User-Centered Design of an Application to Aid in the Safe Return to Work of Injured Farm Workers

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Background

Large animal farms are growing in size, increasing work task specialization and immigrant labor. Workers not only face inherent risks in the agricultural workplace, but are also introduced to significant dangers in these operations.[1]

Injuries in dairy and pork farms are common and are increasingly managed by primary care physicians. Yet, clinicians are often unfamiliar with the physical demands of farming and have little training and few resources to manage the safe return to work of injured workers.

This project will develop a computer application designed for clinicians, working with patients, to guide safe return to work planning for injured workers in the dairy and pork industries.
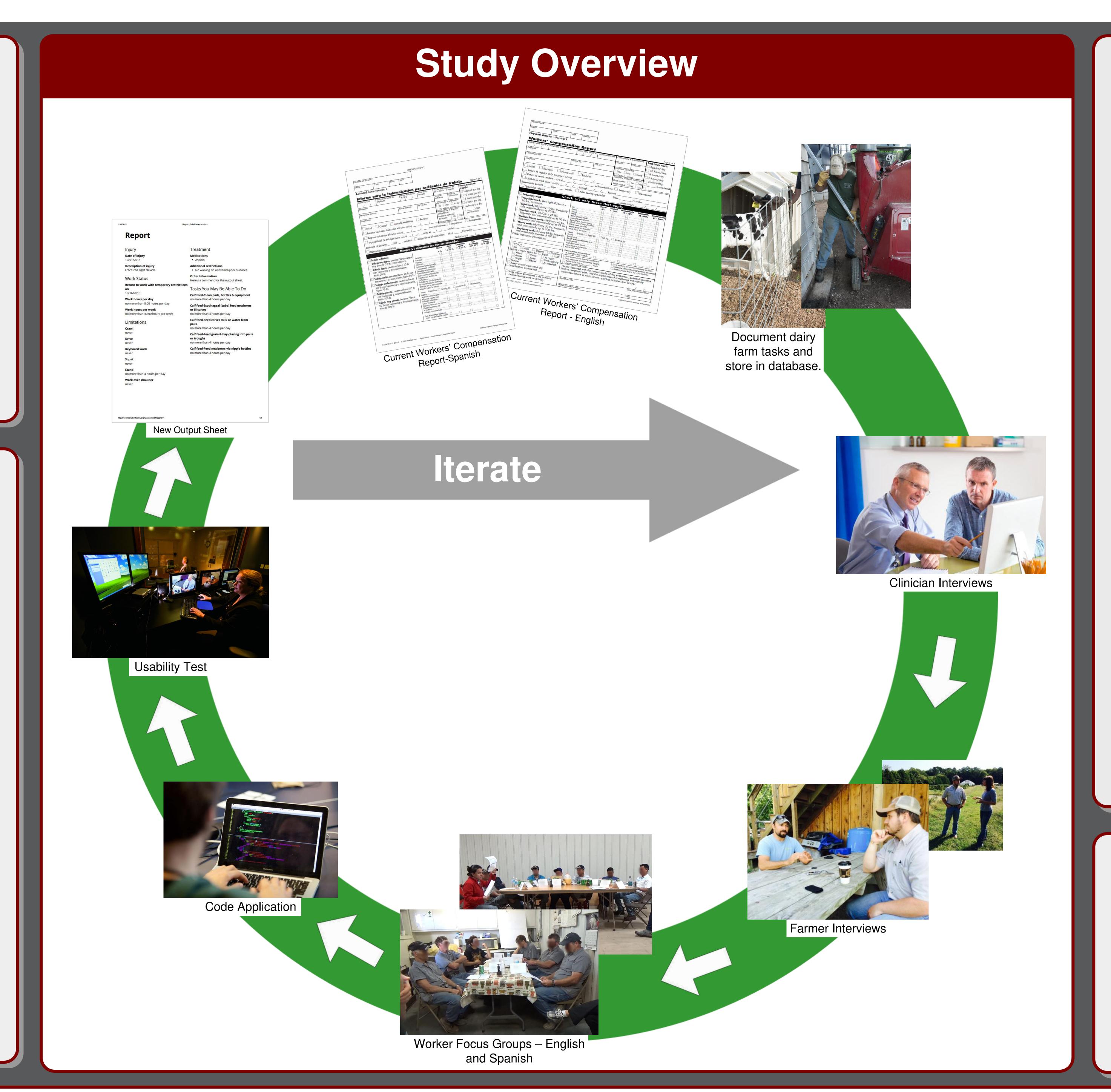
Objective

The project goal is to build an application to assist clinicians, physical therapists and occupational health therapists in translating physical restrictions into potential work task recommendations specific to an injured worker.

The application has the potential to replace existing ink over forms and would result in more structured data, which helps make the data available for research projects.

Due to the large population of Spanish speaking workers, the application's interfaces and forms will be available in both English and Spanish.

The flow of the new application starts with an industry, agriculture or other, entering job task physical demands into the system. Then, when an injured worker is assessed, physical limitations are entered by the clinician. Next the system generates a list of potential tasks the injured worker may be able to do. The clinician and injured worker review and select tasks that are a match for the job. An output sheet is generated including physical limitations, as well as recommended tasks for the injured worker to take back to employer. The injured worker and employer review the list and arrive at appropriate tasks for the worker to do while healing from injury.

Study Overview

Iterate

New Output Sheet
Current Workers' Compensation Report-Spanish
Current Workers' Compensation Report - English
Document dairy farm tasks and store in database.
Clinician Interviews
Farmer Interviews
Worker Focus Groups – English and Spanish
Code Application
Usability Test

Methods

This project employs an iterative user-centered design method on three primary end user types that interact with the system. These included employers, workers and the clinicians, including physical and occupational therapists. Involvement of the end users as a parallel part of development is done to ensure a easy, efficient and satisfying product to use.[2]

A usability analyst visited dairy farms to interview farmers regarding their experience with returning injured farm workers to work. Focus groups were also conducted with farm workers, some of whom had been through the injury and return to work process. Audio recordings were taken for all sessions; focus groups were also video recorded. All participants were compensated for their participation.

Interviews and focus groups probed the understanding and interpretation of the existing Workers' Compensation Report that is given to both farmer and worker by the clinician. The current form identifies physical restrictions for the worker, but does not make any recommendations regarding suggested tasks the worker may be able to perform while healing from injury.

Interviews were also conducted with a variety of clinician roles that have experience with injured farm workers. In parallel with the interviews and focus groups, the team developed several iterations of an application that features a structured version of the assessment form and a "patient friendly" output report. Patient friendly forms have a cleaner, less dense layout and include recommended work tasks.

For both interviews and focus groups the participants were presented with the current form and a redesigned iteration of both the structured form, as well as a patient friendly form. Feedback regarding the alternate layout of the forms was collected. Areas for improvement were identified and implemented iteratively.

Results

Qualitative and quantitative data collection methods steered the content and functionality of a proof of concept prototype. Iterative rounds of usability testing and development will take place in the near future to further refine the application. Design will be implemented, also steered by feedback from end users. Iterative testing and development will continue for the next year, with the possibility of additional funding, potentially resulting in electronic health record integration.

National FarmMedicine Center

UMASH Upper Midwest Agricultural Safety and Health Center

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