2. SPECIFIC AIMS

There are over 1,821 state and federal prisons housing over 2.3 million prisoners in the United States. The U.S. has the highest rate of incarceration per head of population in the world; 756 per 100,000 people versus a worldwide average of 145 per 100,000. Much like demographic trends in the free world, the number of older inmates (aged 50 or older) is growing exponentially. Longer sentences and constrained options for early release compound this trend. "The population of older adult prisoners has more than tripled since 1990." Yet, the health status of aging inmates does not mirror the free-world population. In fact, prisoners typically present health issues common to free citizens who are 10-15 years their senior. Prisoners over the age of 55 have a death rate that is 10 times that of prisoners aged 25-34. Collectively, these trends have a profound impact on prison systems. Prisoners are wards of that state, that is, the system is responsible for providing for not only custody and control of inmates, but also their care. In the case of Estelle v. Gamble, the Supreme Court reinforced the Eighth Amendment to the Constitution, citing inmates' constitutional rights of professional judgment, access to health care, and treatment. These influences shape the backdrop of this application: U.S. prisons are facing sharply increased demands in caring for aged and dying inmates. This project originated through funding from the NIH/NINR (R01NR01874; MPIs Loeb, Penrod, & Hollenbeak). The Toolkit for Enhancing End-of-Life Care in Prisons was developed, infused, and evaluated in six state prisons in Pennsylvania. A train-the-trainer approach was used to orient teams to the toolkit structure and to model strategies for applying the toolkit. Prison insiders (e.g., nurses, chaplains, corrections officers, unit managers and psychology support staff) implemented the training program in the prisons. Although these collaborative partners reported significant advances in enhancing end-of-life care (EOL), the training process and content delivery system were time and labor intensive.

The innovation of the ECAD-P Phase I project pivoted on the contextual constraints of prisons. In our STTR (Phase I) project, titled Enhancing Care for the Aged and Dying in Prisons (ECAD-P), we began the transformation of the conventional paper format of the Toolkit into media-rich, interactive computer-based modules with an expanded focus on geriatric care. The Phase I project established a strong partnership among researchers at Penn State University (PSU), multimedia developers at Klein Buendel, Inc. (KB), and experts in prison healthcare, geriatrics, and palliative/hospice care. Drawing on the complementary skillsets of this team, we developed and usability tested three prototypical modules using media-rich and highly interactive computer-based learning (CBL) to translate EOL and geriatric care principles into the context of state prisons. The technology applied in the Phase I study was specifically selected for its fit with the restrictive constraints of the prison environment (e.g., restricted access to smart phones, internet, tablets, and even USB drives). The environment is not technology-rich; however, prison administration and staff are accustomed to and receptive of computer-based learning (a frequently used delivery platform for mandatory training sessions).

The technological innovation proposed for the ECAD-P project is well-suited to the targeted market. We have demonstrated the technical merit, feasibility, and market potential of the ECAD-P Learning System in our Phase I project. The purpose of this Phase II application is to continue research and development of the ECAD-P learning system with an emphasis on developing a scalable unit for commercialization and testing scale-up in a larger number of more diverse contexts. More specifically, we will:

**AIM 1:** Develop a full scale media-rich interactive computer-based learning system (i.e., ECAD-P) consisting of 6 modules addressing EOL and geriatric care issues in prisons.

**AIM 2:** Conduct in-person usability testing of the full scale ECAD-P learning system in state and federal prisons to evaluate the user interface, ease of use, and perceived barriers in order to optimize the scalable unit for broader dissemination.

**AIM 3:** Test scale-up of the full scale ECAD-P learning system in 12 federal (n=6) and state (n=6) prisons across the nation to evaluate outcomes, usage patterns, and commercialization opportunities.

This Phase II project is critical to scaling up for mass dissemination of a commercial product. We have established the concept and demonstrated feasibility; however, it would not be wise to progress from a limited prototypical unit to full-scale dissemination without a close examination of scalability and scale-up. The continued research and development described in this application will allow us to refine the scalable unit for commercialization. Expanded testing of the learning system will establish the effectiveness of the learning system and will provide critical insights relevant to dissemination of the commercial product. Investment in this research and development is essential to successful commercialization of an effective product.