perspective should I invite to reveal potential sources of bias in my AI-assisted work? Finally, those at advanced career levels or with deep technical expertise will also need opportunities for ongoing training to further develop their skills and invite new thinking about the use and study of AI in HSR.

- **Providing safe spaces for experimentation.** One way to build comfort and confidence with AI is by creating practice spaces for skill-building and experiential learning. These safe "sandboxes" can orient people to practical scenarios for using AI in their work and give them space to practice using these tools and technologies without negative real-world consequences. This not only supports workforce training and development, but also promotes innovation by making space for people to creatively try, test, and tailor new ways of using AI in their work.

Regulations, Guidelines and Governance
Challenges and Concerns

Participants also noted the challenge of a lack of clear regulations and guidelines and the immaturity or inconsistency across AI governance structures. Beyond setting standards and creating policies, participants noted the need to delineate jurisdiction: clarifying which groups or agencies have the authority to set policies, and the responsibility to monitor and enforce adherence. Across levels of decision-making (e.g., state versus federal actors, developers creating tools versus health systems deploying them) policymaking processes and governance structures need to afford flexibility for iterative review and revision as AI evolves. They also need to account for variability in the ways AI tools and technologies are used in different contexts or settings. This applies not only to the approaches for implementing new tools and technologies, but also to dictate what level of disclosure is appropriate to balance protecting privacy and encouraging transparency in each context.

At the national level, many look to the federal government for leadership in setting top-down policies and standards. However, the expansive nature and nearly unlimited possibility for AI use means that some decisions are best made at the levels of state, local, or individual health systems and research institutions. Several resources or playbooks already outline broad guidance for AI operationalization and management (e.g., the National Academy of Medicine AI Code of Conduct, the White House Blueprint for an AI Bill of Rights). However, it is not always clear how closely these should be followed or how to evaluate and demonstrate alignment with these national recommendations.

- **In health care:** Participants reported high variability in the maturity of AI governance structures and processes across health systems. Governance-related decisions significantly impact how AI tools or systems are incorporated into care delivery workflows. Thus, governance decisions shape the "behavior" and outputs of AI by dictating how tools and systems collect, learn from, or communicate information. Governance decisions also dictate how and when AI tools

and systems get audited, who is accountable for errors, and how these should be reported. Since clinicians play an important role in implementing AI to enhance patient care, participants suggested they should be included in key governance decisions. This can inform system-wide implementation so that AI tools and systems are set up to generate information acceptable to providers, applicable for patients, and are accurately aligned with clinical guidelines.

WHAT'S THE HSR ANGLE?
For governance activities to be actionable, health systems must be able to evaluate, report, and respond to outcomes of AI implementation. Traditional evaluation models and metrics may not sufficiently account for the agility or responsiveness of AI tools and systems, evolving over time as they learn from new information or improve their accuracy. By exploring new models and approaches to systematically assess AI, the field of HSR can produce research that helps health systems make actionable, evidence-based governance decisions.

- **In HSR:** Challenges related to data privacy and security (e.g., ensuring protection for personal, sensitive, or proprietary information) and obtaining relevant consent are significant in the conduct of HSR. Additionally, AI poses several governance and regulatory challenges that are distinct to research settings. These challenges stem from the unique characteristics of AI, such as its ability to process vast amounts of data, its potential to make autonomous decisions, and the evolving nature of the technology. Among them, the use of AI in generating research outputs raises questions about who owns the results (e.g., the tool developer, the end-user, or the researching institution). Since AI regulation in health care tends to be fragmented across jurisdictions, researchers working across regions may experience similar challenges in accessing data or accounting for variability. Finally, unless existing frameworks for human subjects research (e.g., Institutional Review Boards) are updated to account for AI's role in analyzing and interpreting data, researchers may get signoff for studies that ultimately perpetuate bias or cause harm. These instances raise additional regulatory questions about who should be held accountable for errors or negative outcomes.

Indicators of Success

To gauge progress toward establishing governance structures, processes, and mechanisms of accountability at various levels of AI-related decision-making, participants suggested tracking trends in:

- The number of organizations in HSR with an AI acceptable use policy (AUP) and the extent of alignment between organizations' AUPs and guidance from key players (e.g., journals, review boards, academic institutions) regarding allowable uses of AI.

- The number of policies co-written with community or other nontraditional research partners, and the practices proven effective for supporting that collaboration.

WHAT CAN WE DO?

- **Form interdisciplinary committees (e.g., ethicists, legal experts, developers, data scientists) to create standards and governance structures related to AI use in HSR.**

- **Propose an iterative process for updating Institutional Review Board (IRB) guidelines, to better account for the ways AI use may change how we validate and evaluate human subjects research.**

- **Ensure journal and conference submission guidelines are clearly communicated, and regularly reviewed and revised to account for the rapid evolution and changing acceptability of AI use in the field.**

Priority Next Steps

There is no single approach for AI-related governance, regulation, or policymaking. These processes and structures should be designed based on the specific needs and features of each community or context. In considering next steps for the broader field, participants suggested the following:

- **Establish novel evaluation methods.** The field of HSR can play an important role in rethinking standards of rigor and how to maintain them, while evaluating evolving AI tools and technologies. This includes (1) agreeing on key performance indicators and standardizing reporting

practices; (2) outlining recommended timelines for auditing AI use in health care and research settings; or (3) testing new, emerging, and innovative approaches (e.g., localized, values-driven, Indigenous or other methods) to evaluate AI's impact in certain groups or settings.

- **Establish standards and guidelines.** Creating a common language, clear definitions, and standardized reporting practices can enable clear, consistent documentation and reporting of AI use and outcomes. Developing standards and ethical guidelines for data quality, collection, and sharing can enhance interoperability so HSR professionals can use available data to conduct robust research. Setting standards for AI implementation in health care settings can support systematic evaluation, to track health equity and outcomes and ultimately improve patient care.

- **Form interdisciplinary committees.** Regularly convening diverse experts (e.g., ethicists, developers, ethicists, legal experts, data scientists, health system leaders) in AI governance, regulation, and policymaking activities can help ensure that related structures or processes are designed in ways that will best support accountability and acceptable use as AI technology evolves.

Other Considerations

Beyond highlighting the aforementioned challenges and opportunities, this convening surfaced several other considerations for the field's successful uptake and use of AI.

Innovation through Inclusion: Creative, Emerging, and Nontraditional Methods

Keeping pace with the rapid evolution of AI will require parallel innovation across the field of HSR. It may become necessary to adapt traditional tools and methods, or to adopt those used successfully in other disciplines such as agriculture, education, and manufacturing.[xxii] If traditional HSR tools and methods prove insufficient to evaluate AI tools and technologies, HSR professionals may need to invite and integrate new and emerging forms of knowledge, information, and expertise to support the field in assessing and understanding the impact of AI on diverse groups. To provide some examples:

- By complementing traditional and quantitative HSR methods with ethnographic approaches, which are "well-suited to exploring underlying causes and power asymmetries… often difficult or impossible to uncover,"[xxiii] researchers may better understand how AI impacts and intersects with people's health. This might ultimately guide research question framing or study result interpretation.

- Evaluation according to traditional metrics (e.g., utility, efficiency, optimization) may not fully reflect the extent of AI's impact on health, especially across diverse groups. By exploring nontraditional frameworks (e.g., Indigenous methods) for studying AI (e.g., assessing its impact on research accuracy and timeliness), researchers may identify new

outcomes to measure (e.g., cultural or technical "harmony," or interrelatedness) that can provide a more complete picture of how AI influences or intersects with individual or community health.[xxiv]

Thinking expansively and inclusively can elevate new approaches to rigorous research and help HSR professionals stay resilient and resourceful, even as AI prompts rapid changes throughout the health care and research ecosystems.[xxv]

Innovation through Inclusion: Bridging the Digital Divide

In practice, inclusion requires more than inviting contributions from patients, providers, and other partners. Bridging the "digital divide" to prepare all partners for involvement in AI co-design, deployment, or decision-making may require sharing level-setting information or educational resources. This is critical for groups with limited access to digital tools, platforms, information sharing, or resources (e.g., cell phones, affordable Internet, health technologies).

Since the rapid evolution of AI may pose even greater challenges to maintaining digital literacy, some suggest that the newly emerging "AI divide"[xxvi,xxvii,xxviii] could be even more harmful by further magnifying inequities that negatively impact vulnerable groups. By conducting research on this phenomenon, the field of HSR can build evidence on how AI use impacts health access, equity, and outcomes—which may include the positive or advantageous impacts of AI.

Just as these tools and technologies have the power to widen gaps, they can also bridge them. When used correctly, AI (especially open-source or publicly available tools and platforms) can give people ready access to a wealth of knowledge, a technical skillset, or a creative outlet. For those without access to formal or technical training, AI could have an "equalizing" effect that levels power imbalances and facilitates collaboration. For example:

- AI can quickly synthesize key insights from the literature and communicate them in plain language, and in languages other than English. Although accuracy is dependent on the specific tool and data used to build the algorithm, this could help patient or public research partners readily access knowledge they need to feel informed and contribute during co-design.[xxix]

- AI can provide mechanisms for capacity building and provide research training to community members who may not have time or resources to enroll in formal training.[xxx]

- AI can help detect bias in algorithms and flag biased patterns in data collection, sampling, or analysis.[xxxi]

- By translating written or spoken language into code for creating data visualizations, AI creates ways for partners without formal research training to advise on data interpretation or translation.[xxxii]

In these and other ways, AI can facilitate engaging diverse partners in research—as is increasingly critical for research and development on these tools and technologies, and for the broader field of HSR.

CONCLUSION

This summary provides insight into how AI is currently impacting the health care and research landscapes. Rapid development and evolution of AI tools underscores the urgent need for robust evidence on what works, for whom, and in what context. The field of HSR can play a critical role in generating needed evidence on AI use and its impact. However, doing so requires agile approaches to evaluating, regulating, and educating people about AI tools and technologies.

Undertaking proposed next steps can address some of the highest priority challenges for the field (e.g., limited trust and transparency, AI literacy, and maturity of established guidelines, regulations, and governance practices). By also adopting inclusive and expansive approaches (e.g., employing new methods, engaging new partners), the field can build on insights from this precursor work and further optimize the ways AI can be used to advance the production of high-impact, equitable research.

Ultimately, these activities can begin to prepare partners across health care and research to embrace innovation and harness the power of AI to improve health equity and outcomes for all.

APPENDIX 1. Approach

The meeting convened invited participants from diverse settings and sectors (e.g., public health, policy, industry, academia, health systems, care delivery) for learning and level-setting that laid the foundation for subsequent priority-setting. Participants included members of a Guiding Council (*Appendix 2*) who served as program faculty and provided input on meeting objectives, format, and framing. This group completed a brief, precursor survey later distributed to all meeting participants. Survey responses surfaced important themes and topics to feature in the program and collected information on participants' (1) roles in the HSR ecosystem and experience funding, conducting, reporting, or using HSR; (2) use of AI in their organization and other relevant entities (e.g., professional societies); and (3) ideas about current opportunities, challenges, and necessary steps to prepare the field for ethical, effective AI use and study.

Two half-days of virtual programming featured didactic presentations that offered level-setting and foundational knowledge on special topics (e.g., approaches for building trust and buy-in among HSR professionals related to the use of AI in research). The convening also included sessions designed to intentionally invite discussion and integrate diverse perspectives on critical themes and topics (e.g., key features of the current landscape, anticipated "cascading effects" of AI for the field of HSR, how AI impacts patient and provider mistrust and the spread of misinformation).

Following the meeting, participants engaged in an asynchronous prioritization activity via Codigital: an online platform for collaborative idea generation and priority-setting. This exercise helped identify high priority needs for the field, next steps to address them, and potential metrics for tracking progress.

APPENDIX 2. Guiding Council

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APPENDIX 3. Acknowledgements

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