4. RESEARCH PLAN

A. SPECIFIC AIMS

We propose to address the unmet need of U.S. medical schools in assessing information and communications technology (ICT) readiness of medical students. We will define the physician specific ICT skills currently in use in our profession and devise a set of novel and comprehensive assessment exams to be given at the beginning and end of our medical student's education in order to test their acumen with these skills. The goal is to find out exactly how well we, as medical educators, are currently doing in training our future physicians in clinical information management with these assessment tools and use them to guide future curricular offerings. We anticipate that these assessment tools will be useful to all medical schools and with modification possibly to other health care professional training programs. This study will provide preliminary data to guide a larger multi-institutional examination of ICT readiness among US medical students.

AIM 1:

To create an initial assessment exam based on general ICT skills and some medical profession-specific skills to be administered with incoming Year I medical students. This exam would be given to see how well students have been prepared by their college education in ICT and to assess what prior knowledge students may have in medical practice based ICT.

AIM 2:

To define physician specific ICT tools of importance and create a comprehensive exam to assess level of competency with these tools at the end of a student's medical undergraduate education (Year IV). This will be a web based exam testing student's ability to problem solve with clinical scenarios using ICT resources commonly available in tertiary and primary care settings. Based on the findings of these two exams we will identify deficiencies in medical student education of ICT literacy.

Educational Testing Service (ETS) - "forth basic literacy: technology (ETS, 2004)."

ETS is currently developing a comprehensive test of ICT proficiency specifically designed for college level students to assess not just knowledge of technology but also critical thinking skills to solve problems within the technological environment.

Kurt Landgraf, the CEO of the ETS points out this need appropriately, "Imagine a physician from the early 20th century in a modern, 21st century hospital. The doctor would be totally unfamiliar with the tools, equipment, and methods involved in healing today."

American Library Association Task Force

1. **The information literate student determines the nature and extent of the information needed and constructs a course of action for obtaining the information.**
2. **The information literate student procures needed information effectively and efficiently.**
3. **The information literate student critically evaluates the procured information and its sources, and as a result, decides whether or not to modify the initial query and/or seek additional sources.**
4. **The information literate student understands and respects the economic, ethical, legal, and social issues surrounding the use of information and its technologies and either as an individual or as a member of a group, uses information effectively to accomplish a specific purpose.**
5. **The information literate student recognizes the need to keep current regarding new developments in his or her field and understands that information literacy is an ongoing process and an important component of lifelong learning.**

Aug, 2006 – Year I (Class of 2010)
Aug, 2007 – Year I (Class of 2011)
Mar, 2007 – Year IV (Class of 2007)
Mar, 2008 – Year IV (Class of 2008)

Table 1. Possible topics to be covered in Year I and IV exams:

Year I exam topics of general and introductory medical ICT literacy

- **Managing email**
- **Knowing the resources; where to look for answers to clinical questions**
- **Using search engines (general vs. medical literature)**
- **Searching through database**
- **Using word processing software**
- **Creating graphs**
- **Creating presentations, manipulating graphic files and movies**
- **Blogs/RSS**
- **Understanding on-line security issues: viruses, firewalls, cookies**
- **Using technology to teach**

Year IV exam will focus on ICT literacy issues essential for all physicians

- **Advanced issues from Year I topics**
- **Evidenced-based medicine searching**
- **Navigating Clinical Information System (CIS) type interfaces**
- **Electronic patient charting**
- **Understanding interfaces with pharmacy, radiology, pathology**
- **HIPAA (Health insurance portability and accountability Act) and patient privacy issues**
- **Evaluating web health sites for patients**
- **Using web resources for drug-drug interactions**
- **PDAs and clinical applications**
- **Keeping current with the medical literature**
- **Managing references**
- **Communicating with patients and assisting them in understanding/using medical ICT**