Lessons Learned in HCI+Health Research

Implementation Contributions Should Be Recognized as a Distinct Category in HCI+Health Research

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ABSTRACT

Publishing in HCI+Health research presents unique challenges due to the interdisciplinary nature of the field. Researchers must navigate ethical compliance, methodological rigor, and effectively communicate contributions to both HCI and health sciences audiences. As a Senior Principal UX Researcher at Eli Lilly, with expertise in HCI and digital health, I have developed strategies to optimize research submissions and align with interdisciplinary expectations. Drawing from my experience as a researcher, reviewer, and Associate Chair for major HCI and health informatics conferences, this paper offers a structured framework to help researchers successfully position their work in venues such as JMIR, AMIA, and the new HCI+Health Coneference (Interactive Health Conference). Researchers looking to publish in HCI+Health venues can use this guide to navigate interdisciplinary expectations, methodological rigor, and review challenges. Additionally, reviewers can use this guide to identify common pitfalls and best practices to evaluate submissions more effectively.

CCS CONCEPTS

• Human-centered computing → User studies; Participatory design; User interface design • Applied computing → Health care information systems; Consumer health • General and reference → Cross-computing tools and techniques; Design; Evaluation

KEYWORDS

HCI+Health, Implementation Research, Digital Health, Interdisciplinary Review, Research Contributions, UX Research in Healthcare

CHI '25 Workshop on Envisioning the Future of Interactive Health, Yokohama, Japan

ACM Reference format:

Sarah Nikkhah. 2025. Lessons Learned in HCI+Health Research Implementation Contributions Should Be Recognized as a Distinct Category in HCI+Health Research. In *Proceedings of ACM CHI '25. ACM, Yokohama, Japan. 5 pages.*

1. Introduction: Bridging the Gap Between Health Research and HCI Publishing

HCI+Health research requires a balance between technological innovation and clinical relevance. Many health researchers struggle with adapting their work to HCI venues, while HCI researchers may not fully meet healthcare standards. This guide serves as a practical resource for structuring and refining submissions, ensuring alignment with the expectations of both fields. Health researchers looking to publish in HCI+Health venues such as Interactive Health, JMIR, and AMIA can use this guide to navigate interdisciplinary expectations, methodological rigor, and review challenges. Additionally, reviewers can use this guide to identify common pitfalls and best practices to evaluate submissions more effectively.

To provide context, I first outline my expertise, followed by concrete strategies to improve manuscript framing, research contributions, and reviewer alignment.

2. Positionality Statement: Why This Guide?

My expertise in HCI and health research stems from my Ph.D. in Human-Computer Interaction (HCI) at Indiana University. I specialized in digital health engagement, UX research, and patient-centered design. My research led to innovations in cancer care coordination technologies and health-related digital interactions. At Eli Lilly, I lead digital engagement research initiatives, leveraging HCI methods to align digital solutions with healthcare regulations and enhance engagement for both patients and healthcare providers. As a reviewer and Associate Chair (AC) for HCI and health informatics venues, I have observed common pitfalls in interdisciplinary

submissions and developed strategies to navigate reviewer expectations. This guide synthesizes those insights and advocates for the recognition of Implementation Contributions as a distinct category in HCI+Health research.

3. Ethical and Regulatory Transparency is Non-Negotiable

Unlike traditional HCI research, which often deals with usability studies or general technology design, HCI+Health research involves human subjects in clinical or sensitive health contexts requiring adherence to medical ethics, patient privacy laws, and institutional review processes.

3.1 Clearly State Ethical Oversight

Ethical approval processes vary between HCI and health research. In medical contexts, Institutional Review Board (IRB) [1] approval or equivalent oversight is standard. In HCI, some studies may be exempt but should still explicitly address ethical considerations. Early in my career, I did not include IRB status, assuming it was understood—leading to revision requests from reviewers. Now, I always include IRB status, even if exempt, to preempt reviewer concerns.

3.2 Detail Informed Consent and Data Protection Measures

Health research requires compliance to privacy laws such as GDPR [2] and HIPAA [3]. Digital health studies involving sensitive patient data must explicitly describe: How participants are informed about study risks and benefits; Data anonymization and storage protocols; Compliance with legal and institutional data protection guidelines.

4. Address Interdisciplinary Review Expectations

Successfully navigating interdisciplinary reviews requires careful framing to ensure contributions resonate with both HCI and health informatics audiences. In an early submission to a health informatics conference, I emphasized the HCI aspects of my work but overlooked key health informatics literature. As a result, I received major revision requests, requiring me to expand the literature review to include health informatics research and explicitly connect my findings to it in the discussion section. To mitigate this, reference both HCI and health informatics literature, emphasize usability, adoption, clinical effectiveness, and implementation challenges, and frame contributions to bridge technical innovation, clinical impact, and real-world integration.

4.1 Balance HCI and Health Framing

A common HCI+Health field-specific reason for rejection is failing to bridge the disciplinary gap. HCI reviewers may critique a paper for lacking technical innovation, while health reviewers may flag insufficient clinical validation. To mitigate this: Reference both HCI and health informatics literature; Emphasize usability, adoption, and clinical effectiveness; Frame contributions to bridge technical innovation and clinical impact.

4.2 Define Specialized Terms for a Broad Audience

In multiple submissions, I was asked to explicitly define abbreviations such as Participatory Design (PD) [4] and Institutional Review Board (IRB) [5], as not all reviewers were familiar with these terms. This feedback reinforced the importance of defining key terms to ensure accessibility and avoid misinterpretation. Also, it is best practice to provide context when introducing domain-specific concepts, making the work more approachable for a diverse review panel.

5. Clearly Define and Justify Research Contributions

Defining research contributions is a universal challenge. In HCI+Health, contributions should be structured clearly to distinguish between technical HCI aspects and health-related impacts. These contributions typically fall into five categories: Empirical, Applied, Methodological, Theoretical, and Implementation. Implementation Contributions address challenges in real-world adoption, scaling, and sustainability of HCI+Health technologies. By formally distinguishing Implementation Contributions, HCI+Health research can better recognize studies that bridge the gap between technological innovation and real-world impact, be more open to researchers from industry, and ensure that digital health solutions are not only designed effectively but also successfully integrated, sustained, and scaled across diverse healthcare environments.

5.1 Empirical Contributions

Empirical research in HCI and health technologies relies on real-world data collection and analysis to understand user experiences, behaviors, and the impact of technologies in specific settings. These studies provide evidence-based insights that inform the design and evaluation of new systems. For example, Nikkhah et al. [12] explored **family resilience in caregiving coordination during child hospitalization**, using interviews and thematic analysis to identify key challenges and opportunities for collaborative caregiving technologies. Similarly, Zakreuskaya et al. [13] examined how **medical discharge letters serve as critical artifacts in managing**

patient care, conducting observational research in a hospital setting to assess the practical implications of automation in clinical workflows. By capturing rich contextual details, empirical research ensures that technology design is grounded in real user needs and healthcare workflows.

5.2 Applied Contributions: Designing and Evaluating New Technologies

Applied research focuses on **developing, implementing, and evaluating technologies** that address specific real-world challenges. This type of research bridges the gap between conceptual models and practical applications by iteratively refining technology through testing and user feedback. For instance, Foong et al. [17] designed and assessed **values elicitation tools for caregivers** in end-of-life decision-making, highlighting the challenges of aligning patient and caregiver values. Similarly, Akiri et al. [18] introduced **a stress reflection system for high-stress training scenarios**, demonstrating how technology can enhance team-based emotional intelligence and stress management. These studies illustrate how rigorous evaluation of new technologies ensures usability, effectiveness, and alignment with user needs before large-scale deployment.

5.3 Methodological Contributions: Developing Research Frameworks and Evaluation Methods

Methodological research introduces **new frameworks, models, or evaluation techniques** to enhance research and practice in HCI and digital health. For example, Bandukda et al. [20] proposed the **PLACES framework for understanding outdoor leisure activities among blind and partially sighted people**, organizing the challenges and opportunities in accessibility research. Methodological studies like this provide standardized approaches to data collection, analysis, and evaluation, ensuring research consistency and replicability. By formalizing research methods, methodological contributions strengthen the scientific rigor of interdisciplinary studies and help future researchers build upon validated approaches.

5.4 Theoretical Contributions: Expanding Conceptual Understanding

Theoretical contributions deepen our understanding of fundamental concepts in HCI, digital health, and emotion research. These studies shape the research discourse by questioning assumptions, refining existing models, and proposing new perspectives. For example, Ahmadpour et al. [22] contrast **Affective Interaction with Affective Computing**, challenging the dominant paradigm of emotion recognition and classification. Their work argues that emotions are **situated, embodied, and culturally dependent**, rather than fitting into predefined categories. Theoretical research plays a crucial role in guiding the future direction of technological advancements by influencing how researchers and designers approach user experience, affective computing, and human-centered technology design.

5.5 Implementation Contributions: Expanding Conceptual Understanding

I propose introducing Implementation Contributions as a distinct category to address challenges in real-world adoption, scaling, and sustainability of HCI+Health technologies. Unlike applied contributions, which focus on design and evaluation, implementation research examines how interventions are deployed, integrated, and maintained in clinical settings. Many innovations struggle with regulatory barriers, stakeholder resistance, and long-term adherence, making it critical to study how healthcare technologies transition from research environments to sustained practice. For example, Gracy et al. [23] **examined barriers to pediatric EHR adoption, illustrating how implementation challenges—rather than just usability or technical design—can hinder real-world adoption.** By identifying gaps in system functionality and advocating for pediatric-specific standards, they contributed to the broader discourse on EHR adoption, policy influence, and long-term system integration in healthcare. By formally distinguishing Implementation Contributions, HCI+Health research can better recognize studies that bridge the gap between technological innovation and real-world impact, ensuring that digital health solutions are not only designed effectively but also successfully integrated, sustained, and scaled across diverse healthcare environments.

5.6 Align Contribution with the Right Area

Each of these contribution types plays a vital role in advancing HCI+Health research. By clearly articulating the type of contribution a study makes, researchers can ensure that their work is positioned appropriately within interdisciplinary research communities and is aligned with reviewer expectations. It is also crucial to frame contributions in ways that align with the expectations of both communities. Successful submissions should integrate insights from human-computer interaction and health informatics, emphasizing both usability and clinical relevance. To aid researchers, I have developed a two-page research contribution framework (Appendix II) and will be refining it through ongoing research and expert discussions.

6. Methodological Rigor and Justification Matters

HCI+Health research must balance usability and iterative design with clinical validity and generalizability.

6.1 Ensure Methodology Matches Research Goals

Submissions must justify why a particular methodology (qualitative [6], quantitative [7], mixed methods [8]) is appropriate for the research question. **Qualitative Studies**: Should emphasize depth of insight and transferability [9] rather than statistical power. **Quantitative Studies**: Require robust statistical analysis and clear outcome measures. **Mixed Methods**: Must articulate how qualitative and quantitative findings complement each other.

6.2 Address Generalizability Concerns in Qualitative Research

For one of my submissions, I received a reviewer questioning the generalizability [10] of my work, despite its qualitative nature. Health-focused reviewers, in particular, often critique qualitative studies for lacking generalizability. To address this, I reframed my findings in terms of **transferability** [9], emphasizing how insights could be applied in similar contexts rather than making broad statistical claims.

6.2 Ensure Transparent Recruitment Strategies

In one of my papers, I initially included only the total number of participants and limited demographic details. Reviewers requested a more comprehensive description of recruitment criteria, sample representativeness, potential biases, and limitations, given that HCI+Health research often involves specialized participant groups (e.g., patients, clinicians, caregivers). To address this, I later created a detailed table outlining participant numbers, demographics, and inclusion criteria, ensuring transparency and alignment with interdisciplinary expectations..

7. Anticipate and Address Common Reviewer Pitfalls

7.1 Avoid Overpromising Results

A frequent mistake is making broad claims without sufficient validation. For example, stating that a digital health intervention "improves patient outcomes" without a longitudinal clinical study invites criticism. Instead, frame findings within the study's scope and acknowledge constraints.

7.2 Discuss Study Limitations Proactively

Transparency about biases, methodological constraints, and confounders strengthens credibility. Clearly stating limitations prevents reviewers from flagging them as oversights. Frame limitations constructively, explaining how they affect interpretation while highlighting future research directions.

By addressing these common reviewer pitfalls early in the writing process, researchers can enhance the clarity, rigor, and persuasiveness of their submissions.

8. Conclusion: Practical Steps for Researchers

Based on this work, I have developed a checklist for strengthening HCI+Health research (Appendix I) and a two-page research contribution framework (Appendix II) to guide successful HCI+Health submissions and reviews. By following this checklist and leveraging the guide, researchers can improve the clarity, rigor, and interdisciplinary alignment of their HCI+Health submissions. This checklist reflects my experiences, but it is a starting point rather than a final solution. I invite researchers and reviewers to refine it through discussions and shared insights. Additionally, I advocate for the recognition of Implementation Contributions as a distinct category in HCI+Health research, addressing the unique challenges of adoption, scaling, and sustainability in real-world settings.

To foster continued discussion and collaboration in the HCI+Health community, I conclude this paper with open-ended questions that invite further exploration and refinement of these best practices.

1. Should conferences develop tailored review criteria that adapt to the interdisciplinary nature of HCI+Health research?
2. Should HCI+Health research introduce a distinct 'Implementation Contributions' category separate from Applied Contributions, recognizing the unique challenges of adoption, scaling, and sustainability in real-world settings?
3. How might we recognize and reward high-quality interdisciplinary work that effectively bridges HCI and health domains—especially when traditional impact metrics may fall short?

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Appendix I: Checklist for Strengthening HCI+Health Research Submissions: Guidelines and Best Practices

Checklist Category	Guideline	Example
Ethical & Regulatory Compliance (Field-Specific Challenge)	Clearly state IRB approval status and justify if exempt.	"This study was approved by [Institution] IRB #12345" or "IRB exemption granted due to minimal risk research."
	Describe informed consent procedures, particularly for vulnerable populations.	"Participants received a consent form detailing study risks and data handling."
	Ensure compliance with GDPR/HIPAA and data protection standards.	"All personal health data was anonymized following GDPR guidelines."
	Outline data anonymization, storage, and encryption methods.	"Data was encrypted at rest and stored in a secure cloud server with restricted access."
Methodological Rigor (Universal Challenge, with HCI+Health Considerations)	Choose the right study type (Theoretical, Formative, Generative, Evaluative, Summative).	"A formative study was conducted to explore initial usability challenges."
	Justify recruitment strategy, ensuring transparency in sample representativeness.	"Clinicians were recruited from a major urban hospital to ensure diversity in expertise."
	Clearly justify methods (qualitative, quantitative, mixed) and explain alignment with research goals.	"A mixed-methods approach was used to capture both user perceptions and quantitative usage patterns."
	Address generalizability concerns in qualitative research by focusing on transferability rather than broad statistical extrapolation.	"Findings are transferable to similar healthcare settings with electronic medical record systems."
Framing Contributions Clearly (Universal Challenge)	Specify contribution type (theoretical, methodological, empirical, applied).	"This research contributes a new methodological framework for evaluating patient-provider interactions."
	Discuss real-world impact on clinical practice, healthcare policy, or digital health adoption.	"Findings inform the design of AI-based clinical decision support tools."
	Ensure contributions bridge HCI and health informatics expectations, demonstrating relevance to both fields.	"This study integrates user-centered design principles with clinical workflow analysis."
	Anticipate common reviewer questions (validation, statistical power, usability concerns, clinical relevance).	"System usability was validated through A/B testing with 50 physicians."
Reviewer Expectations & Common Pitfalls (Field-Specific Challenge)	Balance interdisciplinary framing by citing both HCI and health informatics literature.	"Prior work in HCI on patient engagement (Smith et al., 2020) and health informatics on clinical decision-making (Jones et al., 2021) inform this study."
	Define specialized terms.	"Participatory Design (PD) involves end users in system design, while Clinical Decision Support Systems (CDSS) are AI-driven tools for assisting medical professionals."
	Avoid overstatements, and discuss study limitations proactively to prevent reviewer concerns.	"Although the sample size was limited, findings provide initial insights into clinician adoption behaviors."
	Ensure claims are supported by data, avoiding assumptions about clinical effectiveness without sufficient validation.	"User-reported improvement in efficiency was measured via pre- and post-intervention surveys."
Consistency in Argumentation and Discussion (Universal Challenge)	Ensure key points are introduced in the abstract and introduction for clarity.	"The introduction frames the study's contributions in both HCI and health informatics domains."
	Maintain alignment between research questions, methods, findings, and discussion.	"Each research question is explicitly addressed in the results section."
	Build a coherent narrative supported by interdisciplinary literature.	"Findings align with prior HCI research on patient engagement while extending clinical workflow theories."
	Reinforce key conclusions to maintain alignment throughout the paper.	"The discussion revisits initial hypotheses and reflects on how findings support them."

Appendix II: HCI+Health Research Contribution Framework: Approaches, Methods, and Expectations

CONTRIBUTION	APPROACH	METHODOLOGY	METHODS & EXAMPLES	PURPOSE & REVIEWERS' EXPECTATIONS
EMPIRICAL	Qualitative	Ethnographic Research	Observing clinical workflows, patient-provider interactions (fieldwork, contextual inquiry).	Provides rich, contextual insights into real-world healthcare settings. Reviewers expect depth of interpretation, triangulation, and ethical considerations (IRB, consent).
EMPIRICAL	Qualitative	Grounded Theory	Identifying barriers to digital health adoption through iterative coding of interviews & field notes.	Develops theories based on participant experiences; reviewers look for strong data saturation, theory-building rigor, and clear methodological justification.
EMPIRICAL	Qualitative	Phenomenological Research	Examining lived experiences of telehealth patients through in-depth interviews & narrative analysis.	Explores subjective experiences; reviewers seek participant-centered analysis, reflexivity, and depth in thematic interpretation.
EMPIRICAL	Qualitative	Case Study Research	Investigating digital health adoption in clinical settings via multi-stakeholder interviews & document analysis.	Conducts in-depth analysis of specific settings; reviewers look for contextual richness, case selection clarity, and findings transferability.
EMPIRICAL	Quantitative	Experimental Research (RCTs)	Evaluating digital health interventions (controlled trials, statistical analysis).	Tests causal relationships & intervention effectiveness; reviewers assess statistical rigor, replicability, bias control, and sample size justification.
EMPIRICAL	Quantitative	Survey Research	Measuring clinician adoption of health technologies using standardized questionnaires & statistical models.	Measures user perceptions & trends; reviewers expect sampling strategy, response bias mitigation, and validated measures.
EMPIRICAL	Quantitative	Observational Studies	Analyzing clinical workflow efficiency with digital tools via system logs & workflow analytics.	Studies real-world behaviors without intervention; reviewers prioritize ecological validity, variable operationalization, and data-handling rigor.
EMPIRICAL	Mixed-Methods	Sequential Exploratory	Conducting clinician interviews followed by a survey to validate findings.	Builds quantitative study from qualitative insights; reviewers evaluate sequence justification, consistency across methods, and research alignment.
EMPIRICAL	Mixed-Methods	Sequential Explanatory	Statistical modeling of health tech adoption followed by interviews for interpretation.	Explains quantitative results with qualitative depth; reviewers seek coherence of insights and clarity in mixed-method rationale.
APPLIED	Generative, Creating New Tools & Systems	Journey Mapping & Service Design *(Can be also considered empirical contribution)*	Mapping patient experiences across healthcare settings.	Visualizes end-to-end user experiences; reviewers look for rich narrative insights and participant representation.
APPLIED	Generative, Creating New Tools & Systems	Behavioral Design & Nudging	Designing interventions for medication adherence or patient engagement.	Influences health behaviors; reviewers assess behavioral theory integration, intervention effectiveness, and ethical considerations.
APPLIED	Generative, Creating New Tools & Systems	Concurrent Triangulation	Combining usability logs, surveys, and interviews to assess a digital patient portal.	Cross-validates findings using multiple data sources; reviewers prioritize methodological rigor, data convergence, and balance across methods.
APPLIED	Formative Research, Exploratory & Early-Stage	Co-Design & Participatory Research	Engaging patients or clinicians in co-developing digital health solutions.	Explores unmet needs & early concepts; reviewers assess user involvement, ethical transparency, and actionable insights.
APPLIED	Formative Research,	Needs Assessments	Identifying user needs and challenges in health technology adoption.	Defines healthcare challenges; reviewers seek strong problem definition and alignment with user needs.

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CONTRIBUTION	APPROACH	METHODOLOGY	METHODS & EXAMPLES	PURPOSE & REVIEWERS' EXPECTATIONS
	Exploratory & Early-Stage			
APPLIED	Formative Research, Exploratory & Early-Stage	Early Usability Testing & Rapid Prototyping	Initial evaluation of digital health tool usability with target users.	Refines technology usability; reviewers prioritize usability problem identification and iterative refinements.
APPLIED	Formative Research, Exploratory & Early-Stage	A/B Testing	Comparing design variations of a health tool before deployment (e.g., different UI layouts for medication reminders).	Optimizes design effectiveness through controlled user testing; reviewers look for statistical rigor, experimental design validity, and actionable insights for refinement.
APPLIED	Formative Research, Exploratory & Early-Stage	Iterative Prototyping & Usability Engineering	Refining digital health interfaces through iterative testing cycles.	Ensures user-friendly design; reviewers value iterative improvements based on user feedback.
APPLIED	Summative Research, Final Evaluation & Benchmarking	Usability Benchmarking Data Analytics *(Can be also considered implementation research)*	Comparing redesigned health interfaces to previous versions. Measuring how users adopt and continue using health technologies using Google Analytics.	Compares performance over time; reviewers expect benchmark validity, comparative insights, and statistical robustness.
IMPLEMENTATION (PROPOSED CONTRIBUTION)	Hybrid: Summative & Implementation Science	Implementation Science & Health Policy Research	Evaluating hospital-wide adoption of digital interventions.	Assesses how health technologies scale; reviewers focus on feasibility, systemic barriers, and sustainability.
THEORETICAL	Summative Research	Conceptual Frameworks & Models	Developing new frameworks for AI in clinical decision-making, human-centered health design models.	Develops new theoretical perspectives; reviewers expect novelty, logical argumentation, and strong literature grounding.
THEORETICAL	Summative Research	Literature Reviews	Systematic, scoping, or meta-analyses of digital health interventions.	Synthesizes past research to identify gaps & trends; reviewers assess methodological transparency, coverage, and critical synthesis.
THEORETICAL	Theoretical & Conceptual Research	Epistemological & Philosophical Inquiry	Rethinking UX in digital health, critical perspectives on AI ethics.	Challenges research assumptions. Reviewers value depth of theoretical engagement and interdisciplinary discourse contributions.
METHODOLOGICAL	Methodological Innovation	New Research Methods & Frameworks	Developing usability heuristics for clinical tools, hybrid methods for evaluating patient engagement.	Develops innovative research techniques; reviewers look for rigorous validation, practical applications, and replicability.
METHODOLOGICAL	Evaluation & Validation Research	Evaluation Metrics & Validation	Designing patient engagement metrics, assessing UX heuristics for medical decision aids.	Standardizes assessment methods; reviewers prioritize statistical/methodological rigor and applicability.