

December 1998

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## Recommended Citation

Segall, Richard and Hennessey, Audrey, "A Survey of the Use of Telecommunications and Distance Learning in Medical Informatics Programs" (1998). *AMCIS 1998 Proceedings*. 372.  
<http://aisel.aisnet.org/amcis1998/372>

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# **A Survey of the Use of Telecommunications and Distance Learning in Medical Informatics Programs**

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## **Abstract**

*This paper provides a survey of references available on the World Wide Web that illustrate the use of telecommunications and distance learning in the delivery of educational programs in Medical Informatics, which is a discipline pertaining to the communication and management of medical information. A substantive part of this paper is the list of references each of which includes the respective World Wide Web addresses. With the use of "hotlinks", the latter provides the reader with a wealth of information about educational programs in Medical Informatics as well as health related resources.*

## **Survey**

This paper provides a survey of some of the current programs in Medical Informatics, and is comprehensive, but not considered exhaustive. A list of Medical Informatics Education Centers is provided in [1,2] from the University of California at Davis Health Science Center for Medical Informatics and the Section on Medical Informatics at Stanford University School of Medicine respectively. Both [1,2] provide hotlinks to the respective universities. Medical Informatics Links are provided in [3] from the Duke University Medical Center with links to Medical Informatics home pages around the world.

The "Health-related Sites" [4] web page has links to Medical Informatics programs [2,3] as well as Georgia Tech, National Institutes of Health (NIH), the National Library of Medicine (NLM), "The Virtual Hospital" at the University of Iowa and the "One-stop Global Public Health Mall" [20] at the University of Pittsburgh. The "Virtual Hospital" at the University of Iowa web page includes on-line continuing education courses for physicians and pharmacists, as well as a complete catalogue of the traditional continuing education courses for the University of Iowa College of Medicine.

Web Medicine [7] provides a listing of hospitals on the web [6], and other medical resources on the internet [5] which describes medicine on the web today. This includes the existence of chat pages at many hospitals to facilitate communication between physicians within the hospital for the exchange of patient data and improving the efficiency of the hospital's clinical staff.

Several universities are utilizing the World Wide Web for instructional purposes of courses within their Medical Informatics program. These include the University of Pittsburgh [10,11,12], the University of Florida [8], Baylor College of Medicine [9], University of Iowa [15] and its College of Medicine [14], University of Texas at Galveston [16], Stanford University [17,18,19], University of California at Davis [21,22,23], University of Louisville [24], and Duke University [25].

The University of Pittsburgh [10,11,12] provides on-line lecture notes for their course in Medical Informatics, as well as hotlinks to a short course in Medical Informatics at Stanford University, and Columbia's University's pointers to medical sites on the web, and the use of telemedicine by the Department of Defense.

The home page of the Medical Informatics program at Duke University [25] includes links to other Medical Informatics sites around the world, as well a list of Medical Informatics video tapes library available to the Duke community. The University of Pittsburgh web pages [10] includes hotlinks for the complete listing of courses in their Medical Informatics program.

The University of California at Davis [23] has a six page web site including hotlinks for each of the Medical Informatics organizations worldwide, Medical Informatics programs in the United States, and Medical Informatics programs throughout the world. The University of California at Davis also has a web site of "Tools, Links, & Resources" [22] which includes hotlinks to telemedicine sites, Medical Informatics projects around the world, pathology informatics sites, informatics software, clinical links for primary care physicians, medical coding utilities, and medical search engines.

Telemedicine is also addressed by the "Rural Outreach Division" of the Department of Family Medicine at the University of Texas at Galveston [16], and the University of Louisville [24].

The University of Florida [8] provides “Internet Opportunities for Health Care” including a tutorial on “Toward an Electronic Patient Record.” Baylor College of Medicine [9] provides a web page of “Medical Education Resources” that includes hotlinks for “Harvard Joint Program in Nuclear Medicine Teaching File,” “Johns Hopkins School of Medicine Curriculum Lecture Links,” “Virtual Hospital Multimedia Teaching Files of the University of Iowa,” “Medical i-way: Database of cases categorized by system,” and “The Interactive Patient from Marshall University School of Medicine.”

### Summary

This paper provides an overview of some of the available programs in Medical Informatics that are available on the Internet to the public community. These programs or courses are offered by universities that are striving to increase their student enrollment in programs that are essential to the medical workforce that normally work irregular hours over a normal semester.

It is evident that this increasing trend in use of distance learning is more evident in the area of Medical Informatics than other disciplines. Also telecommunications is increasingly being used by Schools of Medicine affiliated with universities for the delivery of telemedicine in rural areas that normally do not have access to medical care.

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