UW SCOPE: Examining Technology-Enhanced Collaborative Care Management of Depression in the Cancer Setting

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The UW SCOPE study (Supporting Collaborative Care to Optimize Psychosocial Engagement in the Cancer Setting) is designing and developing a new web-based patient-provider platform for technology-enhanced Collaborative Care Management of depression in urban and rural cancer centers. The platform is currently deployed as part of a pragmatic effectiveness-implementation trial of technology-enhanced Collaborative Care vs. Usual Collaborative Care. This position paper for the *CHI 2023 Workshop on Bridging HCI and Implementation Science* introduces our setting of patients with cancer and depression, reviews our human-centered design of SCOPE, and reflects on our experiences with SCOPE as a case study at the intersection of human-centered design and implementation science.

1 INTRODUCTION AND BACKGROUND

The UW SCOPE study (Supporting Collaborative Care to Optimize Psychosocial Engagement in the Cancer Setting) addresses patients with cancer and depression. Up to 25% of people with cancer become clinically depressed, depression is associated with a reduced ability to complete cancer treatment, and 75% of cancer patients with depression do not receive adequate psychosocial treatment [1, 6]. Prior research has found Collaborative Care Management (CoCM) effective for patients with cancer and depression [2], but important challenges remain when implementing CoCM in this setting: (1) engagement and collaboration between patients and clinicians; (2) monitoring patient-generated health data; and (3) ensuring guideline-level depression treatment.

Our collaboration began through the UW ALACRITY Center, and our research has been based in the center's Discover / Design / Build / Test framework [4] (i.e., drawing from both human-centered design and implementation science). Our *Discover* phase was anchored in 29 interviews with multiple stakeholders (i.e., patients, administrators, medical providers, behavioral health providers) and 8 contextual inquiries with behavioral health providers. We confirmed that patients experience challenges in both their cancer care journeys and their psychosocial care journeys, but also found that considering either journey by itself was insufficient. We therefore developed the concept of a parallel journeys framework, which explicitly considers challenges in terms of the intersection of both journeys [5]. As illustrated in Figure 1, this research motivated opportunities for SCOPE to support technology-enhanced CoCM.

SCOPE combines: (1) a provider-facing web-based registry (illustrated in Figure 2) supporting various clinical tasks among collaborating providers (i.e., collecting, organizing, and reviewing data about a population of patients), with

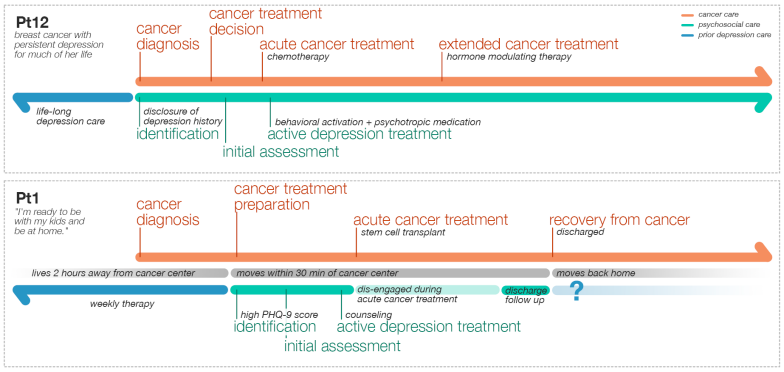

Fig. 1. Different patients engage in psychosocial care at different phases of their cancer care. Our parallel journeys framework helped surface challenges and breakdowns that occur within and between these patient journeys, informing our design of the SCOPE platform for technology-enchanced Collaborative Care Management.

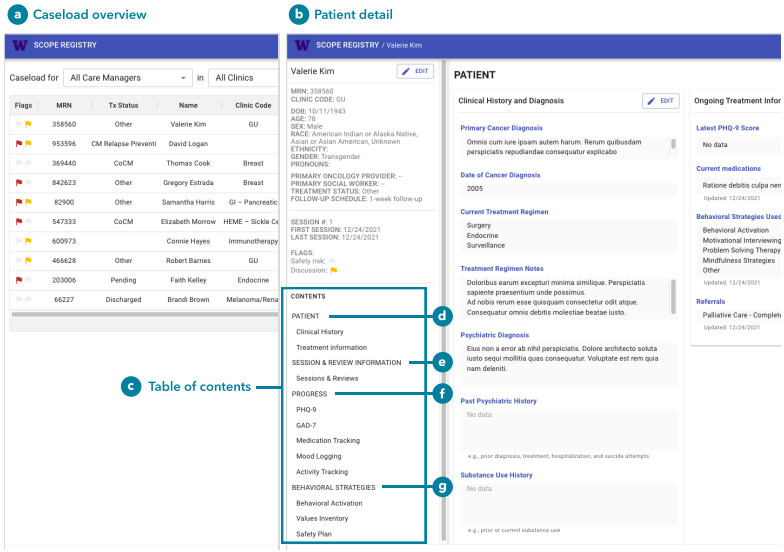

Fig. 2. The SCOPE registry supports (a) patient caseload overview to identify high-risk patients. For each (b) patient in the registry, providers can (d) enter patient history, (e) add session and case review notes, (f) monitor patient progress, and (g) review behavioral strategies and resources. Providers can jump to various sections from the (c) table of contents.

All pictured data is artificial.

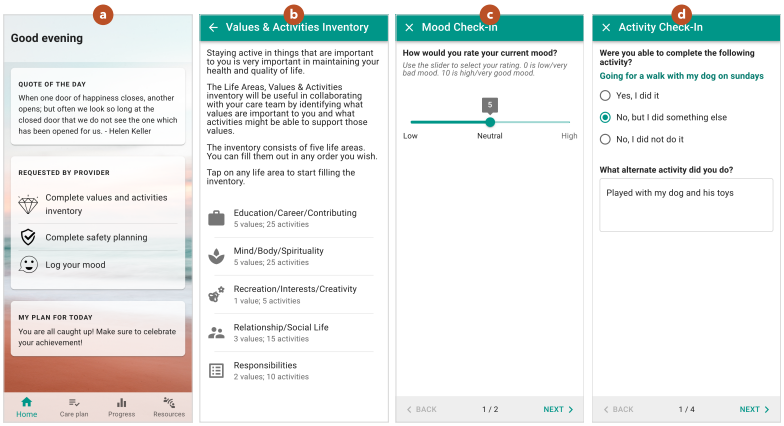

Fig. 3. The SCOPE app supports core components of behavioral activation. This includes (a) provider-assigned and patient-scheduled action items, (b) a values and activities inventory, (c) mood logging, and (d) activity logging.

(2) a patient-facing mobile app (illustrated in Figure 3) providing information, resources, and support for activities related to Behavioral Activation (BA), an evidence-based behavioral treatment for depression [3]. BA aims to promote engagement in valued activities (e.g., relationships, spirituality) and to reduce harmful behaviors (e.g., social withdrawal, avoidance) as part of interrupting a vicious cycle wherein reduced activity exacerbates depression. As we *Design* and *Build* SCOPE, a key innovation is that patient-generated health data is directly integrated into the provider registry (e.g., validated depression measures, BA-related activity data). Motivated by breakdowns we observed in this setting (e.g., access to care being shaped by patient cancer journeys to the detriment of their psychosocial care journeys) [5], SCOPE thus supplements clinical behavioral health sessions with new support for between-session communication. The UW SCOPE study has enrolled 90 patients as of January 2023 and is continuing to enroll new patients.

2 WORKSHOP PARTICIPATION

We look forward to this CHI 2023 workshop for sharing reflections on our experiences in SCOPE, learning from others navigating similar challenges, and learning more about how implementation science can inform such challenges. We expect our workshop participation will draw primarily from the HCI researchers in our team (i.e., who have been involved in designing, developing, and evaluating SCOPE and its implementation), and our preliminary reflections have identified several potentially interesting points of discussion.

Challenges of Conceptualizing Engagement with Behavioral Activation. The SCOPE patient app includes a Values & Activities Inventory based on a commonly-used BA worksheet. Behavioral health providers use the worksheet to support a patient in a process of identifying personal values, identifying activities that align with those values, and then scheduling those activities. Patient engagement with this process is considered a core component of BA's approach to breaking the vicious cycle of depression, and our initial design of the patient app similarly required patients to first identify values and then identify and schedule activities.

Usability testing found this design appropriate, but feedback from the ongoing trial has described it as a barrier (i.e., patients want the option to directly schedule activities without first identifying values). We are deploying an adaptation to support this (i.e., making identification of values optional). However, in doing so we have found it challenging to conceptualize the desired engagement. The new design may support greater patient engagement with the app and perhaps even with activities, but may also effectively circumvent engagement with BA's intended reflection on values. We look forward to discussing this adaptation as surfacing a tension between designing for ease of use versus for the desired engagement with the core components of BA.

Challenges of Mutual Engagement. Patient-generated data in SCOPE creates a need for mutual engagement between patients and providers: patient engagement requires believing data is important to their provider and their care, while provider engagement requires believing data is helping their patients. A breakdown on either side of this collaboration can be expected to undermine the other (e.g., low engagement of a patient may undermine a provider's engagement, which then undermines engagement of other patients). Although we are familiar with some HCI and CSCW perspectives on such multi-stakeholder challenges, we have found less guidance from implementation science and would hope to learn more.

Designing Both Technology and an Intervention. Our larger team is responsible for design of both the SCOPE platform and its implementation as part of the larger technology-enhanced CoCM clinical care model (e.g., including but not limited to behavioral health provider training). As we iterate within the pragmatic trial, there are sometimes questions of whether an issue should motivate an adaptation in the technology or elsewhere in the overall implementation. We

look forward to discussing how other multidisciplinary teams in HCI, health, and implementation science resolve such questions when designing technology-supported interventions.

Challenges of Resources and Research Questions. The SCOPE platform is being developed by the HCI researchers in our team, a significant undertaking in a field that often emphasizes rapid prototyping toward self-contained HCI research questions. Despite this tremendous effort, constraints imposed by available resources also mean the platform is not as capable as we would ideally like. Given implementation science's focus on real-world impact and relatively comprehensive understanding, we look forward to discussing how other multidisciplinary teams address different research questions while subject to real limitations on available resources.

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