Exploring Smart Systems to Support Patients with Discordant Chronic Comorbidities to Self-Manage and Communicate With their Multiple Healthcare Providers

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Our work explores tools to support patients complex conditions such as discordant chronic comorbidities (DCCs). Discordant chronic comorbidities are when two or more chronic or long-term diseases or conditions are present in a person at the same time. Chronic comorbidities often lead to complex treatment regimens, complicated decision-making, and complex symptom management [4]. One challenge we reported in our prior work, is the luck system robust enough for these patients to record and communicate their issues to multiple providers. The current healthcare system is relying upon the patient to personally communicate their issues, and that is not fair, efficient, or accurate. We showed how patients did not share all of their information because they assumed that providers may not be interested in some aspects of their life, some patients were fearful of judgment and other patients forgot terms that were used by their various providers [4]. Systems are being used to help patients record and share their information. For example, online journals are used to track patients' information. However, the challenges associated with this type of tool are the challenges of recording, filtering, and communicating that information across multiple providers.

We believe that, the effective support and care for patients with DCCs should be consistent with the patient's values, desires, and goals. The DCCs care and support should be feasible and flexible to accommodate shifts in a patients' life and must be tailored so it makes intellectual, emotional, and practical sense to a patient **key takeaway # 1**. Studies are looking to help patients and healthcare providers set the care goals that are tailored to each patient's needs. For example, the use of decision aids help clinicians share information about the options and their consequences during the clinical encounter [1]. Future research can explore how decision aids might help clinicians tailor care and reduce the burden of treatment on patients with DCCs and help patients reflect on their values and goals with their healthcare providers **key takeaway # 2** . Some tools such as motivational interviewing help create conversations about the options and their relative merits and downsides [5]. For DCCs, any modification to a patient's treatment plan often introduces new complications to patients' care [3, 4]. If a patient wants to make a modification to their treatment, the research could explore how to bring into the forefront the issues that may matter to a patient in making that switch. More specially, research must visualize what it would be like to stop or introduce a new treatment plan **key takeaway # 3**.

There are apps that are designed to help visualize patients' health histories and symptom maps, with a focus on people living with complex conditions [2]. Patients may visualize and communicate their histories and symptoms maps. However, communicating with a provider alone might not necessarily lead a patient to change their behavior or solve a problem. Sometimes a patient may be struggling to get around their mood and other patients may be scared of change. If there is a need to switch a treatment plan, a tool must show how that process would look like **key takeaway # 4**. Further, a tool must have an interactive interface where a patient could visualize how minimizing one behavior may affect their quality of life **key takeaway # 5**. Thus, identifying the pain points and making all potential issues tangible to a patient can help them in crisis. Such a tool may take a real-time log of a patient's thoughts. Such a tool may also monitor whether a patient is not going to relapse and should show a patient's current trajectory. In this workshop, we hope to explore with other workshop participants how some/all of the **key takeaways #1-5** might be applied to create smart and intelligent systems seeking to engage and motivate patients with complex conditions to self-manage.

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