

# Technology to Help Patients Adhere to Treatment Plans – A Brief Introduction to the *Teleherence* Project

Divya Ramachandran<sup>\*</sup>, Anirban Maiti<sup>\*</sup>, Godfrey Mwangi<sup>\*</sup>, Manfred Huber<sup>\*</sup>, David Levine<sup>\*</sup>, Farhad Kamangar<sup>\*</sup>, Richard Schoech<sup>†</sup> and Gergely Zaruba<sup>\*</sup>

<sup>\*</sup>Department of Computer Science and Engineering

<sup>†</sup>School of Social Work

The University of Texas at Arlington

zaruba@uta.edu

**Problem:** While most segments of society use technology to improve their operational efficiency and effectiveness, the human services lag behind. Technology that would help case managers handle large caseloads, target those at high risk, personalize agency monitoring, predict success, and gather evaluation data would be a tremendous help.

**Proposed Solution:** To address this situation, researchers at The University of Texas at Arlington (UTA) Schools of Social Work and Computer Science and Engineering are in the preliminary stages of developing a web-phone system to support case managers and optimize client outcomes. For each treatment plan objective, the system allow the case manager to schedule reminders, select survey questions to ask a client or a client's significant other, and select messages to deliver on a hourly, daily, weekly, or monthly basis. The proposed system would call the client at agreed upon times, ask the questions, deliver reminders and messages, graph responses on a web site, sends any alerts desired, and flag potential problems and opportunities using smart algorithms. The system would use text-to-speech and voice recognition along with landline, cell, smart, and VOIP phone technology.

**System Description:** The proposed system has five components.

1. A **setup module** or web site where case managers and the client specify when the client wants to be called, how often, who else to involve in the case management process (e.g., a spouse), etc.
2. A **survey module** or web site where case managers in collaboration with clients and significant others set up the treatment plan goals and objectives along with the survey questions that will be asked. Basic survey questions for an treatment plan objective involving medication could be similar to:
  - a. Did you take your medication today?
  - b. Do you feel your medication is working?
  - c. Are side effects bothering you?
  - d. Do you feel you need an appointment with your case manager?
  - e. Do you want to leave a message for your case manager?
3. A **message module** that delivers recorded information or reminders. These messages could be triggered by phase of treatment, analyses of survey data, or predictions of treatment plan success or failure. This module could deliver motivational messages, treatment reinforcers, or cognitive behavioral based interventions.
4. A **graphics module** or web site that graphically displays survey results to those needing to see the results, e.g., the case manager, client, spouse, or a judge.
5. A **prediction module** that uses techniques such as data mining to predict adherence and non-adherence to objectives and flag risks and opportunities.

This works was partially supported by NIH/NLM grant 1G08LM009262-01A1